

**VALUES IN AGRICULTURAL RESEARCH
AND DEVELOPMENT MANAGEMENT FOR
PRO-POOR IMPACT: THE CASE OF
PETRRA PROJECT, BANGLADESH**

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**Values in Agricultural Research and Development
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Project, Bangladesh**

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Ahmad Salahuddin

Abstract

Values in Agricultural Research and Development Management for Pro-poor Impact: The Case of PETRRA Project, Bangladesh

In spite of many years of quality agricultural research and overall agricultural and economic growth, there has been slow progress in the reduction of rural poverty in many developing countries. There is agreement that technology alone is unable to solve the problem of poverty. There are many other issues that need to be considered - some are agroecological and some are social-economic-cultural-institutional-infrastructure. There has recently been fruitful discussion on poverty-focused agricultural research within national and international agricultural research systems. But the actual application of these new ideas and discussions in research has been limited. Although all agree that there is a need to discover ways to achieve greater impact on poverty from research that has been conducted, there is as yet no clear evidence of achievement based on practical experiences. There is little or no real discussion in the literature that demonstrates whether the approach to research affects poverty status.

This thesis revisits different interventions and identifies gaps in the literature in understanding approaches to agricultural research. It examines whether working directly with poor men and women farmers in partnership with organisations can contribute to poverty reduction. It also explores a range of values, asking whether they can make pro-poor research and development more effective and, more importantly, whether a value-based research management approach can significantly contribute to poverty elimination. The experience of a recently completed IRRI-managed and DFID-funded project, the Poverty Elimination Through Rice Research Assistance (PETRRA) project, which claimed to have used a value-based approach to agricultural research management, was used as a case study to learn about the effectiveness of such an approach. The project was implemented in Bangladesh for 5 years with more than 50 national and international partners and in close collaboration with the Bangladesh Rice Research Institute (BRRI).

A qualitative research methodology was used to explore the effectiveness of the value-based research management approach utilised by the project. The values included working with the poor men and women farmers on their demands and priorities, conducting research that ensures participation of men and women farmers, working with partners who work with the poor farmers, and developing networks and linkages to sustain technologies and innovations and communicate results to a large number of

poor farmers for impact. Under PETRRA, a competitive research commissioning approach was used in the selection of partners. The research method involved interviewing the research partners that led research and development subprojects 4 years on from the completion of the project. This group represents the intermediary group that made the link between two large groups: i) the national-international agricultural research and development system and ii) the users, the poor men and women farmers or the farmer groups. During the interviews, the partners of PETRRA evaluated their experience with the value-based approach that was adopted by PETRRA and analysed its effectiveness.

The research revealed that the experience of engaging with values and the value-based management approach was mostly positive. The scientists from national and international research centres and development professionals from government, non-government, and private organizations were successful in linking agricultural research, values, and the need for a management approach to achieve the objective of poverty reduction. They were able to see the strengths of the values when they were used in combination to complement each other. They observed the superior effectiveness in poverty reduction of research outputs in the form of technologies and other innovations that were developed through a value-based approach. They also identified the need for and effectiveness of the contribution of continuous capacity-building efforts on the part of the project management unit in support of a value-based approach. There was clear evidence of capacity-building impact on individual partners and their respective organizations as many of these individuals and organizations sustained the learning after the project ended. Many technologies and innovations, networks, and tools that were developed in the respective subprojects were successfully used by poor farmers, some were replicated by other organizations, and some were mainstreamed and internalised within the organizations that developed them. Many partner organizations involved were substantially changed. Those who had no previous agricultural programme became champions in agriculture, and those who had never worked with resource-poor men-women farmers became leader organizations in conducting such programmes. Many individuals and organizations became advocates and became known nationally. All such evidence indicates the effectiveness of the value-based agricultural research management approach.

The thesis concludes that pro-poor agricultural research and development is possible, even within a traditional setting. The challenge is to create a management approach around research and development activities that is value-based and that can facilitate a learning environment where all actors can contribute, play their due role, and get credit for it.

Acknowledgement

The opportunity to reflect on PETRRA has been a privilege. PETRRA as a project was successful in bringing together a donor, D FID; an international agricultural research centre, IRRI; a national agricultural research institute, BRRI; and a large number of partners - international centres, national government, nongovernment, private organizations, and universities - to achieve a common goal, that of eliminating poverty in Bangladesh through agricultural research and development initiatives. It was a rarer opportunity for me to be part of this historical contribution, both as a team member and as a researcher to capture the learning from this valuable experience.

Many people thought that PETRRA was a very important experience. For many, it was a very valuable lesson and an inspiration, especially to those who wanted to contribute to a positive improvement in the livelihoods of resource-poor farmers. Recognising this, IRRI decided to invest further on the project by capturing the lessons through this research. IRRI management must be congratulated for its generous funding. Dr. Noel P. Magor, head of the IRRI Training Center had the most contribution to make this research funding possible. I am deeply grateful to him.

The cooperation of former PETRRA partners who gave me quality time and granted me very illuminating in-depth interviews, initially excited me and inspired me to carry out this research. They each deserve my heartfelt thanks. All of their names are listed in Appendix 1 and are mentioned throughout the thesis; readers will also find them present in each page.

Supervision of the thesis was not easy because of my physical isolation from my supervisors most of the time. After an initial 1-year stay at Adelaide University, I had to live most of my time in Bangladesh; yet regular consultations and meetings had to be held. Dr. Peter Mayer, my principal supervisor at Adelaide University, deserves special thanks; he rarely missed a weekly Skype meeting. I appreciated the patience, wisdom, guidance, and encouragement that he provided throughout this trying period. Dr. Noel P. Magor, my supervisor at IRRI, has always been in contact. He never stopped encouraging me. He arranged for some funds to enable me to travel to IRRI several times during the period, allowing me to work closely with him and giving me some quiet time at IRRI so I could concentrate on my writing. He also supported my participation in four international conferences to present papers based on my research findings. Dr. Juanita Elias, my co-supervisor at Adelaide University, has been very helpful during the initial concept development period. All three have been special and deserve special thanks.

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Table of Contents

Certificate of Originality	i
Abstract	iii
Acknowledgement	v
Table of Contents	vii
List of Tables	xii
List of Figures	xii
List of Abbreviations	xiii
Glossary of Special Terms	xvii
Administrative Units of Bangladesh	xvii

Chapter I	1
1. Is This Journey Necessary?	1
1.1. Introduction.....	1
1.2. Agriculture in development.....	2
1.3. Poverty and agriculture.....	6
1.4. Poverty, agricultural research, and public goods.....	7
1.5. The values-based agricultural research management approach: a new front for scholarship.....	13
1.5.1. Management, agricultural research, and values.....	16
1.5.2. 'Values': from business to development.....	16
1.5.3. Values-based management in business and development.....	17
1.5.4. Important values in agricultural research and development management.....	21
1.5.5. PETRRA interfacing values concepts.....	28
1.5.6. Innovation Systems Framework and the PETRRA approach.....	30
1.5.7. PETRRA in the context of institutional learning and change.....	31
1.5.8. Introducing PETRRA with actors and approaches.....	33
1.6. The research questions.....	35
1.7. Thesis outline.....	36
Chapter II.....	39
2. The PETRRA Context.....	39
2.1. Introduction.....	39
2.1.1. Who initiated.....	39
2.1.2. Background.....	40
2.2. Project Objectives.....	43
2.2.1. The Goal, Super Goal, and Purpose.....	44
2.2.2. The Outputs.....	46
2.2.3. Cross-cutting issues, the values.....	50
2.3. Project approach.....	54
2.3.1. Strategies.....	54
2.3.2. Defining a target client group.....	54
2.3.3. Demand-led and participatory research.....	55
2.3.4. Research priority setting through stakeholders.....	56
2.3.5. Making women visible in agricultural research.....	57
2.3.6. Identification of poverty elimination pathways early in the research.....	58
2.3.7. Extension materials not research papers as outputs.....	58
2.3.8. Communications profile evolved with project progress.....	59
2.3.8. Strong local ownership.....	60

2.3.9.	Partnerships: from cost effectiveness to complementarity and sustainability.....	61
2.3.10.	Capacity building of local partners to ensure quality research delivery.....	63
2.3.11.	Focal Area Approach (a concept of decentralised research approach and management)....	64
2.3.12.	Uptake Forum.....	66
2.4.	Project management approach.....	67
2.4.1	Establishment of the Project Management Unit (PMU).....	67
2.4.2.	Establishment of Project Steering Committee (PSC) and Technical Committee (TEC).....	69
2.4.3.	Annual reviews.....	72
2.5.	PETRRRA research-commissioning process.....	73
2.5.1.	Identification of researchable issues.....	73
2.5.2.	Research commissioning on a competitive basis.....	75
2.5.3.	What research to commission?.....	76
2.5.4.	Who chose the partners?.....	77
2.5.5.	Learning from other projects.....	78
2.5.6.	Monitoring and evaluation of subprojects.....	79
2.5.7.	Impacts assessed during the life of the project.....	80
2.6.	'Values' of values-based agricultural research management in PETRRRA.....	80
2.7.	Conclusion.....	81
Chapter III	83
3.	The concept and method of capturing learning.....	83
3.1.	Introduction.....	83
3.2.	A qualitative research approach was used.....	83
3.3.	The conceptual framework of the inquiry process.....	85
3.4.	The Method.....	87
3.4.1.	Who to learn from and why?.....	88
3.4.2.	Who are they?.....	89
3.4.3.	Questions to the respondents.....	90
3.4.4.	Different stages of the interview process.....	90
3.4.5.	The processing and analyses of interviews.....	92
3.5.	Reflection on the method.....	92
3.5.1.	Open-ended interviews opened up the boundary.....	92
3.5.2.	Each case interview was different.....	93
3.5.3.	"It was a shame for me, I could not recognise you".....	94
3.5.4.	Personal experience as observer and investigator.....	95
Chapter IV	97
4.	PETRRRA values in practice: early evidence of impact.....	97
4.1.	Introduction.....	97
4.2.	Poverty focus.....	99
4.2.1.	Targeting poor farmers for agricultural R&D: a contested strategy.....	99
4.2.2.	Strategies and tools to make the programme poverty-focused.....	102
4.2.3.	Implementers' attitudes affect targeting performance.....	105
4.2.4.	Engagement with the resource-poor: constraints and prospects.....	108
4.3.	Women in agricultural R&D: PETRRRA learning laboratory.....	109
4.3.1.	Organizational background helped.....	110
4.3.2.	The potential of women-inclusive agricultural R&D.....	111
4.3.3.	PETRRRA emphasis and followup helped partners achieve women-inclusive R&D.....	114
4.3.4.	Approaches need to be strategic and culture-sensitive.....	116
4.3.5.	Working with women became the most important strategy for some partners.....	117
4.4.	Demand-led R&D.....	118
4.4.1.	Engagement with farmers: key to understanding their demand.....	119
4.4.2.	Ecosystem provides clues for effective technology.....	120
4.4.3.	Addressing farmer demand is a challenge.....	121
4.4.4.	Demand-led R&D: reality and rhetoric.....	122
4.4.5.	Conducive policy, strategy, and environment for demand-led research.....	123

4.4.6.	Disseminating technologies that farmers demand through networking.....	125
4.5.	Participation of poor men and women farmer in R&D.....	126
4.5.1.	Defining participatory research: pushing the boundary.....	126
4.5.2.	Organizational commitment was crucial	128
4.5.3.	Partnership made participation easy	129
4.5.4.	Participatory R&D helps improve capacity of researchers and ensures quick adoption	129
4.5.5.	Participatory research has a niche	131
4.5.6.	From concept to practice–the PETRRA experience helped them walk an extra mile	134
4.5.7.	Impact of participatory research approach of PETRRA	135
4.6.	Partnership for pro-poor R&D	137
4.6.1.	A new experience for many partners	137
4.6.2.	Advantages of partnership in R&D as partners learned from the experience	138
4.6.3.	Cost-effective partnership development approach with local NGOs and CBOs – a discovery	140
4.7.	Linkage and network for sustained R&D.....	141
4.7.1.	Partners developed positive views on linkage and network gradually	142
4.7.2.	Flow on from PETRRA was revealing	144
4.8.	Competitive system to identify competent R&D suppliers.....	145
4.8.1.	PETRRA's competitive research commissioning system was a learning process	146
4.8.2.	Only competition would not work	147
4.8.3.	In a competitive system, advantages and disadvantages coexist.....	148
4.8.4.	Some clear outcomes of competitive system.....	150
4.9.	Communication for dissemination, scaling up and sustainability of R&D results	152
4.9.1.	PETRRA helped build awareness and skills about communication	152
4.9.2.	Ideas generated shared, replicated, and materials being further utilised.....	154
4.9.3.	Making a balance to target tools and audience was a challenge.....	156
4.9.4.	PETRRA helped partners develop confidence	157
4.10.	Conclusion.....	157
Chapter V.....		159
5.	Facilitating learning for capacity development.....	159
5.1.	Introduction.....	159
5.2.	PETRRA facilitating capacity development.....	160
5.2.1.	PETRRA facilitated a conducive learning environment	160
5.2.2.	Researchers, extension agents, and farmers worked and learned together.....	162
5.2.3.	PETRRA engaged with partners to achieve a value orientation	163
5.2.4.	PETRRA's capacity-building approach attracted partners	165
5.2.5.	Flexibility was an important learning and management tool in PETRRA	166
5.2.6.	PETRRA core values worked as sources of capacity	169
5.3.	The impact of capacity development on individuals.....	171
5.4.	The evidence of organizational capacity impact	174
5.4.1.	Bangladesh Rice Research Institute (BRRRI).....	175
5.4.1.1.	PETRRA helped change BRRRI	175
5.4.1.2.	BRRRI scientists were exposed to multiple partners.....	176
5.4.1.3.	PETRRA helped BRRRI to achieve scale	177
5.4.1.4.	What BRRRI did in PETRRA was unique.....	178
5.4.1.5.	PETRRA experience exposed BRRRI to many opportunities	178
5.4.1.6.	BRRRI contributed to develop system capacity	179
5.4.1.7.	Rice Knowledge Bank and BRRRI	179
5.4.1.8.	Some BRRRI partners found opportunities elsewhere.....	180
5.4.2.	Dr M.A. Razzaque, Bangladesh Agricultural Research Council (TEC member and chair BARC)	180
5.4.3.	International Rice Research Institute (IRRI)	181
5.4.3.1.	PETRRA laid the foundation of many IRRI projects	181
5.4.3.2.	PETRRA had a big impact.....	182

5.4.3.3.	IRRI Deputy Director General (DDG) regrets his late and weak contact with PETRRA.....	182
5.4.4.	AKM Zakaria, Rural Development Academy (SP00, 37, govt development institute)	182
5.4.5.	M Nuruzzaman, Shushilan (SP09, NGO).....	184
5.4.6.	MG Neogi, RDRS Bangladesh (SP09, 25, 41, NGO).....	185
5.4.7.	Sufia Khanam, Environment and Population Research Centre (EPRC) (SP42, NGO)	187
5.4.8.	Sukanto Sen, BARCIK (SP22, NGO).....	188
5.4.9.	Rokeya Begum Shafali, AID-Comilla (SP27, 30, NGO)	189
5.4.10.	Momtaz Roomy, Mukti-o-Nari (SP31, NGO)	190
5.4.11.	Mofizur Rahman on CARE (SP00, SP 36) and FoSHoL-Action Aid (NGO)	191
5.4.12.	Anwar Hossain and Mobarak H Khan, Proshika (SP00, 06, NGO).....	192
5.4.13.	Gopal Chowhan on SAFE (NGO) and their partnership with Syngenta (SP40) and BRRI & others (SP36).....	192
5.4.14.	Dr Uttam Dev, Centre for Policy Dialogue (SP24)	193
5.4.15.	Fashiur Rahman, ABC (SP08, private organization).....	194
5.4.16.	Mahbubur Rahman, Syngenta (SP36, 40).....	195
5.5.	Conclusion	195
Chapter VI		199
6.	Impact and sustainability of PETRRA innovations	199
6.1.	Introduction	199
6.2.	Innovations and sustainability	200
6.2.1.	Seed network: a small element in PETRRA that became a major national programme	201
6.2.2.	Seed health technologies showed important pro-poor impact potential	205
6.2.3.	Salinity-tolerant variety development research had longer term impact on the way research should be done	207
6.2.4.	From PETRRA partnership to many networks and linkages nationally	208
6.2.5.	Communication activities had strong elements of impact	211
6.2.5.1.	Bangladesh Rice Knowledge Bank: important seed sown for impact	211
6.2.5.2.	Seed technology videos made a big impact.....	212
6.2.5.3.	PETRRA materials continued to be used to deliver impact.....	213
6.2.6.	Graduate education-research linkage – an important capacity development impact	214
6.2.7.	PETRRA innovations disseminated by organizations, projects, or programmes	216
6.3.	Organizational and institutional sustainability	219
6.3.1.	Some indications of organizational and institutional impact.....	219
6.3.2.	Some organizations were transformed	220
6.3.3.	Focal Area Forum – a sustainable approach for scaling up impact	223
6.4.	Reflections on limitations	228
6.4.1.	Duration was too short for PETRRA	229
6.4.1.1.	Strategy development for sustainability was not possible	229
6.4.1.2.	Followup activities could not be taken up.....	229
6.4.1.3.	The short life of the project limited the potential for sustainability	230
6.4.1.4.	Duration was not enough to get a momentum	230
6.4.2.	There was a lack of followup strategy for better impact	231
6.4.3.	Achieving sustainability had a few challenges	232
6.5.	Conclusion	234
Chapter VII		239
7.	Wide open future	239
7.1.	Introduction	239
7.2.	PETRRA was everybody's story	240
7.3.	PETRRA values and their potential strategic use	242
7.3.1.	PETRRA experience provides clues and examples for pro-poor R&D.....	243
7.3.2.	Simple approach made a big difference.....	243
7.3.3.	Values helped organizations to reveal reality.....	244
7.3.4.	Partnership: time to recognise an expanded NARES definition	245
7.3.5.	Values: visible change in individual and organizational behaviour.....	247

7.4.	Building on the strengths of organizations	248
7.5.	Facilitation: a virtue and a challenge	250
7.6.	PETRRRA values-based research management approach	253
7.6.1.	Important lessons for stakeholders.....	253
7.6.2.	Values-based project/programme cycle for management.....	255
7.6.3.	Values are interconnected.....	256
7.6.4.	Values-based agricultural research management approach.....	258
7.7.	Policy recommendations to take learning forward	261
7.7.1.	IRRI	263
7.7.2.	BRRRI	263
7.7.3.	DFID	264
7.7.4.	Government of Bangladesh.....	265
7.7.5.	NGOs	265
7.7.6.	Government development agencies	266
7.7.7.	Private agencies.....	266
7.8.	Conclusion.....	266
	Appendix 1: List of PETRRRA partners interviewed	269
	Appendix 2: Checklist for discussion with SP leaders of PETRRRA.....	273
	Bibliography.....	277

List of Tables

Table		Page
1.1.	Timeline: Agricultural research, international centres, and poverty	9
1.2.	The evolution of values within the CGIAR	13
1.3.	Approaches in agricultural research, by agency	34
1.4.	Stakeholders' early responses to the PETRRA experience	34
1.5.	Research questions, chapters, and methods at a glance	36
2.1.	Changes in output statements of the logical framework of PETRRA over successive output-to-purpose reviews (OPR).	48
2.2.	PETRRA outputs and linkages with the values	51
2.3.	Evolution of cross-cutting issues over time within PETRRA	53
2.4.	Project Management Unit: Actual verses Shadow	69
3.1	Representation of persons interviewed	89
4.1.	Coverage of poor farmers over time by five PETRRA NGO partners	108
6.1.	Change in organizations because of PETRRA involvement that created impact potentials	222
7.1.	Features and dynamics of culture change among partners over the life of PETRRA	248
7.2.	Facilitation need for a diverse group of actors: the PETRRA example	252
7.3.	A tentative list of elements of values-based management approach as take-home for major stakeholder groups	254

List of Figures

Figure		Page
3.1.	The conceptual framework of the learning process for PETRRA	86
3.2.	Partners as the focus of research	88
3.3.	Possibility frontiers for a respondent position	94
6.1.	NW Focal Area Forum approach of training	227
7.1.	Values-based project/programme cycle	256
7.2.	Values and their interrelationship	257
7.3.	Values-based agricultural research management approach	260

List of Abbreviations

AAS	Agricultural Advisory Society
ABC	Agri-Business Corporation
ACIAR	Australian Centre for International Agricultural Research
ActionAid	An international NGO
ADB	Asian Development Bank
AID-Comilla	Association for Integrated Development, Comilla
AIS	Agricultural Information Services
APEX	voluntary organization for community development
AR&D	Agricultural Research and Development
AR4D	Agricultural Research for Development
ARI	Agricultural Research Institute
ARMP	Agricultural Research Management Project
ASIRP	Agricultural Services Innovations and Reform Project
ASSP	Agricultural Support Service Project
AWD	Alternative Wet and Dry
BADC	Bangladesh Agricultural Development Corporation
BARC	Bangladesh Agricultural Research Council
BARCIK	Bangladesh Resource Center for Indigenous Knowledge
BARD	Bangladesh Academy for Rural Development
BARI	Bangladesh Agricultural Research Institute
BAU	Bangladesh Agricultural University
BIDS	Bangladesh Institute of Development Studies
BINA	Bangladesh Institute of Nuclear Agriculture
BMZ	a German donor agency
BRR1	Bangladesh Rice Research Institute
BS	Breeder Seed
BSMRAU	Bangladesh Shaikh Mujibur Rahman Agricultural University
BTV	Bangladesh Television
BWDB	Bangladesh Water Development Board
CABI	CAB International
CARE	Cooperative American Remittances Everywhere
CAREB	CARE Bangladesh
CAZR	Centre for Arid Zone Research
CBFM	Community Based Fisheries Management
CBO	Community-Based Organization
CDP	Crop Diversification Project
CGIAR	Consultative Group on International Agricultural Research
CGS	Competitive Grants System
CIAT	Centro for Internacional de Agricultura Tropical
CIFOR	Center for International Forestry Research
CIMMYT	International Center for Maize and Wheat Improvement
CIP	Centro Internacional de la Papa
CN	Concept Note
CONCERN	an international NGO

CPD	Centre for Policy Dialogue
CPWF	Challenge Program on Water and Food
CSIRO	Commonwealth Scientific and Industrial Research Organization
CSISA	Cereal Systems Initiative in South Asia
CSO	Civil Society Organization
CURE	Consortium for Unfavorable Rice Environments
DAE	Department of Agricultural Extension
DANIDA	Danish International Development Agency
DDG	Deputy Director General
DFID	Department for International Development (UK)
DoF	Department of Fisheries
DoL	Department of Livestock
East-west Seed	a private seed company
EC	European Commission
EPRC	Environment and Population Research Centre
ESCOR	Economic and Social Research Programme
FAO	Food and Agriculture Organization
FARMSEED	Farmer to Farmer Seed production
FFL	Farmer First and Last
FFS	Farmer Field School
FIVDB	Friends in Village Development Bangladesh
FoSHoL	Food Security for Sustainable Household Livelihoods
FSR	Farming Systems Research
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GKF	Grameen Krishi Foundation
GMO	Genetically Modified Organism
GO	Government Organization
GoB	Government of Bangladesh
Grid International	an international consulting firm in the area of project management
GSI	Good Seed Initiative
HARP	Hill Agricultural Research Project
HEED	Health Education and Economic Development
HYV	High Yielding Variety
IAR	International Agricultural Research
IARC	International Agricultural Research Centre
ICARDA	International Center for Agricultural Research in the Dry Areas
ICM	Integrated Crop Management
ICRAF	World Agroforestry Center
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
ILAC	Institutional Learning and Change
ILCA	International Livestock Center for Africa
ILRAD	International Laboratory for Research on Animal Diseases (merged with ILRI)

ILRI	International Livestock Research Institute
INGO	International Non-Governmental Organization
INIBAP	International Plant Genetic Resources Institute (now known as Bioversity International)
IPGRI	International Plant Genetic Resources Institute
IPM	Integrated Pest Management
IRRI	International Rice Research Institute
ISNAR	International Service for National Agricultural Research
IWMI	International Water Management Institute
JBIC	Japan Bank of International Cooperation
JICA	Japan International Cooperation Agency
KAP	Knowledge, Attitude and Practice
Katalyst	A Swiss supported project in Bangladesh
Kg	kilo gram
LCC	Leaf Color Chart
LCVIP	Learner Centered Video Development Project
LG	Local Government
LITE	Livelihoods Improvement Through Ecology
MDG	Millennium Development Goal
MNC	Multi-National Company
MoA	Ministry of Agriculture
MoU	Memorandum of Understanding
MS	Master of Science
Mukti	voluntary organization for community development
NAEP	New Agricultural Extension Policy
Namdhari Malik Seed	a private seed company
NARES	National Agricultural Research & Extension System
NARI	National Agricultural Research Institute
NARS	National Agricultural Research System
NATP	National Agriculture Technology Project
NGO	Non-Governmental Organization
NRI	Natural Resources Institute (UK)
NRM	Natural Resources Management
OPR	Output to Purpose Review
OXFAM	an international NGO
PETARRA	Poverty Elimination Through Rice Research Assistance
PhD	Doctor of Philosophy
PKSF	Palli Kormo Shahayak Foundation (village employment support foundation)
PLA	Participatory Learning and Action
PMU	Project Management Unit
POSD	People's Organization for Sustainable Development
PPS	PRA Promoters' Society
PRA	Participatory Rural Appraisal
Practical Action	an international NGO
PROSHIKA	one of the largest NGOs in Bangladesh
PSC	Project Steering Committee
PVS	Participatory Variety Selection

R&D	Research and Development
R4D	Research for Development
RDA	Rural Development Academy
RDRS	Rangpur and Dinajpur Rural Service
REFPI	Research and Extension in Farm Power Issues Project
RIU	Research into Use
RKB	Rice Knowledge Bank
RLEP	Rural Livelihoods Evaluation Partnership
RP	Research Proposal
RPF	Resource-Poor Farmers
RPRF	Resource-Poor Rice Farmers
R-to-D	Research to Development
SAFE	Sustainable Agriculture and Farming Enterprise
SCA	Seed Certification Agency
SDC	Swiss Development Cooperation
SFFP	Soil Fertility and Fertilizer Project
SHIP	Seed-Health Improvement sub-project (of PETRRA)
Shushilan	A regional NGO
SID	Seed Industries Development project
SP	Sub-Project
SRI	System of Rice Intensification
STRASA	Stress Tolerant Rice for poor farmers in Asia and Africa
STW	Shallow Tube Well
SUFER	Support for University Fisheries Education and Research
Syngenta	a multi-national private agri-business organization
TAC	Technical Advisory Committee
TEC	Technical Evaluation Committee
TLS	Truthfully Labelled Seed
ToR	Terms of Reference
ToT	Training of Trainers
UN	United Nations
UNDP	United Nations Development Programme
USG	Urea Super Granule
Uttaran	community development organization in Southwest Bangladesh
VBM	Value-Based Management
VBR	Values-Based Research
WAVE	community development organization
WB	World Bank
WTO	World Trade Organization

Glossary of Special Terms

<i>Aman</i>	Main monsoon rice season in Bangladesh whereby crop is transplanted from July to August and harvested from November to December
<i>Bigha</i>	one bigha is equal to 0.33 acre
<i>Boro</i>	Dominant irrigated winter rice season, which is transplanted during the cold months of December to early February and harvested in April to early June
<i>BRRIDhan28</i>	a BRRI developed HYV rice variety grown in winter season
<i>BRRIDhan29</i>	a BRRI developed HYV rice variety grown in winter season
<i>BRRIdhan47</i>	a HYV rice variety developed by BRRI for winter season
<i>Decimal</i>	one hundredth of an acre or 40 square metres
<i>Federation</i>	an apex organization that constitutes of representatives from several groups
<i>Haor</i>	Flood plain in the northeast of Bangladesh
<i>Laksmi</i>	a Hindu goddess
<i>Lakh</i>	equals to 100,000
<i>Maund</i>	37.32 kg
<i>Monga</i>	a local Bangla term, is used to describe famine-like situation
<i>Rice provisioning ability</i>	RPA is the number of months a farming household can supply itself with rice from its own or operated land.
<i>Rickshaw</i>	Three-wheeled vehicle like bicycle with seats attached behind the driver
<i>Taka</i>	The currency in Bangladesh. Tk 69 equals US\$ 1

Administrative Units in Bangladesh:

Bangladesh comprises six divisions, namely Dhaka, Khulna, Barisal, Rajshahi, Chittagong and Sylhet.

- 1 division = 10-12 districts
- 1 district = 5-12 upazilas
- 1 upazila = 5-12 unions
- 1 union = 9 wards
- 1 ward = 1-3 villages

Chapter I

1. Is This Journey Necessary?

1.1. Introduction

Throughout the developing world, the livelihoods of resource-poor farmers are subject to tremendous economic, social, and environmental pressure. In spite of many years of quality agricultural research and overall agricultural and economic growth, there has not been the hoped-for reduction in rural poverty. It appears that the challenges faced by poor farmers cannot be effectively addressed by traditional models of transfer of technology in agricultural research and development (Watts et al. 2006). Moreover, improved technology is only a part of the need; if technology is to contribute to the reduction of poverty, it needs to be context-specific and need-based. 'The starting point is a definition of technology that encompasses technical, social, and organizational domains' (Magor 1996:383). Thus, a research process that generates technology for pro-poor agricultural development must consider socioeconomic issues. These issues include the affordability of the technology, its nature in terms of risk involvement, social differentiation (gender, class, ethnicity, etc., which affects the extension of the technology), the variety of choices that poor farmers value, and the access of poor people to land, water, credit, market, and infrastructure (Meinzen-Dick et al. 2003). In addition, apparently complex technologies, which were previously interpreted as unsuitable for poor farmers, can be taken up through an enterprise web analysis that can identify pro-poor intervention points (Magor 2005). It is therefore necessary to actively revisit the approach to agricultural research and development to improve its pro-poor impact.

The contribution of national and international agricultural research centres (IARCs) to food production is well established but the extent to which it is pro-poor continues to be debated.¹ There has recently been fruitful discussion on poverty-focused agricultural research within national-international agricultural research systems² (Mackay and Horton 2003). This has been further emphasised by development practitioners, academics, and donors. However, the actual application of these new ideas and discussions in research has been limited. There is general agreement that we want to see a greater

¹ Sections below elaborate this further.

²The key components of the international agricultural research system are (1) research institutions in developed countries; (2) international agricultural research centres (IARCs) within the Consultative Group on International Agricultural Research (CGIAR) coordinated by the World Bank and FAO; and (3) research programmes in developing countries. The country programmes in the developing countries take a variety of forms and may be in the public and private sectors (Dalrymple, D. G. (2000). "The Role of Public Agricultural Research in International Development." *Warren E. Kronstad Honorary Symposium*. Retrieved 13 April 2007, from <http://cropandsoil.oregonstate.edu/News/Publicat/Kronstad/15.html>.

impact on poverty from the research that has been conducted. But yet, there is no clear evidence of achievement based on practical experiences.

This chapter highlights the links between poverty, agriculture, and agricultural research with special reference to values and the values-based agricultural research management approach in which a poverty focus is central. The author aims to explore and to understand the need for a pro-poor engagement as it is not so much a technical issue but an issue of engagement with the organizations around poor households and purposefulness in being inclusive of poor households. It is not a magic bullet but rather a fine tuning; in that sense, it is not radical surgery but rather a concern with processes. The exploration process will be developed based on the experience of one international agricultural research centre, the IRRI, and its recently implemented project called PETRRA³. The PETRRA Project, which was implemented in Bangladesh during 1999-2004, claimed that it innovated and operationalised a values⁴-based research management approach and that the poverty focus was one of its core values (Van Mele et al. 2005:5). The project was deemed successful by the closing review mission of PETRRA (Risner et al. 2004). This study will explore the claim in developing its arguments on processes for pro-poor agricultural research and development.

The literature in this field focuses on the role and importance of agriculture in poverty reduction, the contribution of agricultural research as public goods in general, and agricultural research by publicly funded research systems to deliver public goods, in particular. While discussing these issues, the gaps in current approaches and potential future strategies to make international agricultural research systems become more pro-poor are identified. In addition, the chapter introduces the investigation process with the understanding that this is a journey of iterative learning and that there is a long way to go in conceptualising pro-poor agricultural research. An examination of the proposed case study (PETRRA) within the framework of global agricultural research system would provide insights on intended pathways for poverty-focused agricultural research.

1.2. Agriculture in development

The twentieth century has been a most remarkable period for mankind in economic growth; one contributing reason has been the 'growth and improved stability of food production,' in which 'agriculture changed from a resource- and tradition-led enterprise to a science-based industry.' It has

³ The Poverty Elimination Through Rice Research Assistance (PETRRA) project was implemented by the International Rice Research Institute (IRRI) in collaboration with the Bangladesh Rice Research Institute (BRRI) and was financed by the Department for International Development (DFID), UK.

⁴ 'Values' defined as central beliefs and purposes of the society, in this case, it is the organization or the project Jary, D. and J. Jary (1991). Collins Dictionary of Sociology. Glasgow, HarperCollins. ; a more detail discussion on values is presented later in this chapter;

been a period that produced larger harvests, thereby ensuring food stability and security for a growing world population. This achievement helped avert massive starvation that was predicted to take place during the 1970s and 1980s. It is very often mentioned that the success of the Green Revolution⁵ in particular helped prevent massive famine in Asia (Plucknett 1991).

Agriculture, 'the centerpiece of economic development' (Sisler and Oyer 2000), is the principal source of livelihoods and a key means of development in developing countries. Agriculture, food, food security, nutrition, and development are very closely linked terms. Dalrymple (2000) provides a good clear definition:

Agriculture ... is defined as including the production of food and non-food products and the utilization and preservation of natural resources... Food products, which accounted for about 95 percent of the value of agricultural production in the world ... in 1997, play an important role in (a) the economies of families and society and (b) the nutritional status of individuals (Dalrymple 2000:2).

Dalrymple, in the same paper, also indicates that agriculture may not always be the answer to the short-term needs in situations like natural disasters, but in the long run, it can help reduce the severity of such problems and 'lay the basis for economic development.' Food production is a major source of employment and income. People of the poorest parts of the world spend about 60-80 percent of their disposable income on food. Food availability and consumption determine nutrition, health condition, productivity, and well-being. More importantly, Dalrymple commented, "less visible is the opportunity cost, the opportunities missed, when economic growth does not obtain the levels that it might due to a neglect of agriculture" (Dalrymple 2000: 2).

As it was true during the 1970s and even with today's advanced level of industrialisation, the role of agriculture continues to remain important. "[I]ndustry tends to be regarded as the focal point of economic development, with agriculture playing the role of a resource reservoir" (Reynolds 1975: 2). Reynolds (1975) also went on to clarify that "agriculture is a complex bundle of activities, highly variable within and among countries. It is probably impossible to make any statement that would be true of all agricultural activities everywhere" (Reynolds 1975: 2). Even within a country, it varies from one area⁶ to another. This variability calls for diverse responses; some agroecological and some socioeconomic-cultural-institutional-infrastructure (TAC 2001).

Development theory during the 1950s viewed the agricultural sector as reducing its share of national income and employment, releasing labour from traditional agriculture to the industrial sector, and providing food for growing urban populations at a low price. Lewis' model (in Sisler 2000) strengthened

⁵ The term 'Green Revolution' was coined by William S. Gaud, former administrator of USAID in 1968 to describe the dramatic wheat harvests that had been achieved in India and Pakistan during the late 1960s (Plucknett, D. L. (1991). "Saving Lives Through Agricultural Research." *Issues in Agriculture*. CGIAR(1): 1-20.

⁶ Area could be any unit: district, subdistrict, village, field, plot, etc.

this concept further; he explained that labour from subsistence farming sector should move to the capital sector for industry and national development. Prebisch (in Sisler 2000) saw a limited role for agriculture in development⁷. In contrast, Johnston and Mellor recognised agriculture as the catalyst of development, not a passive contributor, and mentioned this sector's five important contributions. First, it could provide labour to the industrial sector. Second, it could provide limited amounts of capital to the industrial sector. Third, it could generate foreign exchange. Fourth, it could supply low-cost food to a growing industrial sector. Fifth and finally, it could provide a significant market for domestic and industrially produced goods and services such as clothing and tools (Johnston and Mellor 1961).

These conclusions were supported by many other writers. Development economists started to consider agriculture as an important component of development. Many low-income nations and donors started to invest in agriculture. The diffusion approach suggested the route to development "through more effective dissemination of technical knowledge and a narrowing of the productivity differences among farmers and among regions" (Ruttan 1984: 41). This diffusion and community development model, however, was questioned as it tended to push sometimes inappropriate technology from the west and failed to provide policy support that could claim to "generate either modernisation of traditional farms and communities or rapid growth in agricultural output" (Ruttan 1984:42). Institutional reforms were suggested for effective agricultural extension to eliminate structural barriers such as skewed land ownership and power structures. Schultz, a neoclassical economist, argued that farmers know best how to allocate factors of production, but what they lack is technology and training (human capital) to enable them to cope with the 'changing pace of agricultural development' (Schultz 1964). This theory continues to have great influence in development discussions.

Mosher, another influential writer (in Sisler 2000), recommended five essential facilities and services to farmers for agricultural development: (i) market for farm product, (ii) constantly changing technology, (iii) local availability of supplies and equipment, (iv) production incentives, and (v) transportation. He likewise mentioned five accelerators of agricultural development: (i) education for development, (ii) production credit, (iii) group action by farmers, (iv) improving and expanding agricultural land, and (v) national planning for agricultural development (Sisler and Oyer 2000).

The Green Revolution during the 1960s and 1970s had the most influence on the discussion of agriculture and development, replacing the diffusion and community development models. It increased employment opportunities for the growing labour force and created demand for the goods of the industrial sector. Most importantly, it raised a debate on the issue of variable impact on the rich and the

⁷ Prebisch advocated for import substitution strategy in developing countries as he could not trust the flow of foreign exchange earnings by exporting high-value agricultural products to developed countries, as the terms of trade tend to be against the exporting countries.

poor and from one region to another. 'Those who did not receive productivity gains of the Green Revolution but who nonetheless experienced a price decline have suffered actual losses of income (Evenson and Gollin 2003). The 'induced innovation model' of Hayami and Ruttan recognised differential development growth paths for different countries based on their respective resource endowment situation⁸ (Sisler and Oyer 2000). This recognised the issue of context specificity in the agricultural development process. Marxists and dependency theorists questioned the objective of the international transfer of technologies, which clearly cannot be developed independently by local research institutions and which create dependency on the west (Palladino 1987). To combat such dependencies, the development of national and regional scientific communities was recommended (Palladino and Worboys 1993).

Until the 1970s, agricultural and rural development concepts were mainly developed along the line of modernisation or diffusion theories, most of them were top-down, where technologies from the north or elsewhere would be disseminated to the south without going into an intensive local improvement cycle⁹. It was argued, but widely debated at the same time, that this process widened the gap between the rich and the poor and therefore the utility of this approach of modernisation and development was questioned. Nabudere (1997) argued that "[S]uch a revision has to start from the actual experiences of the people who are adversely affected by these strategies" (Nabudere 1997: 204). Chambers (1974) and later other writers such as Uphoff (1979) and Bryant and White (1982 and 1984) introduced the 'bottom-up' participatory approach, which has since then been widely practiced today. 'Farming systems research' was another approach widely used in agricultural research during the 1980s to diagnose the problems of the farmers, assess technologies and adoption, and identify probable solutions together with farmers and extension workers (Sisler and Oyer 2000). Chambers (1997), however, considered the farming systems approach to be an example of 'normal professionalism' where the 'uppers' decide, instead of poor people taking the lead in development. He observed a similarity between a poor-people-centred decentralised approach and the chaos and complexity theory, which finds that "complexity, creativity, and adaptability will be greatest at the local level with an appropriate minimum of regulation to enable individuals to know what the rules are and what is happening, so that they can collaborate creatively" (Chambers 1997: 195). Chambers, in the same paper, also observed post-modern theory and participatory approach as mutually reinforcing. In his

⁸ They gave examples of the USA where development of agriculture was based on mechanisation and of Japan where growth was ensured through labour-intensive technologies.

⁹ "The data suggest that in the 1960s and 1970s, national and international programs may have sought to 'short-cut' the varietal improvement process in sub-Saharan Africa by introducing unsuitable varieties from Asia and Latin America, rather than engaging in the time-consuming work of identifying locally adapted germplasm and using it as the basis for breeding new varieties. This pattern remained until the 1980s, when more suitable varieties finally became available, based on research targeted specifically to African conditions" Evenson, R. E. and D. Gollin (2003). "Assessing the Impact of the Green Revolution, 1960 to 2000." *Science* 300: 5.

words: “[T]hey share the common new high ground, for variously they affirm and celebrate multiple realities, local diversity, and personal and social potentials” (p 196). All these theories and approaches mainly explored ways and means to ensure the benefits of agriculture for the majority of poor farmers.

The current challenge is to develop ways to combine top-down and bottom-up emphases. Coming up very strongly are institutional issues that need to be addressed to ensure a dynamic change in the process of agricultural research and development. The “students of innovation systems,” who have been engaged in a longstanding dialogue that started with the “Farmer First” movement in the 1980s, have maintained their focus on poverty and poor farmers’ development and continue to enrich it into the early twenty-first century¹⁰ (Hall 2007). The accommodation of different creative approaches and engaged discourse on these may help address some of the emerging issues of development.

1.3. Poverty and agriculture

In South Asia and sub-Saharan Africa, poverty is primarily a rural phenomenon. The livelihoods of the rural people are determined by agriculture (World Bank 2007). Agricultural development therefore is considered to be synonymous with rural development. Even the non-farm contribution of the rural economy is considered broadly linked with agriculture.

Some tend to argue that there are limitations in the scope and ability of agriculture to have a positive impact on poverty and food security. Haddad argued that “[A]griculture is not always the only, or even the main, answer to food problems... but it is part of the answer” (Haddad et al. 1997). Rigg (2006) made a similar observation. According to him, a dynamic change is under way throughout the rural south. The changes in sources of income of farmers from farm to non-farm, changing occupations, de-linking of livelihoods from land, cultural changes, and movement of people, have divorced the lives of many from farming. According to him, agriculture, for many rural poor, may not be the desired life (Rigg 2006). Yet, agriculture is very important in the discussion of poverty elimination. This is simply because of the involvement of a large number of rural poor in agriculture and because it will continue to provide employment (65% of total labour force) and livelihoods for a large number of the rural poor (86% of rural people) for a long period of time (World Bank 2007a). The Bangladesh experience suggests that poor farmers graduating out of poverty first aim to achieve household food security by combining their own production of rice with income from non-farm employment (Orr and Adolph 2007).

¹⁰ The latest of this series was “Farmer First Revisited” of 2007 Scoones, I. and J. Thompson, Eds. (2009). Farmer First Revisited: Innovation for Agricultural Research and Development. Warwickshire, Practical Action Publishing Ltd, UK.

Moreover, agricultural development directly contributes to poverty reduction. Ravallion and Datt (1996, in Sisler 2000) and Timmer (1997, in Sisler 2000) showed that 84.5 percent of the recent significant poverty reduction in India and a significant amount of employment in other places are due to growth in agriculture. Growth in agriculture is considered to be the 'fundamental first step' without which 'the prospects for poor countries lessening their dependence on agriculture and escaping the trap of slow growth and poverty are bleak' (DFID 2006). A 1% productivity increase in agriculture will reduce by 6.25 million the number of people who live under \$1¹¹ a day (Thirtle et al. 2003). The big impact that agricultural productivity growth has on poverty reduction and other sectors of the economy is not the case for the industrial and service sectors. Agriculture plays a far greater role than just production.

In spite of significant improvements in food production, food security, and economic growth since the inception of the Green Revolution in the 1960s, about 20 percent of the world's population, or 1.2 billion people, still live on less than \$1 per day; 70% of these are rural and 90% are in Asia and sub-Saharan Africa (Thirtle et al. 2003). In Asia alone, 670 million people live in poverty. Most of these poor people still live in rural areas and generally depend on agriculture, forestry, or fishery for their livelihoods (Rosegrant and Hazell 2001). The challenges of gradually reducing these big numbers remain very large and call for innovative approaches to address them.

1.4. Poverty, agricultural research, and public goods

Agricultural research that leads to improved technology can benefit the poor in a number of ways. Some of the direct and indirect contributions of agriculture to poverty reduction, as indicated by Hazell and Haddad (2001), are (1) increase in food production, supply, and availability; (2) increase in employment; (3) increase in positive (economically beneficial) migration; (4) growth in non-farm income, (5) reduction of the price of food, (6) increase in the access of poor women to better food, and (7) empowerment of the poor (World Bank 2004).

It has been established that agricultural research played a significant role in facilitating increases in agricultural production and productivity. "Research-led technological change in agriculture generates sufficient productivity growth to give high rates of return in Africa and Asia and has a substantial impact on poverty, currently reducing this number by 27 million per annum ... " (Thirtle et al. 2003 p 1959). These include national government-led public sector and international centre-linked research. In developing countries, 90 percent of the total research and development is carried out by public

¹¹ The global definition of poverty by the World Bank is being widely used: according to this definition, a person will be considered poor if s/he earns less than US\$1 a day.

organizations (Byerlee 2004), many of these have links with IARCs¹². Although international centres share only 4 per cent of the total global expenditure spent by donors and national governments on agricultural research (IFPRI 2000), the impact of their research is utterly disproportional to their funding share¹³. Publicly funded agricultural research, with the assistance of the CGIAR, contributes more to the reduction of poverty than any other single policy initiative (Thirtle et al. 2003). Sometimes, the IARCs are accused of diverting funds from the national agricultural research systems (NARS) (Greenland 1997), but it never became an issue greater than their need for cooperation to fight against poverty and food insecurity.

Even though there is acknowledged success of four decades of research in greatly increasing agricultural output, poverty still remains the greatest challenge. The lack of success of earlier efforts to deliver the fruits of research to the poor has led to a major shift in emphasis in agricultural research from production issues to socioeconomic factors that impede poor people's escape out of poverty (Meinzen-Dick et al. 2006). And 'problems in adoption and benefit were largely associated with poverty of the natural resources at the disposal of the farmer' (Greenland 1997:469). This shift emerged from the realisation that, even if countries have widespread poverty, they can be self-sufficient and have a surplus of food. There is now a growing agreement within the publicly funded research systems that current research needs to focus on the less favoured areas where most poor people live and to conduct research on issues that concern poor people (Greenland 1997; Haddad et al. 1997; Hossain et al. 2003; Byerlee 2004).

Despite this failure to address poverty across unfavourable areas, the CGIAR centres have continued to develop technologies as global public goods that have helped avert the famine that was widely anticipated in the 1970s and 1980s (Plucknett 1991; CGIAR 2006; IRRI 2006). The technological innovations¹⁴ developed in these centres helped produce "enough grain to make the difference between life and death for millions of people"¹⁵ (Reeves and Cassaday 2001 p 4). A historical timeline with major achievements and limitations over the last five decades of international agricultural research is presented in Table 1.1. The table shows gradual shifts in priorities with outcomes. Despite the positive outcomes, the international centres have recently encountered two challenges. First, with global initiatives favouring reduction in funding for the public sector and expansion of funding in the

¹² There are 16 international agricultural centres; these together form a group named as CGIAR; members of the CGIAR are IRRI, CIMMYT, Africa Rice (formerly WARDA), CIAT, CIFOR, CIP, ICARDA, ICRISAT, IFPRI, IITA, ILRI, IPGRI, IWMI, ICRAF, and WorldFish Center; these centres are supported by a consortium of donors (governments, international organizations, and private foundations);

¹³ There are opinions that the creation of international centres indirectly reduced the flow of resources to the national agricultural research systems (NARS) and made NARS dependent on the IARCs.

¹⁴ Mainly new tropical semidwarf rice and wheat varieties IRRI (2006). Bringing Hope, Improving Lives: Strategic Plan, 2007-2015. Manila (Philippines), IRRI.

¹⁵ The scale of the achievement was termed as "Green Revolution."

private sector, questions are raised as to whether “the new rules transform these so-called ‘global public goods’ into vanishing commodities and into commodities that poor people cannot hope to access” (Reeves and Cassaday 2001: 2). The second concern is the extent of commitment to poverty-focused research (Magor 1996). Dalrymple, quoting a CGIAR report, suggests that the international centres’ concern for poverty alleviation only dates from 1994 (Dalrymple 2004: 6). It has, however, come to the fore. The strategy documents of various CGIAR centres show links to the United Nations’ Millennium Development Goals (MDGs) (IRRI 2006). Most IARCs have adapted the MDGs, matching these to their respective mission statements. Their commitment to MDGs may be seen as a potential entry point to realign their research and development objectives. Mainstreaming concern for poverty into research programme remains a challenge and is one of the issues addressed by this dissertation.

Table 1.1. Timeline: Agricultural research, international centres, and poverty

<i>Year</i>	<i>Events</i>	<i>Consequence</i>
1940s	Famine in Bengal World War II; until this time research was supported by colonial powers	The death of thousands of people (3 million in Bengal in 1943) Disaster: human, economic, food, physical, and resource
1950s	Big scare about famine and human catastrophe; Rockefeller Foundation supported research in the tropics	Marshal Plan for Europe for industrialisation; Preparation for establishment of international agricultural centres for the developing world (as these countries had little potential for industries) Criticism: in absence of colonialism, new modernisation approach in the name of rebuilding and establishment of new imperialism; undermined the indigenous potential and push for modernisation in every aspect of the approach
1960s	Establishment of IRRI and CYMMIT by the Rockefeller and Ford Foundations	Green Revolution, large-scale growth in agriculture production and productivity, ensured national level food security, scare for famine reduced to a great extent
1970s	Establishment of CGIAR with IRRI, CYMMIT, IITA, and CIAT with the initiatives of World Bank, DFID, ADB, UN, Rockefeller Foundation, and Australia; establishment of other international centres regionally to take care of regional crops and issues; technology generation research leading to increasing crop productivity and food output; ICRISAT and CIP established; WARDA became CGIAR member in 1974; IFPRI and ISNAR joined in 1979.	Green Revolution continued; large-scale production boom; agricultural growth surpassed population growth; poverty reduced to a great extent; scare for famine reduced further; global availability of food ensured; Criticism: inequitable growth, growth favoured the rich; environmental issues emerged as soil and water got polluted and overexploited; no suitable technology for the rainfed and marginal areas where poor people live; top-down research approach
1980s	ILRAD, IPGRI, ILCA, and ICARDA became CGIAR members; CGIAR centres continued to play a leading role in agricultural research and attracted resources; began to broaden its views about development: poverty alleviation, equity and quality of life, sustainability; MNCs and NGOs got involved in agricultural research; top-down approach continued; production economists operated as socioeconomists; FSR activities were considered important; NRM was introduced as a priority issue	Food production continued to grow; percentage of poverty reduced; developing countries in Asia and Latin America performed well; farmer participatory and poverty research introduced by both CGIAR and NGOs; Criticism: poverty remains a big issue as the absolute number continued to grow; food situation in Africa was not encouraging; NGOs could not make any breakthrough in terms of getting scale to combat poverty; CGIAR and its NARES partners remained away from the poverty-focused agenda of research; still no technology for marginal areas
1990s	ICLARM, IIMI, INIBAP, ICRAF, and CIFOR became CGIAR members; CGIAR formally incorporated poverty alleviation in its mission; CGIAR centres started to receive less attention from donors, attracted less resources; started to address poverty issues, but in terms of ‘socially responsible science’, in the regions but productivity remained in focus; particular attention was focused on gender issues and participatory approaches; globalisation continued to emerge; MNCs got stronger involvement, introduced hybrids, GMOs	Poverty continued to diminish but at a slower pace; food production still continued to grow; new technology for marginal areas started to come from the CG centres; Criticism: inequality, pace of growth, number of poor people, marginal environment, lack of poverty focus, traditional approach by the CGIAR centres heavily criticised

<i>Year</i>	<i>Events</i>	<i>Consequence</i>
2000s	CGIAR adopted new vision to reduce poverty, hunger, and malnutrition; calls for the CGIAR agenda to be pro-poor and focus on poor people; CGIAR centres started to regain their importance as they were receptive to the need for change; donor attention on Africa's agriculture indirectly helped to attract attention to agriculture again; MNCs continued to grow; global focus on MDGs put agriculture high on the agenda	Poverty continued to be reduced at a slower pace; CGIAR centres started to look for alternative strategies to be more poverty-focused and showed their keenness for change, embraced the spirit of the MDGs strongly; CGIAR centres focused on the need for continued production of public goods in favour of the poor that MNCs do not usually deliver; a clear willingness of working together by CGIAR centres, NGOs, and NARES is evident Criticism: poverty remains an issue; lack of successful initiatives among the CGIAR centres, NARES and NGOs to address poverty issues
2008	Food shortage, high food price due to high oil prices, depletion of stocks, policy on biofuels, anticipated export ban by some rice-exporting countries, and climate change impacts on weather (drought and floods)	Consequences are in the making; anticipated slowdown in achieving the millennium development poverty reduction goals; food riot reported in a number of countries; food security issue is back on the the agenda; promised new investment in agriculture after 20 years of disengagement

Sources: (Plucknett 1991); (Kassam 2003); (Reeves and Cassaday 2001); (Greenland 1997); (Sen 1981); (IRRI 2008); and (Scoones and Thompson 2009).

IARCs are playing a very important role, protecting the interest of the poor farmers across the developing countries while the private sector has little incentive to invest in technologies that are suitable for small and marginal farmers. A World Bank report (2005) commented:

The realization that agricultural research for small-scale farmers was an international public good with high potential for reducing hunger and poverty was a primary motive for establishing the Consultative Group on International Agricultural Research (CGIAR) and its constituent research centers. The record of the CGIAR centers in developing and disseminating new knowledge for agriculture has more than justified their costs (World Bank 2005:47).

The same report suggests that international agricultural research needs to be sustained with increasing support from the international community to ensure global public goods for the poor. Although the potential and promise of new agricultural technologies such as biotechnology and information technology are immense, these are less available to the poor. Private sector agencies dealing with life science biotechnology are eager to claim a leading role, which previously would be a role of the public-sector research, but are not endorsed fully to be trusted as they cannot ensure 'large impacts on production or social welfare' and thus a strong public sector role is desirable (Evenson and Gollin 2003). IARCs may do better to address the interests of the resource-poor through collaboration with the private sector to ensure a continuous supply of these goods and services as public goods. Some of them, such as Golden Rice, have shown early success and are considered suitable for resource-poor farmers. More such innovative partnerships between the private sector and IARCs are desired but not often available¹⁶ (World Bank 2005). Keeping all such options open and exploring pro-poor impact potential within them would be a challenge for the future.

Even though the contribution of productivity growth to poverty reduction is strongly documented, CGIAR expenditure is decreasing. The World Bank, in its meta evaluation of the CGIAR, reports a 6.5 percent

¹⁶ 'Golden Rice' is one such example, where collaborative research is being conducted by a number of private companies and IRRI. The fruit is yet to be harvested by the poor, taking more time than anticipated.

decrease in expenditure on research that had proven impact of poverty reduction by increasing productivity. This decrease in investment might have contributed to stagnant performance in food production and thus might have had a negative impact on poverty reduction. Another important area of expenditure, which has a complementary role in poverty reduction, is the strengthening of the NARS (by training and management development). The NARS, like the CGIAR, have also experienced a decreasing trend in funding (World Bank 2004: 49-51). The macroeconomic policy of industrial-led growth 'has meant developing country governments have lost sight of the essential role of agriculture'. The developing countries' share of agriculture is only 7.5 percent of total government spending, of which very little goes to agricultural research (Sisler and Oyer 2000: 11). Developed countries have also reduced their agricultural assistance to developing countries. These scenarios together impede the potential role of agriculture in poverty reduction. This suggests non-action from the part of the national governments and the donors as they doubt the potential of agricultural research and development as a strong strategy for poverty reduction.

The close working and understanding between IARCs and the NARS has helped the development and dissemination of global public goods in agriculture. Both parties value this relationship. There is a strong degree of interdependence. Together, they can claim credit for the level of success in food production in developing countries. NARS have endorsed training as the most important input they receive from the IARCs. The success of training-led impact in agricultural development varies from country to country due to the relative strength, in terms of economic, political, and institutional setting, that exists within each country (Greenland 1997). Nevertheless, the demand for capacity by the NARS to the IARCs shows both a dependency relationship on the one hand, but, on the other hand, a partnership between the two for R&D and achieving impact.

Nevertheless, in agricultural research, the international centres do have a comparative advantage and potential for poverty alleviation over other actors such as NGOs and the private sector. They can address any equity issues of science that may emerge from 'upstream' research, such as biotechnology and genetically modified organisms (GMOs). This tends to be developed mostly by the private sector in the developed world (Reeves and Cassaday 2001). IARCs, as leaders of public sector research, have scope to explore innovative strategies and 'public-private partnerships' to share research and development costs for "pro-poor" biotechnology' to sustain the delivery of public goods (Borlaug 2007). On the other hand, although NGOs have diverse localised experience, their performance in agricultural research that could benefit poor farmers 'tends to vary and sometimes rather sharply' (Dalrymple 2004).

Thus, despite ongoing challenges, international centres have shown responsiveness, realisation, and urgency in their willingness to take poverty issues seriously as they have come to recognise that only focusing on yield does not reduce poverty (Reeves and Cassaday 2001; IRRI 2006; Meinzen-Dick et al. 2006); they are also beginning to recognise the complexity of the issues and to identify a number of important aspects that need to be addressed in research (Meinzen-Dick et al. 2003). These are i) to target the areas where most poor people live and to target the crops that most poor people consume; ii) to align research with poor people's needs and priorities to increase the understanding of livelihood strategies and the vulnerabilities of poor people; and iii) to pay due attention to issues such as gender, policy, institution, and market. Interestingly, all these recommendations have been made from an impact study point of view. There is still little or no mention of the way these can be addressed while implementing the research. This thesis addresses the issue by way of reflecting on a project (PETRRA) experience that claimed to have shown early evidence of success. The following chapters present the case experience.

There were attempts to bring a new dimension of looking at potential success through institutional learning within organizations so that they can address the emerging issues of concerns that affect poverty and change. Much emphasis has been given to the practice of 'institutional¹⁷ learning and change (ILAC)' as Watts suggested:

If agricultural research organizations are to be more successful in reducing poverty and increasing the sustainability of agricultural production systems, they must become less isolated, more interconnected, and more responsive. In so doing, they must transform themselves into learning organizations, more in touch with field realities and better able to learn and change (Watts et al. 2003 p 3).

From this, certain values may be considered important for agricultural research and impact on poor households. These are a multidisciplinary approach, farmer-participatory research toward empowerment of poor men and women farmers, attention to women and their issues, a livelihood approach, linking research and extension early, formation of partnerships with appropriate organizations, and an engaged learning process (Meinzen-Dick et al. 2006). In each of these values, we see a direct engagement with poor households and the organizations that interface with these households. It is postulated that there is a need to engage with such values to have a more significant impact on poverty. Without such engagement, a significant impact on poverty can hardly be achieved.

This new realisation raises the question: Why is it so difficult to reach the poor and address their issues of concern? It can be asked whether this issue has anything to do with the research management approach. It can also be asked whether there are issues relating to capacities and the right mindset of

¹⁷ Chambers (2003) clarifies the use of the term institution in this context as: "The term institution is used here not in its popular sense as a synonym for organizations but as referring to the formal and informal rules, regulations, norms, and practices that govern and determine the agricultural R&D system as a whole".

these organizations to be able to become “learning organizations” (CGIAR 2005). Some good but scattered and inadequate examples of such experience of NGO work in agriculture are available (Farrington et al. 1993). But there is a gap in the literature of documentation of such experience within international centres.

1.5. The values-based agricultural research management approach: a new front for scholarship

The CGIAR has gone through a process of change since its foundation to enable it to respond to the growing awareness about bottom-up, demand-driven, environment-aware, decentralised, poverty-focused, gender-aware, and partnership-linkage-network-based participatory research. Table 1.2 provides a timeline that indicates major milestones in the history of the CGIAR.

Table 1.2. The evolution of values within the CGIAR

Event/source	Description	Comments
1970s and 1980s	<ul style="list-style-type: none"> - Food and nutrition was the priority - Importance of the commodity given primary attention - Adaptive research not a priority - Research style and approaches mostly top-down 	Mainly emphasised germplasm improvement; research induced diffusion approach
1987 Brundtland Commission Report, “Our Common Future”	<ul style="list-style-type: none"> - Emphasised sustainable development - NRM research encouraged - Some centres began to appreciate direct beneficiary participation and sociocultural issues 	Mainly emphasised the environmental aspects of sustainability
TAC 1990	<ul style="list-style-type: none"> - CGIAR formally incorporated poverty alleviation and sustainable food security into its goal - <i>Food self sufficiency</i> was replaced by <i>food self-reliance</i>, emphasis given on natural resource base, ecoregions, and partnerships - Issues related to equity, particularly gender equity, received increased emphasis 	Poverty, food security, gender equity, location specificity for research, and partnership highlighted
TAC 1991	<p>Recommended the following to optimise the poverty reduction impact of CGIAR research:</p> <ul style="list-style-type: none"> - focus on scaling up potential - focus on areas where poor people live - seek partnerships to adapt generic technologies to local conditions and empower poor people through participation - build the capacity of NARS and extension systems to undertake pro-poor research - include poverty reduction objective more exclusively - focus on livelihood dimensions (vulnerability, etc.) 	Targeted areas where poor people live, emphasised partnership and livelihood aspects
TAC 1992	<ul style="list-style-type: none"> - Widened CGIAR boundary of intended outcome to forestry and fishery - Emphasised partnership with national research systems, sustainable improvements in productivity in developing countries with the objective to enhance nutrition and well-being and emphasis on low-income people - Location specificity emphasised and an ‘ecoregional’ approach recommended, re-emphasised the partnership of NARS 	Expanded the area of work, partnership with NARS, targeted to the poor
1994 The Renewal of the	<ul style="list-style-type: none"> - TAC Chairman Serageldin’s stressed: “..needs of the 	Need-based budget

Event/source	Description	Comments
CGIAR, suggestions to downsize the system	research programme should be driving the budget, not the budget determining what research could be done"	allocation proposed
1995 CGIAR Annual Report: The Lucerne Declaration	- Recognized that CGIAR research has raised productivity that generated employment, alleviated poverty, and promoted north-south research partnership	North-south research partnership for poverty-focused research highlighted
TAC 1997	- Sustainable agriculture for food security in developing countries to alleviate poverty	Poverty linked with agricultural development
TAC 2000	- Overall goal of CGIAR defined: "to reduce poverty, hunger and malnutrition by sustainably increasing the productivity of resources in agriculture, forestry, and fisheries" - Envisioned an important role for social science research in CGIAR "to focus more on identifying the characteristics and needs of the ultimate clients, i.e., poor farmers and urban food consumers; institutional arrangements needed to foster social capital creation and activation; motivation behind poor farmers' cropping strategies; factors affecting collective action in agricultural, forestry, and fish production and marketing; and patterns of community or group resource management" - "Research in sociology and anthropology should complement economic research in CGIAR, and this socioeconomic research must be linked better, both upstream and downstream, to that in the biological and physical sciences"	Poverty reduction set as an overall objective; multidisciplinary, especially the importance of social science in agricultural research was highlighted;
TAC 2001	- Focus on situations where there is scope for scaling up of research results; on geographical areas where a large number of the poor live - Seek research partnerships with users to adapt generic technologies to local conditions and empower poor people through participation - Explore CGIAR's comparative advantage - Focus research on improving nutrient, storage, cooking qualities of food, NRM problems, including socioeconomic, where potential for scaling up exists, including through adaptation by local people; biotechnological issues relevant to local people; - Help build the capacity of NARES to undertake pro-poor research - Include more explicitly the poverty reduction objective in the centres' research priority setting - Future research should focus on regional approach to research priority setting and attacking poverty; vulnerability dimension of poverty; technological support to household livelihoods - "Technology is only one instrument for helping the poor, and it is not always the most effective one. Its role will best be realised within the broader context of rural and grassroots development efforts" - "Centres will need to internalise a greater poverty orientation in the selection of their research agenda and in the way they conduct and evaluate their research"	Targeted approach for research and extension highlighted for poverty reduction; farmer-participatory and demand-led research need highlighted; capacity need of NARS highlighted; people and poverty-centred approach appreciated
Science Committee Report to Exe Com-15 October 2008 & SC Report to AGM-08, December 2008	-An overall increase in the number of social scientists in the system is needed, among them economists, who comprise the largest discipline group as various non-economist disciplines may fail to reach a critical mass; the second largest group is composed of social scientists with no formal social science training and there is a reasonable proportion (by ARI standard) of women. There are signs of declining quality in social science research.; planned to review social science	Concern for impact-oriented science and development by mobilising centres, NARS resources are evident; but still the capacity to do it within centres seems inadequate; good signs of awareness at the top still to make impact at the bottom

Event/source	Description	Comments
	research support for poverty reduction; organising science forum to highlight issues beyond traditional agriculture, exploring innovative partnerships that highlight the benefit of improving food security,...and reducing poverty; promoted 'science for development;' advocated for 'science for development' and encouraged the concept of science "centre without wall' that will pursue partnership...for greater development impact.	

Sources: (Greenland 1997); (Kassam 2003); (Kassam 2006); (Dalrymple 2004); (Rabbinge 2008); (CGIAR 2008)

It is interesting to note that even though the international centres have shown their commitment, they tend to be slow to pick up the 'new' awareness: incorporation of poverty alleviation as its mission, and output- and impact-driven orientation, into the CGIAR strategic and operational planning and centre research agenda, although such issues had been recognised as essential 'in initiating and sustaining agricultural and rural change since the days of the Comilla project in Bangladesh during the early 1960s and had been emphasised by the work of Akhter Hamid Khan and his team (Bunting 1970), and others such as Guy Hunter, Robert Chambers, and Michael Cernea' (Kassam 2003: 443).

Table 1.2 provides a summary of the evolution of values and social issues that were considered important within the international agricultural research system. Most of the issues raised here fall within the broader discipline of social science. As social science has been a subordinate discipline in the IAR system, it did not achieve much in terms of taking social issues forward within research. Although mainstreaming social science is expected "to foster a research culture to promote a development-oriented synthesis of socially responsible sciences in the CGIAR research planning and implementation processes along the R-to-D continuum in agriculture, forestry, and fisheries" (Kassam 2003: 458), it remains comparatively neglected in agricultural research (Scoones and Thompson 2009).

With all these limitations, it is however evident that, over the period, the mission of agricultural research organizations (including the CGIAR) has moved from 'increasing production to attacking poverty.' New initiatives have been taken by these organizations to develop networks, partnerships, and relationships to understand the changing social-economic-political-environmental condition of the poor farmers and to respond to new complex challenges. All these are taking place at an unprecedented pace. Chambers (2003) indicates this situation as a massive challenge for all concerned.

There are massive challenges — professional, institutional, and personal — confronting all those engaged in the practice, management, and evaluation of agricultural R & D. As the development community strives to address these new and more intense demands, its players are challenged to accept and internalise changes in their concepts, methods, mindsets, values, behaviours, and relationships (Chambers 2003a).

1.5.1. Management, agricultural research, and values

There is a clear gap in the literature that relates to the effect of research management approaches on poverty reduction outcomes. As Kerr and Kolavalli state, “one specific point on which there is little or no evidence is whether the approach to research (rather than just the products of research) affects poverty” (Kerr and Kolavalli 1999 p v ii). It would be interesting to know whether research and development that is directly conducted in partnership with poor men and women or the organizations who work with them positively contributes to poverty reduction.

From the context of this research, it is important to understand the role of a research management approach that is values-based. Management, as stated by David Korten, ‘is a process of mobilising resources toward a purpose,’ while, according to him, ‘it is inevitably value-driven with respect to the choice of both purpose and means’ (Korten 1984: 341). This interrelation between management and values in relation to agricultural research is the point of interest of this research.

1.5.2. ‘Values’: from business to development

The wordreference.com defines values as

[b]eliefs of a person or social group in which they have an emotional investment (either for or against something) Source: WordNet (r) 1.7 (<http://www.wordreference.com/definition/values>)

Lemin et al (1994) defined values for education in terms very relevant to development:

Values are determined by the beliefs we hold. They are the ideas about what someone or a group thinks is important in life and they play a very important part in our decisionmaking. We express our values in the way we think and act (Lemin et al. 1994).

The uses of ‘values’ in the discussion on agricultural research and development appear in the literature with different attributes. Chambers (1985), in his discussion of the farmer first and last (FFL) approach, referred to the term as ‘special institutional conditions.’ He found a strong resemblance between the attributes of his concept with aspects of the American business literature. In his words, these are “learning from the customer, encouraging risk taking and tolerating mistakes, and valuing and giving sustained support and resources to innovative individuals” (Chambers and Ghildyal 1985: 27). Wharton (1990), in his article ‘Reflections on Poverty,’ mentioned ‘values and attitudes’ that are relevant to the elimination of poverty at the individual level and ‘are considered to be favourable toward self-improvement and pro-development.’ These are “high achievement orientation and strong self-image to high propensity to save/invest and work ethic” (Wharton 1990:1135). Chambers (1997) presents values as comprehensive, connects with both theories and practices that are part of his mainstream development ideas, which he terms the ‘New Professionalism.’

The ideas and values interlink. Concepts which bear on human relations have implicit values. In the new professionalism, underlying values are not hidden in assumptions of objectivity but made explicit. An eclectic pluralism values doubt, self-critical awareness and open-mindedness; respect for the views of others; and respect for the views and values of others. Each of us has a personal set of values and beliefs. In a spirit of plural tolerance and mutual learning, it is better for each to articulate these and share them than for one set to be accorded primacy or to prevail. Beyond certain core human values, there is then a meta-value of value diversity which tolerates all values, except those that will not tolerate others (Chambers 1997: 229).

The challenge therefore is to understand the effectiveness of interaction between personal values and organizational values and transforming some of the useful ones from personal into organizations so that the organization then can achieve its purpose. Thus, for organizations, it is critical to adopt a management approach that can sustain such values.

1.5.3. Values-based management in business and development

Values-based management (VBM) has two different roots, one in business and the other in the development literature. Both roots are discussed here in order to explore the possibility of introducing the concept into a third, agricultural research management.

Modern corporation and VBM. The concept of VBM has existed in business literature for a long time. In business, it started with performance metrics and gradually developed as a management system based on the creation of value.

Value is created only when companies invest capital at returns that exceed the cost of that capital. VBM extends these concepts by focusing on how companies use them to make both major strategic and everyday operating decisions. Properly executed, it is an approach to management that aligns a company's overall aspirations, analytical techniques, and management processes to focus management decision making on the key drivers of value (Koller 1994: 87).

Besides value creation, the other important components of VBM are corporate culture, including values that involve mission, strategy, internal communication, decision processes, performance management, and reward system, and measuring the creation of value with appropriate indicators. This is an approach that is 'wrapped around an attitude' (Karlof and Lovingsson, 2005).

During the 1950s, the firms that had "capacity for entrepreneurial or strategic behaviour...acted on the potentials of new technologies and opportunities... that addressed social value, not as a threat, but as a challenging opportunity to redefine their roles in humanly satisfying ways" were doing better in business (Korten 1984: 343). These firms acted on the new reality and began to experiment with new management concepts and strategic planning. They quickly learned to adapt their strategies with the changed environment.

In a changed reality, the firms began to experiment with a new management concept, strategic planning. There emerged a complex management style leading to 'strategic organization'. Korten (1984) described this environment:

Analytical and social processes are interrelated such that all levels and units of the organization assume a strategic orientation, interacting dynamically with their environment within the guidelines of central policy and the values of a strong organizational culture. Thus everyone from shop worker to company president becomes a contributor to a continuing process of strategic adaptation (Korten 1984: 343).

The McKinsey's 7S Framework strongly advocated keeping 'shared values' at the centre of the model as "superordinate goals" for an organization to achieve its intended goal. The model suggested aligning seven internal aspects for an organization to be successful. Besides 'shared values', the other aspects e.g. skills, style and staff are labelled as soft elements and strategy, structure, systems as hard elements of an organization. 'Shared values' are meant to be core values as well that are 'evidenced in the corporate culture and the general work ethic' (Waterman Jr. et al 1980).

Within a strategic organization, 'commitment to quality service,' 'listening to the customer', and 'a belief in the creative potential of people' became dominant values as opposed to short-term profit. 'Institutional culture' became the new focus for studies of the strategic organization as it is 'the dominant force driving the organization forward, maintaining commitment, and facilitating a continuing negotiation of objectives and review of progress toward their achievement' (Korten 1984: 344). Change had been valued within the strategic organization as the most vital element. Managing the creative tension between the forces that provide stability and those that drive change within the organization has been indicated as a big challenge.

The more effective the leadership in developing a culture supportive of teamwork, the more effective it must also be in nurturing champions and skunk works which are encouraged to depart from prevailing ideas and sow the seeds for change. Even as the strategic manager works to develop a cultural consensus, attention must be given to nurturing initiatives which may lead eventually to its dissolution in favour of an alternative better suited to a significant change in the circumstances of the organization (Korten 1984: 344).

It was the efficiency of the corporations to utilise the innovative creativity and potential of the people to achieve productivity that worked. For corporations, the secret was "to provide people with the opportunity to assume valued and socially useful roles which allow them to apply their creative intellect toward creating a better future for themselves and their society" (Korten 1984: 345). People-centred values have been practiced as part of the corporate culture by the innovative corporations. The question which this seeks to explore is whether these concepts can be profitably and successfully utilised in development management.

Chambers (1997) has analysed and presented a good comparison between business management and participatory approaches of development.

It has been the discipline of the market and opportunities and imperatives of new technology which have driven and drawn business management to decentralized flexibility, to diversification, towards a culture of sharing information, in order to keep ahead, to finding and exploiting transient niche markets. The ultimate discipline is sales and profits. For PRA and related approaches, the ultimate discipline is what works with the people and communities. In both business management and PRA, value is placed on decentralization, open communications and sharing knowledge, empowerment, diversity and rapid adaptation (Chambers 1997: 197).

This statement can be considered as bridging between business and development approaches of management.

Development and VBM. In the 1970s, the importance and practice of development based on the concept of equity and participation were already a requirement felt by many. There was a strong demand to deliver development benefits directly to the people. But the agencies that were responsible for carrying out the task were not capable of addressing them. They were

...dependent on bureaucratic structures within a limited capacity to respond to local diversity, they expected clients to tailor their needs to what the agency found it convenient to offer. Nor did they have the capacity to elicit meaningful participation or to respond to beneficiary feedback regarding the inappropriateness of what was offered (Korten 1984: 346).

The idea of strategic management was pushed into the development management arena, to be guided by values such as equity and participation, leading to a de-bureaucratization of development. But, until the early 1970s, the values were neglected, the urgency of reaching the poor and working with them directly was ignored. Good intentions without any action did not help (Korten 1984).

In the 1980s, a new approach took over the stage of development management. The narrow project approach gave way to "powerful strategic frameworks for managing programmes, systems, and institutions. The advocacy of rigid, blueprinted, planning methodologies and control systems had given way to a search for methodologies which facilitate social learning processes" (Korten 1984: 346). Empowerment of people and de-bureaucratization of development became the central theme of development management. Human creativity was recognised as critical human resource while 'human well-being as a prime indicator of development' (Korten 1984: 347). The modern notion of development management is "management for development, a particular kind of orientation towards progressive change, rather than just deliberate intervention tasks" (Abbott et al. 2007: 201). This implies learning and knowledge building across the organization to allow the change to take place.

Social learning theory provided intellectual support to Third World development management practice that facilitated institutional learning processes and encouraged Third World development institutions 'to drive a capacity building process involving iterative cycles of action and reflection.' The concern for

Third World development management has been to move from creating strategic organizations to strategic societies, the ideas centring on people, their creativity and motivation (Korten 1984: 347).

The discussion of values-based management in the development literature so far has been largely theoretical. All of these need to be mainstreamed in order to achieve a better pro-poor development on the ground. David Korten (1984) concluded his paper by saying,

Management, as a profession and a social technology ... [is] still only dimly recognized ... we may assume that we are still in the early stages of recognizing its potentials Realizing the potentials of this frontier will depend on our ability to accept the magnitude of the changes and challenges we face. ... we must be prepared to embrace openly the opportunities presented by this particular period of history and to focus our creative energies on designing the organizational forms of our future rather than on repairing those which survive as relics of our past" (Korten 1984: 350).

Chambers (1983) made a similar conclusion in the discussion on management for rural development, he observed, "Management is a discipline or profession which has yet to make its major contribution to rural development ... practitioners still have a long way to go in recognizing how management can contribute to rural development" (Chambers 1983: 183). For agricultural research management, it is likely to be even truer, be it national or international. Focusing on certain sets of values at the centre of the management of agricultural research that aims for pro-poor impact and development calls for a new way of doing business.

Values-based agricultural research management. There is considerable gap in the literature that talks about values-based agricultural research management. There are, however, some closely related concepts in the field of agricultural research and development discussions. One such concept is adaptive management. Mog (2006) emphasised the need for adaptive management for sustainable agricultural research and development. According to Mog, adaptive management requires that "project planning and management be flexible and innovative enough to learn from local people and environments, to gain from past experience, and to respond to changes quickly and wisely" (Mog 2006: 432). He refers to the idea of a 'learning process approach' to describe the iterative and experimental nature of the planning process within adaptive management. Mog, in the same paper, also refers to accountability as another important aspect of management. This refers to demand-led interventions and the participation of masses.

Yet practical management challenges remain, especially those related to accountability—that is, how do we monitor and evaluate such a program?—and to ensuring that local priorities are set in a truly democratic manner—that is, how do we deal with the diversity of opinions, needs, and interests within a community and prevent a minority of locally powerful interests from hijacking the agenda? (Mog 2006: 532).

The discussion above provides positive indications and possibilities of theorising a values-based approach in agricultural research and development management. This is a concept that is yet to be

articulated within international agricultural research. One of the reasons could be the lack of a practical experience of such an approach on the ground. Second, there could be some practical examples in the developing world that have not been articulated and which, therefore, remain as untapped sources of learning. This thesis attempts to tap into such practical learning on the ground.

1.5.4. Important values in agricultural research and development management

There can be a long list of values that may appear important in the discussion of agricultural research and development management but, for convenience of a brief discussion, only a set of major values is discussed here. This section builds a link between the discussions above and what follows on the discussion of the case study, the PETRRA project.

Poverty focus. From the discussion of the trend in development, some issues come out clearly as strong elements that need attention in order to bring about change among the poor in developing countries. There is enough evidence to recommend policies that help bring about growth in the farming sector that directly helps the poor. The focus must be on the resource-poor farm families (small and marginal farmers), especially those who are vulnerable and involved in the farm and non-farm sectors, men and women, living in unfavourable areas. This needs to be done for three different reasons: i) social justice, as the poor are a large community; ii) to help the resource-poor in production by developing technologies suitable for them to reduce vulnerability; and iii) employment, which is produced by generating scope in both farm and non-farm sectors (Chambers and Ghildyal 1985). Efficient ways of engaging with knowledge (through training and communication) suitable for small and marginal farmers must be explored. A widened gap - economic, technological, and institutional - between the poor and the rich has been created nationally and internationally. The network between disciplinary and interdisciplinary colleagues between international centres and national centres in activities could change the scenario positively (Sisler and Oyer 2000). Such gaps affect the poor more than the rich. Appropriate ways to engage with the poor could prove useful for understanding and addressing this problem. There is a clear lack of such ideas in international agricultural research and development.

Demand-led. The national and international agricultural research in the public sector is paying increased attention to demand-led research. This mainly concerns setting the agenda for research, essentially following a bottom-up approach. For donors, this is a precondition to establish relevance and effectiveness in research and promote decentralised decisionmaking

with the participation of stakeholders. NGOs are playing a bridging role here.¹⁸ Within the scientific community, however, doubt remains: they do not fully trust the ability of the farmers, whom they perceive to be 'untutored' and therefore unable to determine "well-ordered" research topics (Dalrymple 2004). The farmers' demand-driven approach has other kinds of limitations: farmers may only be concerned about their immediate short-term problems, rural elites can dominate the process, and better-off farmers' views can undermine poor farmers' views (Dalrymple 2004: 15). The current trend to deal with the issue is to interact with farmers through farmer organizations. PETRRA claimed to have developed an effective way of dealing with such questions; it is important to see whether the claim is valid.

Chambers and Ghildyal (1985) have recommended five values-based thrusts for agricultural researchers to address demand-led research: i) methodological innovation—collects all good tools, methods, experience and learning across the developing world; ii) interdisciplinarity — strong mixture of disciplines: technical and social; iii) resources—enough to facilitate travel and work; iv) rewards—in the form of recognition, appreciation, promotion, publication, etc.; and v) training—appropriate orientation toward finding ways 'to learn from farmers.' Presently, there is attitudinal change among policymakers and researchers to conduct demand-led research. But, in most cases, there is a limitation of skills and examples that will show how it can be done effectively. The PETRRA project claimed to have trained farmers, engaged with them and helped them achieve gradual improvement in their capacity; the claim will be verified in later discussion chapters.

Participation. 'Participation' has been one of the most used words in the development arena in the 1980s and 1990s. Chambers indicated some important events that heralded its usage: UNICEF pioneered in instilling the value of 'putting people first;' the UNDP published the *Human Development Report*; the World Bank published a book entitled *Putting People First* by Michael Cernea in 1985; world summits for social development in Copenhagen and on women in Beijing were held in 1995 (Chambers 1997). While indicating the influence of the approach, Chambers (1995) commented, "[S]o widespread is its use that some talk of a paradigm shift to participatory development" (Chambers 1995: 30). The word can be used in three different ways: (i) as a cosmetic label, (ii) 'they' (local people) participating in 'our' project, and (iii) 'we' participating in 'their' project, not 'they' in 'ours.' The latter is the desired one as it is interpreted

¹⁸ There are some negative opinions about the role of the NGOs. Some believe that their contribution to agricultural research and development varies too much and some think that their sphere of work is local and decentralised and tends to antagonise public and private initiatives; Dalrymple, D. G. (2004, April 21, 2004). "Demand- and Supply- Driven International Agricultural Research: Setting the Agenda for Global Public Goods." Retrieved 19 October, 2006, from http://dfid-agriculture-consultation.nri.org/theme5/keypapers/demand_driven_research.pdf.

as empowering local people conduct their own analysis and take control of the development process (p 30). He emphasised that “[T]he paradigm of people implies the third meaning or use of participation, an empowering process, with a shift of power to those who are local and poor” (p 33). Chambers emphasised the need to change bureaucratic procedures, culture and participatory management, flexibility in operation, allocation of resources and open-ended social science research in the organization or agency that would like to adopt it for effective empowering participation of the poor. This must ensure that the voices of women and the disadvantaged are heard in the process (p 41-42). In PRA,¹⁹ “value is placed on decentralization, open communications and sharing knowledge, empowerment, diversity and rapid adaptation. Error is embraced, ‘failing forwards’” (Chambers 1997: 197). In this connection, he referred to the famous one-sentence manual for PRA—‘Use your own best judgement at all times.’²⁰ This suggests taking a strategy that works for the people in a particular context and then responding to the situation with one’s best judgement.

In this era of development, there have been a lot of changes in approach. Many organizations started to recognise the fact that the ‘uppers’ should listen to and work on equal footing with the ‘lowers’ and they tended to believe that “‘lowers can do it;’ that social synergy and fun are a positive sum; and that uppers’ behaviour, attitudes, and personal responsibility are central²¹. For the realities of lowers to count more and for the new high ground to prevail, it is uppers who have to change” (Chambers 1997: 188). This strongly suggests the idea that ‘we’ should not think to change ‘them’ because they ‘do not have knowledge;’ rather, it is ‘we’ who need to be changed to be able to remain relevant. IARCs need to change themselves as ‘uppers’ if they want to help the poor farmers, the ‘lowers.’ There are problems with commitment, attitude, and institutionalisation of participatory research within CGIAR centres (Becker 2000). Changes are taking place within different international agencies, recognising the values of appreciating the need to work for the ‘lowers.’ There is room for optimism as well; the comments made by Becker is such a sign, “[t]he most important improvement [within CGIAR] is that today the issue of farmer participation in research can be discussed more seriously with most scientists”(Becker 2000:5).

¹⁹ PRA (participatory rural appraisal) is the method used for participatory analysis, presently popularly known as PLA (participatory learning and action), and many other names, to make it to a universal one beyond being used for village analysis only.

²⁰ This idea that ‘values trust and individual discretion and initiative’ had its origins in North American business management Chambers, R. (1997). *Whose Reality Counts? Putting the First Last*. London, Intermediate Technology Publications.

²¹ ‘Upper’ and ‘lower’ are concepts used by Chambers to analyse the dichotomy between people (scientists, development workers, administrators) as ‘uppers’ who work for the poor (farmers) and the (poor) farmers as ‘lowers.’ This is also used to indicate relative superiority and inferiority within the ‘uppers’ and ‘lowers.’

The participatory approach as discussed by Chambers and others has yet been criticised by others. The main criticism has been that it is insufficiently theorised because of its empiricist orientation. The approaches are also said to give too much attention to 'local' socioeconomic inequalities and to ignore wider 'national and global socioeconomic forces' in effecting change (Kapoor 2002: 113; Ute 2007). Nevertheless, there are examples of sincere efforts to conduct participatory research among researchers of the IARCs, but what is needed is to think over it, together with other complementary values, in order to succeed in effective participatory research. PETRRA claimed to have used additional complementary values such as partnership, gender, and demand-led research and a development approach to make participatory research poverty-focused and effective. It is important to test the validity of the claim.

Partnership, network, and linkage. The success in assisting poor people through agricultural research outputs would always depend on the formation of effective coalitions and partnerships "of people brought together by a shared belief in the importance of this task, yet there will always be difficulties in building a powerful coalition to assist powerless people" (Reece et al. 2002: 6-7). PETRRA claimed to have pursued the right coalition and partnerships among the right agencies in terms of engaging with those who care for effective pro-poor impact; it will be important to test whether the claim is valid.

In development, no single agency can carry out its activities without partners, collaborators, and linkage support agencies. It is even more important for the IARCs as they have limited ability to reach poor farmers. They operate through partnerships with the NARES. Most of the success stories depend on the effective partnership of the national and international research systems. This is important to implement research activities and to sustain the impact of the research. Partnership and linkage reinforce and complement each other for effective impact. Like-mindedness is a strong element in developing strong partnerships. Chambers observed, "[W]ithin and between organizations, and between levels in organizations, the like-minded can support one another. Change in one organization can help others learn" (Chambers 1997: 227).

Partnership, collaboration, and network are needed at various levels: international, national, and local. This also ensures effective participation of different players in development and help implement scaling-up strategies (World Bank 2000) and sustain innovations. The PETRRA project sought to integrate different partners to achieve such an objective; the question of whether it worked must be asked.

Gender. In many developing agriculture-dependent rural societies, women, especially poor women, are playing a critical, but unrecognised, role in agriculture. There are examples that also endorse this changing trend, a process that is known as 'feminisation of poverty,' with women taking more responsibilities for the household economic activities in the state of growing vulnerability. But, because of the nature of the patriarchal society, women do not get access to mainstream development activity, as frequently happens in research and extension in the field of agriculture. Women's achievement during the 1990s was quoted as 'a story of expanding capabilities and limited opportunities' in the UNDP *Human Development Report* (Buvinic 1997). Some projects and programmes have recognised women's quest for all kinds of agricultural knowledge, not only 'in topics recognised as women's work;' there is widespread agreement that this needs to be mainstreamed.

Experience has shown that women can identify their own concerns and priorities, which are different from men's. Women also look at social realities differently from men as well (Chambers 1997). Experience also reveals that, to get into the research system, gender concerns need to be carefully introduced and nurtured. Close monitoring on progress and followup discussions while implementing the programme is important. Different case experiences from PETRRA projects are discussed in Chapter IV to highlight the learning. It would be interesting to see how far it is useful to understand the gap in existing agricultural research and whether it can help identify ways forward.

Competitive research: The idea of competitive grants emerged on the backdrop of falling investment in public-sector agricultural research during the 1980s in spite of the fact that it contributed to unusually high productivity to make judicious use of scarce resources. A study conducted in the United States by Huffman et al (1998) concludes that '...funding of competing scientists working on the same problem at different institutions under a different direction has merit.' But, at the same time, the research approach raised more questions than answers: quality of evaluation process, quality of research proposals compared with ultimate output quality, asymmetry of information between scientists and funders (Huffman and Just 1998:2). In the case of developing countries, 'dissatisfaction with traditional mechanisms of funding agricultural research and dissemination' was the reason for introducing competitive agricultural technology funds. The essential element to the introduction of a competitive system is the recognition of the variety of organizations (universities, NGOs, different departments, private sector) that can participate in research (Byerlee 1998). Success depends on several factors: if there is in-country capacity to constitute an effective market (available competitors), if there is a reform agenda in place, and if the fund is run by an independent agency that does not compete

for funds. Some of the advantages of the approach include the following: increase effectiveness by directing resources by merit, increase efficiency, help promote closer alignment of AR&D with national research priorities, promote a demand-driven national system, strengthen the link between research and extension organizations, and induce institutional change in the national innovation system. The disadvantages include lack of support for medium- to long-term research agenda, human development, or infrastructure; higher funding uncertainty; and low sustainability of funding (Gill and Carney 1999).

Experience shows that the effectiveness and usability of the competitive grant system varies, depending on the type of environment in which it operates. It is a tool that can be used as long as it gives the intended benefits that its proponents would desire. Interestingly, not enough discussion was done as regards the scope of the approach to achieve a pro-poor impact. Also, there was the clear lack of an approach that would combine elements such as partnership and participation that would make a more promising option available for the use of scarce funding.

Communication: Communication discussion in relation to agricultural research and development has been evolving quickly. The more effective approach has been addressing the challenge of reaching the maximum number of farmers with knowledge and information quickly and cost-effectively. This approach intends to optimise and utilise the advantages of existing fast-growing information technology for technology or innovation dissemination to farmers. The other forms of communication strategy aim to respond to the changing demands of multiple stakeholders on a continuous basis. While the first approach is commonly practiced, the second approach demands more practical experience and further articulation. It has to properly understand the strengths and weaknesses that prevail within the AR&D system and then plan the entry points. The challenge for this approach is to be able to manage the diversity of strategies to satisfy the needs of different stakeholders: poor men and women farmers, government-NGO extension agents, media, political decisionmakers, research managers, and national-international donors. Overwhelming interest on such a communication strategy is increasing, but not many practical experiences are available that support developing-country AR&D management. P ETRRA claimed to have addressed these questions in the way it handled communication issues. It will be important to see whether the claim is valid.

Capacity. Capacity has a wide meaning in this context, and it is a big challenge too. It is a big challenge to establish 'new professionalism' (Chambers 1983) among scientists and researchers. It is another challenge to recognise all relevant disciplines, including social sciences, so as to be able to respond to the concerns of the resource-poor farmers, male and

female. Thomas Becker, in his article on participatory research in the CGIAR, observed the limitation.

For agricultural research in the CG, social sciences are at best assigned a supportive function. Especially basic research and partly also strategic research is conceived only as biological research. Sociological reflections on the foundations of science, and more specific on the foundations of agricultural science have never been on the CG's agenda and CG has always avoided epistemological questions about the theoretical assumptions underlying its understanding of knowledge and how scientists can come to grips with other forms of knowledge (Becker 2000:5).

'Other forms of knowledge' can be interpreted as including the types of knowledge that embrace relevant values such as poverty focus, demand-led, gender, partnership, participation, linkage network, etc. The system needs strategic skills in facilitation, cooperation, coordination, and above all management capacities to support the pro-poor and impact-oriented AR&D. And there is a need "for a flexible, sustained, experimental, action-based, capacity-building style of assistance, which most major donors [in this case, its projects and programmes] are ill-equipped to provide" (Korten 1980: 484). All such issues require core commitment and 'should be firmly supported by management.' That which requires 'intercentre, systemwide networking and exchange' needs to be institutionalised (Becker 2000: 9).

Becker (2000) advocated a 're-conceptualisation of agricultural research.' He suggested that "[T]he system should depart from its understanding of agricultural research as natural sciences carried out in a natural sciences mode and develop an epistemological basis for its research that integrates natural sciences and social sciences perspectives" (Becker 2000: 11). This suggestion provides logical support to accept the idea of giving due importance to complementary disciplines that would help make agricultural research poverty-focused. The values suggested should not be considered as downstream activity in all types of research: strategic, applied, and adaptive. Being able to benefit from 're-conceptualisation' and its practical implementation in the research process demands a dynamic, engaged, and balanced capacity on a continuous basis, aiming toward institutional change that results in a contribution to poverty elimination.

Perhaps the greatest challenge facing the agricultural research community is to build the capacity to operate this research paradigm effectively, in partnership with resource-poor farmers in developing countries (Collinson and Tollens 1994).

Importance should be given to areas such as networking to get access to knowledge within and outside the system, as this is a means of capacity building. Strong emphasis should be given on capacity building in critical areas (Becker 2000).

Capacity building is an aspect that needs to be seen at the hub of values, which embraces all basic values and remains active in the system. There is a clear lack of an approach of continuous capacity building during the implementation of the project to keep values active in conducting agricultural research. The PETRRA project claimed to have engaged in a process of continuous capacity building during the implementation of the project; the validity of the claim needs to be seen.

1.5.5. PETRRA interfacing values concepts

The PETRRA project aimed to enhance the livelihood security of poor farmers by increasing production and productivity of rice-based farming systems through poverty-focused research. Rice was the entry point, and research was to support a strategy for poverty elimination. The PETRRA project, its management structure, and its outcomes are the subject of this thesis. Chapter II on the PETRRA context describes the project in detail.

The PETRRA project itself did not clearly define its values-based approach but indicated a set of values that constituted it. The project also tried to articulate the links between the values identified and those used in project planning, design, implementation, and evaluation and monitoring. Quin et al (2003) were especially responsive to the internalisation and interpretation efforts of the values-based approach of the project team and further refined the articulation of the approach. They defined the PETRRA values-based approach as follows:

The competitive process for the award of research contracts ... requires adherence to certain specifications. With respect to PETRRA, the proposed research must (a) be demand-led, poverty-focused, gender-sensitive, and environmentally aware; (b) use participation and partnerships in both the design and implementation phases; and (c) commit to networking to enable more effective research, including its linkage into development processes. Thereby, PETRRA aims to achieve (a) demonstrable change in the livelihoods of the target group (resource-poor rice farmers, RPRFs) in target sites, and (b) develop an institutional mode for conducting research that is well geared to contributing to the development of pro-poor rural policies and services (purpose-delivered). PETRRA refers to this way of designing and undertaking research as value-based research (VBR) (Quin et al. 2003: vii).

The PETRRA project team claimed that they adopted values as per requirement of the project activities. The values themselves evolved over time, based on suggestions provided in the project documents by project stakeholders, resource-poor farmers, and partners over a period of 5 years. Some values came to be identified as core values (poverty focus, gender balance, demand-led, participation, partnership, network linkage, and capacity building); others (e.g., communication, decentralisation) came in as unintended values but ones which were found essential and useful for such a programme. As previously discussed, the capacity element of the so-called PETRRA VBR approach supported and tied all other values into one.

To conceptualise this research, taking the PETRRA project as a case to explore issues of values-based agricultural research management approach as a case study, a *practice->theory-> practice* approach has been taken. At the time the project started, it did not aim to develop any particular approach. But, over the period of implementation, building around values led to a values-based agricultural research management approach. Looking at the initial positive response of the approach and the experience, there was a need to link it with relevant concepts and theories to be able to articulate the relationship between whatever limited experiences it gathered. This is expected to enable future replication of the concept. So the ultimate objective would be to ensure the quality of practice that is adequately backed by theory as well as to inform theory with grounded experience.

The PETRRA project included values that are not new; many others have mentioned and practiced similar approaches in projects and programmes under various names: Farmer First, Participatory Action Research, Farmer First and Last, etc (Chambers and Gildyal 1985), innovation system research (Opando et al. 2005), pro-poor rural innovation, impact pathways, institutional learning, action learning²² (Chambers 2003a), or farmer-to-farmer experimentation and extension (Krishna and Bunch 1998). However, the difference that PETRRA claims is that they practiced it from a project management approach point-of-view to foster continuous institutional learning and change, as Watts et al (2003) might have desired. The experience elsewhere, however, shows that no single organization can meet this demand; new tools and new types of partnerships are required (Reeves and Cassaday 2001). The significance of the PETRRA project was to identify the important values for a poverty focus through action and reflection with partners and then incorporate these into a management system coupled with capacity building to facilitate the process. The actors in each subproject incorporated the values through action and then, as a collective of subprojects, shared that experience (Salahuddin et al. 2008a) The PETRRA project also claims that it developed, adopted, and practiced a values-based research management approach and built a shell of capacity around its partners in a learning environment²³ as part of its desired organizational culture (Van Mele et al. 2005). Project experience in Mexico supported such capacity aspects for the success of a project; it showed that success there depended on the researchers' and managers' capacity, motivation, and enthusiasm to facilitate a complex agricultural project (Cisneros et al. 1998). As discussed earlier, this capacity relates to implementation of values. It is thus important to explore the validity of the PETRRA claim. An evaluation

²² According to Chambers, "Action learning, with participants as action learners, is an umbrella phrase for the fundamental changes in concepts, methods, mindsets, values, rules and behaviours that are beginning to alter the practice of agricultural research and development" Chambers, R. (2003a). "Preface." *Agricultural Systems* 78: 119-121.

²³ The concept of the learning process approach and its logic has been outlined by Korten, who argues, "[T]he key ... capacity for embracing error, learning with the people, and building new knowledge and institutional capacity through action... A model of the learning process approach ... suggests a new program should progress through three developmental stages in which the focal concern is successively on learning to be effective, learning to be efficient, and learning to expand." Korten, D. C. (1980). "Community Organization and Rural Development: A Learning Process Approach." *Public Administration Review* 40(5): 480-511.

of the values-based agricultural research approach as proposed in this project will be a unique opportunity to assess the possibility and viability of this approach to agricultural development.

1.5.6. Innovation Systems Framework and the PETRRA approach

The innovations systems approach is currently one of the most frequently-used approaches in the field of agricultural research and development. It has become widely used because it has helped to eliminate some of the 'false dichotomies' (farming systems research vs farmer-participatory research; indigenous vs scientific knowledge etc) that existed in this field for a long time and has helped to integrate traditional and newly recognized actors (market forces, private companies, NGOs etc) for economic growth. In a way the approach can be considered as the logical next step for some of the popular approaches of the 1970s and 1980s e. g. farming systems, participatory, and agricultural knowledge and information system (AKIS) approaches (Hall 2007).

An innovation system can be defined as a network of organizations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behaviour and performance (Pound and Essegbey 2008:46).

The innovation systems framework also added a new dimension, helped widen the view on agricultural research and development, and provided tools to think beyond factors of production as viewed by the neo-classical economists.

Discussions on evolutionary theory of economic growth, new institutional economics are parallel concepts to innovation systems framework which add additional insights (Nelson & Nelson 2002). For example, the enterprise web approach of Magor took into account the institutional barriers for poor farmers in terms of their high transaction cost, an issue not touched upon by innovation systems (Magor 2005; Van Mele et al 2005). The innovation systems framework allowed research and development practitioners to acknowledge complexity that exists within developing country agriculture. The framework helps analyze 'complex relationships and innovative processes that occur among multiple agents, social and economic institutions, and endogenously determined technological and institutional opportunities' (Spielman 2005:1). The framework also 'demonstrates the importance of studying innovation as a process in which knowledge is accumulated and applied by heterogeneous agents through complex interactions that are conditioned by social and economic institutions' (p1).

While the framework is very useful as an analytical framework to understand the context in which innovations are developed and interact, it does not appear to be an approach that could help manage a

pro-poor impact oriented agricultural R&D. It obviously played an important role in changing the mind-set of researchers and policy makers, encouraging them to consider new and unconventional actors and relationships. Yet critics have found limiting qualities in the approach. These include: 'a lack of perspective beyond the conventional role of the public research organization; ... limited relevance to policy analysis and policy makers; and limited relevance to poverty reduction and food security' (p 44). Despite its strong emphasis on partnerships and network '[T]he innovation systems approach is not pro-poor. As with other approaches, real impact on poverty and gender imbalances will only result if special attention is given meeting those challenges' (Pound and E ssegbey 2008:49). The framework lacks clear strategy to operationalize values (e.g pro-poor, gender) to make use of its contribution to development.

1.5.7. PETRRA in the context of institutional learning and change

One of her concept that has strongly emerged in the IAR system is the discussion on 'institutional learning and change,' mainly because of the diminishing appeal of the existing paradigms (e.g., economic). The economic paradigm, the dominant discipline within agricultural research, has been criticised for its failure to help understand the institutional aspects of agricultural research (Mackay and Horton 2003). Recognition of these limitations has led to exploration of alternative means of understanding poverty issues in relation to agricultural research. Since 2003, a new concept, institutional learning and change (ILAC), has emerged in discussions within CGIAR forums. It is currently being developed within CGIAR centres, involving their communities of researchers, research managers, development practitioners, and donors. This research incorporates the objective of strengthening the understanding of institutional learning within the system for constructive change among the actors - researchers, research managers, and donors - with the aim of addressing poverty issues better.

The development of the ILAC concept is still at an early stage and some of its early definitions are the following:

Institutional learning is about the process through which new ways of working emerge (Hall et al. 2003 p 8).

ILAC is part of this movement into new space and relationships. It may be a good thing that it is not currently explicitly defined, but a conjuncture of words—institutional, learning, change (Chambers 2003 p 19).

Institutional learning and change is the process of reflection and reframing of knowledge that results in changed behavior and improved performance (Blackshaw 2003 p 24)

ILAC has been influenced by many other concepts over the last few decades (Hall et al. 2003). These are evolutionary economics (1980s), organizational learning (1970s), systems thinking (1930s, 1980s/1990s), action research (1960s, 1970s), capacity development (1980s), programme evaluation (1970s), participatory learning and action and monitoring and evaluation (1980s, 1990s), agricultural research management perspectives that recognise multiple sources of agricultural innovation (1990s), and innovation system (1980s/1990s). Some of these concepts were useful in this study for understanding the learning, which can emerge from the analysis of the case study.

'Learning-oriented evaluation' is one of the key concepts in ILAC, which was employed in this research. This is different from 'evaluation for accountability.' Watts (Watts 2005:1), referring to the constructivist school of learning, suggests that effective learning takes place 'through the social experience of working together. This can change the mindset of the learner, enabling him/her to break from traditional knowledge, beliefs and practice and adopt a new approach.' Thus, learning takes place at the individual, group, and organizational levels (Watts 2005). As the case study in this thesis tried to capture learning at all those levels, it is an opportunity to evaluate the usefulness of the ILAC concept.

Changes in institutional behaviour and changes in the attitude and behaviour of scientists involved in the research and the way they conduct and interact with the research team are equally important for ILAC. In other words, the whole culture of dynamic relationship between individuals and the institutions with which they are interacting is important. The ILAC concept demands social science, together with technical input to facilitate learning to "encourage constructive discussion, reflection, questioning, clarification of values, beliefs and assumptions, and the creation of new insights and knowledge" (Horton et al. 2003 p 16). All these elements, in an integrated manner, can play an important role and add different perspectives to the learning process. A strong capacity development component in support of the process and behavioural change indicators to monitor these are recommended in the ILAC (Hall et al. 2003). Contextual and 'real-time' learning and documentation are also important in ILAC.

In order to focus on both successes and failures, the entry point for CGIAR centres could be at the system, centre, programme, team, or individual level. Both top-down and bottom-up approaches are needed for ILAC: "top-down for support and legitimisation and bottom-up to foster individual and group learning and knowledge sharing" (CGIAR 2005). Through ILAC, it is hoped that an organization like the CGIAR can develop a supportive external environment that includes donors and different national-international partners, foster a culture of innovation, reorient management systems, and develop knowledge, skills, and motivation toward institutional change.

However, a major limitation of the ILAC concept is that it is still being developed. This is why it provides only limited examples of its use. This appears to give much importance to evaluation-based learning without operationalising the core values, such as poverty, effectively into practice. The reports of the pilot projects that used the ILAC concept for such evaluation can be cited as good examples of this limitation. The CIAT report on farmer participatory research (FPR) discussed innovations using the concepts of 'learning cycle' (for internal analysis) and 'learning alliance' (for joint analysis) for institutional learning without mentioning poverty reduction as the key objective of the innovation system (CIAT 2004). ICRISAT has used a historical approach to review its learning process as part of an ILAC learning project, called for a greater sensitivity in research design for faster and real-time learning (Prasad et al. 2005). However, it reflects little recognition of the problems with poverty issues. The INIBAP/IPGRI, in a preliminary *ex ante* potential impact study report in Uganda, reflects their concern about 'rural well-being' instead of targeted poverty elimination (INIBAP/IPGRI 2004). These examples of ILAC initiatives push us back to the old experience of lack of poverty focus in agricultural research, whereas, in PETRRA, it is claimed that there has been a clear poverty-focused initiative in its research agenda. The case study on PETRRA in this thesis, therefore, promises a test of PETRRA claims of its performance in institutional learning and change.

However, there is a difference between what PETRRA claims and what ILAC offers in terms of concept and practice. The PETRRA project claims that it has tried to put in place a proactive capacity-building component to facilitate a values-based agricultural research management approach to positively influence the outcome toward the poverty-focused agenda (Van Mele et al. 2005). In ILAC, the focus is to learn from evaluative inquiry, as if the institutional issues that needed to be influenced through research were not known. Therefore, there was no initiative to positively influence that in terms of engaged proactive capacity building. The PETRRA approach has been captured in detail in Chapters IV, V, and VI, which test the three aspects of PETRRA's values-based management approach: i) the effectiveness of the values, ii) the effectiveness of the capacity development approach, and iii) the effectiveness of the overall PETRRA values-based research management approach to deliver and sustain pro-poor impact.

1.5.8. Introducing PETRRA with actors and approaches

An analysis of the effectiveness and replicability of the PETRRA values will be made as a part of this research. Table 1.3 provides a comparative picture of the perceived performance of the PETRRA project compared with projects conducted by major stakeholders in the field of agricultural research, which will need to be tested further in the following chapters. This is presented to give a preliminary

idea about the compatibility and claimed effectiveness of the PETRRA approach. However, this is further tested with additional information in Chapters IV-VI.

Table 1.3. Approaches in agricultural research, by agency

<i>Agency</i>	<i>Poverty</i>	<i>Demand-led</i>	<i>Gender</i>	<i>Participation</i>	<i>Partnership</i>	<i>Linkage and network</i>
IARCs	Indirect	Committed but has limited access	In special studies	Not systematic	At higher level, e.g. NARS	At higher level
NGOs	Direct but not effective in agricultural research	Committed but lack practical experience to implement	Direct but not strong in agricultural research	Systematic	Strong with farmers but weak with research institutes	Not strong in agriculture
Private sector	Not an issue	Respond to market	Not an issue	Contractual	From commercial interest	From commercial interest
ILAC	Theoretically strong	Committed	Theoretically strong	Theoretically strong	Theoretically strong	Theoretically strong
PETRRA	Strongly committed & practiced	Strongly committed & practiced	Strongly committed & achieved much	Strongly committed & achieved much	Strongly committed & achieved a lot	Strongly committed & achieved a lot

Table 1.4 introduces a preliminary assessment of the PETRRA project's overall performance. The personal opinion of this researcher, based on his experience in the project, is used for this analysis, which is further tested through a systematic approach and captured in Chapters IV-VI.

Table 1.4. Stakeholders' early responses to the PETRRA experience

<i>PETRRA stakeholder</i>	<i>Approach</i>	<i>Impact</i>	<i>Learning</i>	<i>Future use potential</i>
DFID	Useful and effective	Evident	Very important	Useful for projects, programmes Useful for similar projects
IRRI	Relatively new but useful	Evident	Very useful	Useful for similar projects
BIRRI	New but effective	Evident	Very useful for those who participated	Useful for similar projects
GoB (MoA)	Enabling	Evident	Complex, workable, and useful	Same forum could be used for wider projects
Other NARI	New but effective	Evident	Very useful	Already gained trust of other donors
NGOs	Compatible and effective	Evident	Useful and effective	Attracting funds, signing MoUs
Private sector	Good exposure	Good but incomplete	Useful but incomplete	Useful link to NARES
Resource-poor farmers	Very effective, refreshing	Evident	Useful and effective but needs scaling up	Very effective but needs to be sustained

Not all projects are successful. However, PETRRA is claimed to be a successful project in terms of meeting the project objectives (Risner et al. 2004). It is now important to explore 'reasons for success' where that occurred, so that 'reasons for hope' can be assumed and anticipated in future endeavours

(Krishna and Bunch 1998; Uphoff et al. 1998). It will also be important to analyse the context and circumstances under which the project has been successful (Lipton 1998) and where it was not. As an IRRI project, this research will also address the challenges that IRRI has as a learning organization to meet the MDGs (IRRI 2006). The outcome of this project could also provide DFID, the donor agency, with policy guidance to improve its agricultural strategies (DFID 2006) further and also to influence the CGIAR. For NGOs, especially in Bangladesh and in similar socioeconomic conditions elsewhere in the world, it could offer food for thought as to whether they can make appropriate adjustments to their existing agriculture programmes to make them more effective, values-oriented and pro-poor. The PETRRA project management approach can be, once tested, considered as a global public good, which was innovated in Bangladesh and may well be used globally (World Bank 2004: 57).

1.6. The research questions

The research questions were designed to elicit evidence that would help fill the gap in the literature that was discussed earlier in this chapter. The literature shows that most national-international agricultural research and development systems lack appropriate approaches and attention to engage with poor farmers. This results in slow and ineffective performance in their contribution to poverty elimination. What is being explored in this research is whether a values-based approach is more successful in engaging with poor farmers. The statement of the hypothesis of the research in this thesis is as follows:

Poverty elimination through agricultural research and development can be more effectively addressed if a values-based approach is applied; through a competitive process, existing organizations can be more effectively engaged towards pro-poor agricultural research management by orienting them with appropriate sets of values: poverty-focused, demand-led, gender-balanced, innovative partnership-network-linkage and supported by an effective communication and capacity building guided by the principles of facilitation.

Three major research questions were raised to guide the investigation process of the research. These three questions again were linked with the chapter structure of the thesis and the methods and sources of information used for the investigation. Table 3.2 below presents research questions and their links with chapter structures and the methods and sources of information used in this research.

Table 1.5. Research questions, chapters, and methods at a glance

Main research question	Main chapter heading	Source/method
Why is focusing on poverty in agricultural research that is carried out by national-international systems so difficult?	Chapter_I_Is this journey necessary?	Argument-based exploratory studies through literature review
How was the PETRRA project designed to fit into its context (to address poverty)?	Chapter_II_The PETRRA context	Primary documents from PETRRA project
	Chapter_III_The concept and method of capturing learning	Literature and analysis of the research process
What was the PETRRA learning and in what ways can that learning contribute to an approach that strengthens the poverty focus in the agricultural research system?	Chapter_IV_PETRRA values in practice: the early evidence of impact	Interviews and analysis of interviews with PETRRA partners
	Chapter_V_Facilitating capacity for pro-poor impact	Interviews and analysis of interviews with PETRRA partners
	Chapter_VI_Impact and sustainability of PETRRA interventions	Interviews and analysis of interviews with PETRRA partners
	Chapter_VII_Wide open future	Analysis of contents of all previous chapters

1.7. Thesis outline

This chapter aims to set the agenda of the research. It tries to explore the potential scope of the research by identifying gaps in the system with regard to values-based research and the use of a development management approach. It introduces PETRRA as a case study for the research. Chapter II presents the context of the PETRRA project for discussion and reflects on its main agenda, which were set in project documents, and indicated early outcomes. Chapter III discusses the methods used in the thesis to capture the learning of the project. Chapter IV on PETRRA values in practice presents the experience of interaction among PETRRA partners and assesses the validity of the claims of the PETRRA project about the importance and effectiveness of using these jointly developed values. It systematically reflects on the project activities, tests early results (both successes and failures), and analyses them from the context of the partners' individual and organizational positions while exploring learning issues for future use. This analysis is likely to have important policy lessons for IRRRI in particular and for other international research institutes under the CGIAR in general. Chapter V reflects on the type of capacity development efforts that the PETRRA project was engaged in and how its partners interacted to ensure overall facilitation and deliver results. This also captures the organizational learning that took place. Chapter VI discusses and captures the major impact and

sustainability aspects of the PETRRA outcomes as a result of being engaged in a values-based research and development process. This includes the sustainability aspects of the impact in the bigger picture of organization and institution. Chapter VII presents the overall learning issues and conclusions.

Chapter II

2. The PETRRA Context

2.1. Introduction

Poverty Elimination through Rice Research Assistance (PETRRA) was a research project implemented in Bangladesh from April 1999 to August 2004. This 5-year research project with a budget of 9.5 million was funded by the Department for International Development (DFID), UK, and managed by the International Rice Research Institute (IRRI) and the Government of Bangladesh (GoB) in close partnership with the Bangladesh Rice Research Institute (BRRI). The project aimed to enhance the livelihood security of poor farmers by increasing production and productivity of rice-based farming.

This chapter provides the context of the project by discussing the PETRRA project background, objectives, approach, management, and research commissioning. While presenting the context, the chapter explores the building blocks, principles, and values that evolved over the 5 years of project implementation. These became synonymous with the nature of PETRRA. The context is the outcome of the conceptual contribution of all stakeholders: the project team, the donor, the review missions, the PETRRA Technical Committee (TEC), the Project Steering Committee (PSC), partners of the project (including BRRI and IRRI scientists and management, nongovernment organizations, and the private sector), consultants, the direct beneficiaries (men and women farmers), the Ministry of Agriculture (MoA), including the ministers, secretaries, and the media. The fact is that PETRRA was a process project (Bond and David 1999). As such, ideas evolved over time and did not have a specific source; these were put forward by concerned stakeholders and were assessed in terms of the desired outcome of creating a positive impact on the poverty status of small and marginal farmers.

2.1.1. Who initiated

PETRRA was developed through a series of discussions, communications, negotiations, and interactions among the stakeholders in the field of agricultural research in Bangladesh: the GoB through its MoA, IRRI, BRRI, the Bangladesh Agricultural Research Council (BARC), the Department of Agricultural Extension (DAE), several NGOs (BRAC and Proshika), and a few donors (DFID 1999).

2.1.2. Background

One major reason for donors to invest in agriculture in a country like Bangladesh is that such an investment provides a good return. Another reason to support the sector is that “agricultural growth in Bangladesh is more poverty-reducing than an equivalent non-agricultural growth because it increases inequality by less” (DFIDB 1999:11).

The project was developed on a solid foundation of past collaboration between leading national and international institutes and donors in the field of rice research. The idea originated in an international seminar held in Bangladesh by BIRRI where national and international experts talked about food production and the food security situation and explored the need for greater collaboration between BIRRI and IRRI (IRRI 1997). The seminar stressed the need for continued collaboration between the institutes, policy support by the government, and donor assistance to support research, extension, and capacity development. The near self-sufficiency in foodgrain production in Bangladesh by 2000 was evidence of the success of a long-term partnership in rice research between BIRRI and IRRI, supported by a range of donors.

There has been a collaborative research and capacity-building program between IRRI and BIRRI since the independence [of Bangladesh in 1971] until 1994, mainly funded by Rockefeller, USAID, and CIDA. The infrastructure at BIRRI has been developed, the staff trained, and 35 MVs suited to different agroecological conditions in the country released. This project will build on this experience but with the emphasis on accelerating the outputs of demand-led research (DFIDB 1999:6).

This long-term productive relationship between IRRI and BIRRI [institutionalized through an MoU] has ensured that much of the relevant knowledge base of IRRI has been transferred to BIRRI. This provides a useful framework for ongoing collaboration in partnership through PETRRA (DFIDB 1999 Institutional Annex 5:6).

The solid foundation of the partnership between IRRI and BIRRI, both of whom desired to address poverty issues through rice research assistance, provided a working environment that was significant in the success of PETRRA.

The PETRRA project fitted well into the context of the Fifth Five-Year Plan of the GoB (1998–2003), which linked the need for agricultural research to provide technology that is essential to meet future food demand. It was mentioned that the project supported DFID’s policy objectives on poverty elimination as an integrated poverty project. The policy objectives included “sustainable livelihoods, environmental management, equality between women and men, and enhancing productive capacity and research” (DFIDB 1999:7).

DFID Bangladesh was then looking for an opportunity to provide comprehensive support, rather than funding a large number of smaller research projects, to strengthen agricultural research in Bangladesh.

They were also willing to provide financial support that would complement ongoing efforts in agricultural research, which were started by a like-minded donor, the World Bank, through its Agricultural Research Management Project²⁴ (ARMP).

In recent years, IRRI and its Bangladeshi partners have asked DFID to support several smaller research projects. This project is a more appropriate alternative to such ad hoc support. It will complement the WB Agricultural Research Management Project (ARMP, 1996–2001), which aims to strengthen the overall capacity of the research system in Bangladesh (DFIDB 1999:6).

The types of smaller projects DFID was asked to support were not clearly mentioned in the document. It was also not clear who had proposed them. The ARMP project was meant 'to strengthen the overall capacity of the research system in Bangladesh' (DFIDB 1999). It did not provide detailed information about the nature of the ARMP project that the PETRRA project was expected to complement.

The major stakeholders - DFID, IRRI, BRRI, and MoA - had different interpretations of their objectives and why they wanted a project like PETRRA and toward what they wanted PETRRA to work. The following paragraphs capture some of these explicit and implicit indications from different documents produced before and after the commissioning of the PETRRA project.

DFID: DFID, through a successful implementation of PETRRA, wanted to develop 'a model for other bilateral initiatives' as they thought that the project was based on 'a new concept' aimed toward needs-based research as opposed to an agenda determined by the scientists (DFID 1998). They also thought that the project would complement the then ongoing ARMP project, which mainly contributed to capacity building of agricultural scientists in public agricultural research institutes and to achieving efficiency of the research system. DFID expected the project to contribute to technology and capacity development, to enhance the rice production policy environment, to improve rice extension programmes, and to better understand rice issues from the perspectives of poor producers and consumers (DFID 1997). The Politics of Aid for DFID at that stage appeared to be very simple: if the PETRRA project were successful in innovating positive experience, it could be used to expand the program across the sector and beyond rice research.

IRRI: IRRI had collaborative research activities with BRRI that they expected to be strengthened through the PETRRA project. IRRI showed its commitment toward contributing to strategic research to develop technologies relevant to Bangladesh. This will enable the country to address the needs of their small rice farmers so that they remain competitive within the regime of

²⁴ The ARMP project was financed by the World Bank and managed by the Bangladesh Agricultural Research Council (BARC). The main objective of the project was to increase the efficiency of the national agricultural research system (NARS) for better delivery of research and extension, development of technical capacity of the agricultural scientists of government research institutes and universities. BARC (2008, October 28, 2008). "ARMP - Agricultural Research Management Project." Retrieved 16 July, 2009, from <http://www.barc.gov.bd/index.html>.

globalization of agriculture that resulted from the Uruguay Round of GATT. IRRI expected to be able to address the challenge by harnessing the potential of the people and institutions (IRRI 1997). IRRI also had given the project a very high priority 'as they want to ensure that it is a success and seen as a model for other countries' (DFID 1999). Despite all good intentions, IRRI maintained its technology-first agenda; in the very beginning, it wanted the project to start with three major areas of research: pest management, salinity, and hybrid rice (IRRI 1999).

BRRRI: BRRRI found this as an opportunity to build the capacity of its scientists and to be a source of funding for research. As major donors (such as USAID and CIDA) had ceased to support such activities since 1994, it was stressed that BRRRI must reestablish its links with IRRI through the proposed project. It was hoped that, through such a programme, BRRRI would be able to avert a major food insecurity situation and prevent the country from becoming a major food importer. There were small projects supported by donors such as JICA, A CIAR, A DB, and FAO, but these were not considered major investments in the field of rice research (DFID 1997).

MoA: PETRRA was a potential agricultural research funding source for GoB to fulfill its mission of national-level food self-sufficiency. At that time, the MoA was seriously seeking a breakthrough in the IRRI-BRRRI research relationship to make the country self-sufficient. In the opening session of the IRRI-Bangladesh workshop, which laid the foundation of PETRRA, the then minister especially stressed the need for increased productivity of small and marginal farmers. She also emphasised the need to close the yield gap between demonstration plots and farmers' fields.

Rice was selected as the entry point of the project and involved stakeholders that dealt with rice issues. The significance of rice in the economy and livelihoods of the Bangladeshi people, as in many other rice-growing countries in Asia, was recognized.

Rice dominates the [Bangladesh] economy. It contributes nearly 20% of GDP, occupies 75% of cropped land, accounts for nearly 50% of employment, and 75% of calories consumed in the country; the rural and urban poor spend up to 60% of their income on it (DFIDB 1999:5).

The overwhelming relevance of rice in Bangladesh easily explains the importance of the partnership between IRRI and BRRRI as implementers and principal partners of the PETRRA project.

The project memorandum noted that the partnerships between BRRRI and other concerned institutes and organizations in Bangladesh were in need of strengthening. It expressed the hope that PETRRA might provide a framework conducive to implementing strongly integrated, demand-led, and collaborative research projects. Through PETRRA, DFID also hoped to build linkages and synergies to similar projects and thereby achieve greater impact. The projects that were mentioned were A SSP

(later called ASIRP)²⁵ supported jointly by DFID and World Bank, Interfish, NGO poverty alleviation projects (e.g., Proshika and BRAC), and research projects funded under ESCOR²⁶ and RNRRS²⁷ of DFID (DFID-B 1999:8). From experience, it was acknowledged that partnerships between agencies, such as universities, NGOs and other international institutes, are critical in the delivery of quality research. PETRRA needed to encourage partnerships in research. This was especially emphasised in terms of project cost effectiveness (DFIDB 1999:12).

The project document also foresaw the need for continued capacity building of the partners and stakeholders in order to achieve the project purpose²⁸. The capacity need was especially felt to enhance the demand-led research ability of the partners (DFIDB 1999:8).

Two other areas that were not sufficiently addressed in Bangladesh's agricultural research system were policy research and research on improved uptake methods and pathways for dissemination to resource-poor farmers. The project memorandum recognised that without proper attention to either of these, the delivery of demand-led research would be incomplete (DFIDB 1999:9). Already, we see the uniqueness and growing complexity of PETRRA as a project; there was the development and validation of new and improved technology, research on improved uptake methods and pathways for delivery of technology to farmers, and policy research. Each component was expected to contribute to a pro-poor research and development environment. A question that arises here relates to the choice of institutions to lead the project. IRRI and BIRRI are two relatively traditional rice research institutes and the PETRRA project emerged as a complex challenge that involved a broad gamut of institutions engaged in agricultural research and development in Bangladesh. Was this an appropriate choice?

This chapter aims to highlight the original objectives of the project and the evolution and modifications that occurred during the life of the project. This will be done by looking at key policy documents developed between 1999 and 2004. These include documents produced by the independent review missions of PETRRA and working papers and concept papers produced by the project team. The personal observations of the researcher will also be included.

2.2. Project Objectives

The objective of the project was very clearly reflected in the title of the project. 'Poverty' and 'elimination' are the key words in the title. Rice was used as the entry point, and increasing production

²⁵ Agricultural Support Service Project (ASSP); Agricultural Services Innovations and Reform Project (ASIRP)

²⁶ Economic and Social Research Program (ESCOR)

²⁷ Renewable Natural Resource Research Strategy (RNRRS)

²⁸ Discussed in the following section

and productivity of rice through research was used as the strategy for poverty elimination. Rural poor people, as consumers of rice, would always be looking for inexpensive rice. But, for poor rice farmers, there is a large dilemma: they are producers as well as consumers. They would need to get a good price for their produce when they are in the market to sell and they require a cheap price for rice when they are buyers. However, the project, at the outset, was committed to strike a balance between the two. It aimed at both increasing production and keeping the price affordable for the poor by reducing the cost of production from improved technologies.

The livelihoods of both poor consumers and poor producers can be protected through further technological progress to raise yields; increase efficiency in the use of scarce natural resources and material inputs; reduce unit costs of production; and maintain farm profits, even at lower prices. The PETRRA project will make a significant contribution to this goal (DFIDB 1999 Institutional Annex 5:2).

This appeared to be a good project's strategy to achieve the project goal, targeting technological progress to increase yield and coming up with cost-saving technologies to help producers get enough profit and keep the rice price low and affordable. The project avoided the path of targeting production; instead, it targeted poor farmers, not the large producers. "PETRRA starts with people [resource-poor farm households], not technology" (Orr and Magor 2007a).

2.2.1. The Goal, Super Goal, and Purpose

The goal of the project was to increase production of rice and income (to be increased substantially by 2008) such that it contributed towards the Millennium Development Goal (MDG) of a 50 percent reduction of poverty by the year 2015. The goal and super goal statements of the project linked the purpose statement of production and productivity with the MDG objective of reducing poverty by 50 percent by 2015.

PETRRA's purpose is the sustainable and equitable enhancement of the productive potential of rice-based farming systems. This supports the goal of substantially increasing rice production and incomes by 2008 and the super goal of a 50% reduction in rural and urban poverty by 2015 (DFIDB 1999:5).

A target was set to increase rice yield by 50 percent as a strategy to achieve the goal. Improved research had been identified as the strategy to provide the information and knowledge required in raising productivity.

In the beginning of the project, the purpose statement was:

Productive potential of rice based farming systems for improved livelihoods, especially of resource poor farmers enhanced (DFIDB 1999).

This remained in place until the second review mission²⁹. The second review mission changed the statement to:

Productivity of the rice based farming systems for resource poor farmers (RPRFs) sustainably increased (DFIDB 2001).

The project itself developed a clearer version of the purpose statement in year four, with three different substatements to capture and reflect the actual issues it was trying to address. The three-dimensional purpose statement was:

Productivity of the rice based farming systems for resource poor farmers (RPRFs) sustainably increased;
Government and non-government extension services have made use of research findings from PETRRA sub-projects;
Other important research funding bodies in Bangladesh have adopted key elements of a pro-poor demand-led competitive rice research system as used by PETRRA (Quin et al. 2003);

This approach of having three different substatements is usually not accepted in conventional forms of logical frameworks. However, the donor was flexible enough to accept this deviation from tradition.

There was an ongoing debate about the statements of goal and purpose to maintain the coherence of the logical framework of the project³⁰. Production and productivity were not even mentioned so directly in the original formulation of the purpose statement of the logical framework; the objective was to enhance the productive potential, not production per se. The debate did not, however, affect the progress of the project much. The logical framework was adjusted to be compatible with and relevant to the evolution of the project. That evolution was guided by being pro-poor and demand-led. The limitations of the logical framework were not a hindrance to the generation of innovations and ideas by the project. The first three annual review missions attempted to make the logical framework representative of the project, but it was always with a view of 'more discussion needed.' The final version of the logical framework was drafted by the PMU and was apparently agreed upon by the donor in the beginning of year four³¹. The donor was flexible enough to accept and accommodate this process. The environment allowed by the donor helped PETRRA to develop itself as a 'process project' (Bond and David 1999). The later chapters (IV, V & VI) discuss in detail the advantages and disadvantages of such flexibility.

²⁹ PETRRA used to have annual reviews conducted by consultants hired and led by DFID; these involved DFID, PMU, IRRI, BRRI, PETRRA TEC members, and partners.

³⁰ For each annual review, there was a Monitoring and Evaluation consultant. The PETRRA logical framework was reviewed by each mission. There were discussions on the consistency of the logical framework from output to purpose level. Also, there was an effort made to adjust the logical framework to reflect the dynamic learning environment of PETRRA in terms of its influencing the original logical framework. The final threefold purpose statement reflects a production, a partner use of outputs, and an impact of research funding models rather than simply a technology impact purpose.

³¹ There is no evidence that DFID formally approved or rejected the final logical framework. This status of the logical framework is unusual. The practice was that higher level objectives like the purpose-level statement required approval in DFID London. However, it could be said that the new purpose-level statements actually placed more demands on the project. In that sense, it could be said that the project outperformed its initial objective.

2.2.2. The Outputs

The output is the next logical level down in the hierarchy of a logical framework. If each output is achieved to the level agreed upon and if the assumptions are met, then the purpose-level objective is achieved. The PETRRA logical framework began with five outputs but ended with six. In year four, a new output on communication was added and the one on a pro-poor model of research was substantially revised. Four output statements remained unchanged throughout the project, except for the sharpening of the wording to be more specific. The order of the outputs was also consistent until year four, when there was a shift. The outputs can be labeled as i) technology, ii) capacity, iii) policy, iv) uptake, v) communication, and vi) pro-poor model. Table 2.1 shows the details.

Changes in the sharpening of the objectives at the output level reflect the response to the overall objective of 'the elimination of poverty.' For example, the development of rice production technologies for resource-poor farmers had been an output all along. The inclusion of the specific words 'farm households' and 'identification of appropriate technologies' that were added during the first annual output-to-purpose review may be seen as a recognition of the household and the inclusion of an identification process that included resource-poor farmers. During the second annual output-to-purpose review, a further point was included, namely, 'testing the technology together with the resource-poor farmers'. Finally, in the fourth annual output-to-purpose review, the wording was made even more specific to reflect the achievements of the 'subprojects and the project management unit'.

The focus on subproject partners, which was reflected in shifts in wording, is also reflected in the policy output with reference to 'PETRRA policy research partners' and in the uptake method output with reference to 'PETRRA subproject partners and PMU.' This recognised that the measurement of the achievement of the output would be reflected in the achievement of the specific subprojects. In addition, the PETRRA PMU was expected to contribute to the uptake output through its activity in establishing the Bangladesh Rice Knowledge Bank and the north-west Focal Area Forum.

It is interesting to note the shift in wording of the output on research management systems of PETRRA. Initially, the wording simply reflected the establishment of the BRRI-IRRI project management unit. The wording for this output was changed at the second annual output-to-purpose review to read 'Pilot model of an effective competitive rice research management scheme established and effectively managed by PMU'. This represented a substantial shift. The wording was further adjusted in the fourth output-to-purpose review to reflect 'pro-poor.' This does reflect a substantial evolution from delivery of technology, recommendations on improved uptake methods and pro-poor policy recommendations to piloting a whole approach to research commissioning and managing that was pro-poor. The fourth

output-to-purpose review coined the phrase 'Competitive Grant System: Value-based Research (CGS-VBR)'. The concept of a 'value-based research' process was recognised late in the life of the project with its recognition being an outcome of the action-reflection processes employed throughout the project (Quin et al. 2003).

Table 2.1.Changes in output statements of the logical framework of PETRRA over successive output-to-purpose reviews (OPR).

Output order	Original statement	OPR Year 1	OPR Year 2	Mid-term Review	OPR Year 4 ³²
1/2	Improved rice production technologies appropriate to resource-poor developed	Improved rice production technologies appropriate to resource-poor farm households identified or developed	Improved rice production technologies appropriate to RPRPFs identified or developed and tested in collaboration with farmers	Improved rice production technologies appropriate to RPRPFs identified or developed and tested in collaboration with farmers	Improved rice production technologies appropriate to RPRPFs identified or developed and tested in collaboration with the PETRRA subproject partners and Project Management Unit
2/3	Capacity of rice research system to undertake demand-led research sustainably enhanced	Capacity of rice research system to undertake demand-led research sustainably enhanced	Capacity of rice research system to undertake demand-led research sustainably enhanced	Capacity of research partners to undertake value-based, demand-led research sustainably enhanced	Capacity of rice research system to undertake demand-led research sustainably enhanced
3/4	Policy constraints to enhanced rice production identified and recommendations for improvements made	Key policy constraints to enhanced rice-dependent livelihood production identified and recommendations presented and discussed in key policy forums	Key policy constraints to improved rice-dependent livelihoods identified and recommendations presented in key policy forums	Key policy constraints to improved rice-dependent livelihoods identified and recommendations presented in key policy forums	Key policy constraints to improved rice-dependent livelihoods identified and recommendations presented in key policy forums by PETRRA policy research partners
4/5	In collaboration with the extension services, constraints to effective uptake of rice technologies identified, improved approaches pilot-tested, and recommendations for improvements in uptake pathways made	Improved methods for effective uptake of technologies for rice systems identified, pilot-tested, and recommendations for improvements in uptake pathways made	Improved methods for effective uptake of technologies identified, pilot-tested, and recommendations for improved uptake pathways made	Improved methods for effective uptake of technologies identified, pilot-tested, and recommendations for improved uptake pathways made	Improved methods for effective uptake of technologies identified, pilot-tested, and recommendations for improved uptake pathways made by PETRRA's subproject partners and Project Management Unit
5/6	BRRI-IRRI Project Management Unit (PMU) established and operational	BRRI-IRRI Project Management Unit established and operational	Pilot model of an effective competitive rice research management scheme established and effectively managed by PMU	Pilot model of an effective competitive rice research management scheme established and effectively managed by PMU	A pilot model of an effective pro-poor competitive rice research management scheme has been established and effectively managed by PMU
6/1					PETRRA management practices and research findings effectively communicated to relevant organizations and persons involved in agricultural research and extension, and policy makers

³² There was no change after OPR 4.

In year four, a new output on communication was added: 'communication of PETRRA management practices and project innovations to persons and organizations involved in agricultural research and extension and policymaking.' Communication evolved as an important output over the period of 3 years. In year four, it was added in the logical framework. The concept of communication in PETRRA emerged as a major strategy for consolidating the project outcomes to ensure greater impact.

None of the parties (PMU, donors, and reviewers) concerned was ever completely happy with the formulations of the statements of the objectives (super goal, goal, purpose, and outputs) and their vertical and horizontal links and logics. This situation reflected the complexity and dynamic nature of the project. This was recognised as positive. It was also recognised that the persons closely working in and for the project [≠]i.e., the project stakeholders (PMU, PSC, TEC, subproject partners, BRRI, IRRI, DFID) [≠]were in a far better position to update and adjust the statements from time to time to reflect the continuous learning of the project, rather than a process led by persons from outside such as consultants reviewing the project.

The dynamic nature of the PETRRA project did present an interesting problem [≠]how to ensure that an M&E system keeps up with a dynamic, evolving project, frequently adding activities and forming new partnerships. One (but not the only) way may be periodic logframe reviews and revisions, based on the experiences and reflections of project stakeholders rather than consultant tinkering (DFIDB 2002). This seems to be an ideal statement. This could have been followed in an ideal environment where all stakeholders concerned are taking equal interest in the project, its progress, and implementation. In this case, the interest about the project and desired direction of progress were the concerns of the PMU team and the donor but this was not an issue for the other stakeholders. It was partly because, for many of the stakeholders (including IRRI researchers), there was no experience with the use of the logical framework approach in project management.

The objectives that emerged and evolved over time and that were incorporated as part of the logical framework have been mentioned. However, there were other objectives and targets that evolved over the 5-year period during the course of the reviews and discussions, which were advocated and formulated during the project implementation phase and which were indicated in different documents. The major ones are discussed below (Salahuddin et al. 2008a).

2.2.3. Cross-cutting issues, the values

Beyond the outputs, there were several important concepts that became cross-cutting. The cross-cutting issues were poverty focus, demand-led research, participation, partnership, gender, linkage and network, and competition in research management. Later, in the discussions, these cross-cutting issues formed the PETRRA values. Table 2.2 explores the link to the PETRRA outputs in practical terms.

Table 2.2.: PETRRA outputs and linkages with the values

Value	Technology	Communication	Uptake	Capacity	Policy	Pro-poor model
<i>Output statements</i>	<i>Improved rice production technologies appropriate to RPRPFs identified or developed and tested in collaboration with the same by PETRRA sub-project partners and Project Management Unit</i>	<i>PETRRA management practices and research findings effectively communicated to relevant organizations and persons involved in agricultural research and extension, and policymakers</i>	<i>Improved methods for effective uptake of technologies identified, pilot-tested, and recommendations for improved uptake pathways made by PETRRA's subproject partners and Project Management Unit</i>	<i>Capacity of rice research system to undertake demand-led research sustainably enhanced</i>	<i>Key policy constraints to improved rice-dependent livelihoods identified and recommendations presented in key policy forums by PETRRA policy-research partners</i>	<i>A pilot model of an effective pro-poor competitive rice research management scheme has been established and managed effectively by PMU</i>
Poverty focus	Selection of appropriate clients to work with, i.e. poor farming households	Ensure that poverty remains the main focus of all communication activities, regardless of whether materials are targeted at farmers, extension workers, scientists or policymakers	Develop innovative and appropriate pro-poor uptake methods that may or may not be different from those for the non-poor	Train/orient researchers on different ways and means of poverty-focused research	Ensure that poverty issues are central to any policy research agenda	Ensure that poverty focus remain the key value
Demand-led	Research priorities based on needs of the clients and not decided unilaterally by the researchers	Guarantee and monitor demands for materials from all levels; sometimes may need to create demand for tested materials	Identify gaps in the system and identify appropriate uptake methods; farmers' demand should be at the centre of the analysis, which needs to be compatible with the interests of the partners concerned	Train/orient researchers on different approaches and techniques to identify poor (men and women) farmers' demands	Identify policy researchable issues with poor men and women farmers; avoid a top-down agenda	Monitor and adjust the model's relevance to ensure that it remains demand-led
Gender	Work with both male and female members of households	While developing, testing, and disseminating communication materials (e.g. leaflets, posters, video, fact sheets), engagement with both men and women is considered; sometimes specific attention and	Ensure that uptake methods for technology dissemination take into account the interests of both men and women. Where the target is the household, both men and women should be involved separately if that appears	Train/orient researchers on different approaches and dimensions of gender-balanced research	Identify context of both men and women in policy research and formulate recommendations for both men and women	Ensure that gender awareness is a strong component in the model

Value	Technology	Communication	Uptake	Capacity	Policy	Pro-poor model
		tools are needed for women	more appropriate			
Participation	Ensure participation of poor men and women farmers in all stages of the project cycle	While developing, testing, and disseminating communication materials, participation of both men and women is ensured in all stages	Involve farmers (men and women) and stakeholders in all levels of the research-development process	Train/orient researchers on different approaches and techniques of participatory research in all stages of research	Involve in research the people who are affected by policy issues; concerned stakeholders should be involved during research and policy dialogues	Ensure that participation becomes the culture of the model
Partnership	Ensure proper partnership that can effectively help develop, disseminate, and sustain the technology	Ensure that appropriate partnership is formed at all levels for developing, testing, and disseminating communication materials; ensure that resource-poor farmers and material developers become partners	Establish strategic partnership based on comparative advantage to ensure development of, research on, and sustainability of uptake methods	Train/orient researchers on approaches and advantages of partnership for conducting demand-led participatory research	Involve all stakeholder levels (farmer, field worker, <i>upazila</i> /district and national) in policy research, as national-level stakeholders are not able to represent all	Ensure that the model finds its strength in partnerships
Linkage and network	Establish linkage and network during the project and thereafter, to help eliminate structural and institutional barriers to technology adoption	Ensure that partnerships are not lost once the project ends, with ability to expand the social capital for potential future investments	Design a sustainable linkage and network as part of the research on uptake methods; which should not be threatened to be discontinued immediately after a project ends	Train/orient researchers on approaches and inform them about the advantages of linkage and network to sustain the technology among its users	Establish linkage and network for continued followup and policy dialogue for sustainability	Ensure that the model always advocates linkages and networks to strengthen and sustain the model itself
Competitiveness	Commission most research on a competitive basis to identify competent suppliers; create a level playing field through open bidding	Select partners for development and dissemination on a competitive basis	Gather ideas from different suppliers of research through competition; uptake-method research requires a series of facilitated discussions to develop and articulate research outlines	Train/orient researchers to equip them to participate in a competitive bidding system and be successful	Conduct policy research on a competitive basis with NGOs, community-based organizations, local government, private sector, media and whoever is working with or for resource-poor farmers	Ensure that the model is developed, tested, and sustained through a competitive process and is exposed to competition

Source: table adapted from (Salahuddin et al. 2008a: 623-625)

Cross-cutting issues as values were conceptualised over time, identified, developed, and defined from the PETRRA perspective. They were articulated by the Project Management Unit in a systematic manner over a period of 5 years (the lifetime of the project). Table 2.3 describes and captures the development process.

Table 2.3. Evolution of cross-cutting issues over time within PETRRA

Value	Year 1	Year 2	Year 3	Year 4	Year 5
Poverty focus	Partners were not aware of it	Agreed but most were not aware of the rationale and approach	Started practicing well-being analysis	Revised the portfolio of clients	Most clients were resource poor
Demand-led	Subprojects defined demands	Subprojects referred to demands expressed from the stakeholder analysis done by PMU	Subprojects conducted extended analysis to sharpen the demands of the resource-poor farmers	Integrated resource-poor farmers' demands into the project management cycle	Partners recognised demand as the basis for responsive research
Gender	Partners were confused about the importance	Agreed to be more inclusive of women; gave some training on postharvest issues	Agreed to train women in, and discuss with them, all aspects of farming (not just postharvest)	Appreciated the importance of women in all aspects of farming	Appreciated the concept of family approach and women accessing all aspects of knowledge
Participation	Partners were aware, but did not practice and often resisted	Agreed to take training	Started using the approach	Started to appreciate the importance	Accepted participatory approach as a guiding principle
Partnership	Partners uncommon	Reluctantly accepted the idea of forming partnerships	Started to realise the advantage	Started to appreciate the importance	Agreed to sustain the relationship for future collaboration
Linkage and network	Partners hardly had any linkage among GO-NGO or GO-PS or NGO-R&D institutes	Government policy and project facilitated the relationship	Started appreciating the advantages	Appreciated the importance for sustainability of innovations and impact	Most have recognised the advantage and a few have institutionalised the relationship and signed MoU between organizations
Communication	Partners had limited interaction with farmers; scientific papers were the only targets	Farmers asked for materials	Partners participated in communication fairs and contributed to newsletters	Started to appreciate materials for farmers and secondary stakeholders	All subprojects produced a set of materials for farmers and shared the pride

Source: Adapted from (Salahuddin et al. 2008a:622)

2.3. Project approach

2.3.1. Strategies

PETRRRA developed a number of project strategy documents as suggested by the inception review and the first OPR teams. The suggested documents were 1) research strategy, 2) gender strategy,³³ 3) environmental strategy,³⁴ 4) poverty and livelihood strategy, and 5) policy research strategy (DFIDB 2000:23; DFIDB 2001). The poverty and livelihood strategies were not prepared separately; the project strategy document covered issues relating to poverty and livelihoods (Orr and Magor 2007a). All these strategy documents were available to researchers who are preparing concept notes. These documents were used as references throughout the project implementation phase. The value of preparing these materials early in the project proved critical as they provided the project a solid conceptual foundation.

2.3.2. Defining a target client group

Interestingly, there was no specific mention of a target group in the project memorandum, although it did mention the poor as the ultimate target. Focus was on the poor as consumers and indirect beneficiaries of technology transfer but not as a potential target group for production. It was expected that improved technology would ensure employment and improved production and would supply cheap food for the poor. The first OPR raised this issue for further discussion.

The selection of defined client groups will require careful thought. There are two choices before the project: (a) focus on the poor as producers, or (b) focus on the poor as consumers or wage labourers. The latter approach is likely to involve working with medium and larger scale rice producers, as they (probably) make the greater contribution to rice suppliers (which are purchased and consumed by poor people), and are the largest employers of wage labour. The former approach will require targeting of research resources towards meeting the needs of farmers who are below or just above the poverty line (DFIDB 2000a:6).

The PETRRRA strategy document provided the definition of PETRRRA target groups and indicated the rationale for selecting them. The whole argument was based on the statement “PETRRRA starts with people, not technology.” This statement provided a strong argument in favour of targeting resource-poor farmers as the potential group on both equity and economic grounds. PETRRRA’s target group was defined as “households with 3 to 8 months’ net household food security from own rice production and where more than half of the household income is derived from own farm production” (Orr and Magor 2007a:6). These households represent the moderately poor and tomorrow’s poor. These groups lack

³³ Paris, T. (2007). Gender Strategy. *PETRRRA - an experiment in pro-poor agricultural research*. N. P. Magor, A. Salahuddin, M. Haque, T. K. Biswas and M. Bannerman. Dhaka (Bangladesh), Poverty Elimination Through Rice Research Assistance Project, International Rice Research Institute. 2.5: 18.

³⁴ Bell, M. A. Ibid. Environmental Management Strategy. 2.4: 4.

technology, operate³⁵ land, and have labour and entrepreneurial quality. The extremely poor were considered the indirect beneficiaries of the project who would benefit both from the cheap price of rice and increased employment (Orr and Magor 2007a).

2.3.3. Demand-led and participatory research

The project aimed to build on the relationship developed through long-term collaboration among the international centres and funding bodies and emphasised one additional dimension, commitment to demand-led research, which was not a prominent in the research collaboration in the past (DFIDB 1999:6). Previously, achieving food security at the national level was the objective of most agricultural research collaborations. This may have been the case on the grounds that Bangladesh did not attain near self-sufficiency in cereal production until the nineties.

Demand-led participatory research was an important principle of the project. The target was to make sure that poor farmers, men and women, actively participated in all stages of the research process. This was planned to ensure that the research was need-based and demand-led.

The project will adopt a participatory approach and farmers, women and men, will be involved at all stages of technology development to ensure that the technology is needs based. Research projects will be appraised for their potential impacts on poverty and gender, and wherever feasible resource poor women and men farmers will be involved in all stages of the research to ensure that it is demand-led (DFIDB 1999:12).

By introducing the word 'wherever' it was recognised that it would not be possible to involve resource-poor men and women farmers in all stages for all kinds of research. But, in fact, it gradually became clear that involvement of resource-poor men and women farmers is possible in all kinds of research and at all stages of the research process, except for the part that needs to be done exclusively in the laboratory³⁶. But, even there, it was found that the very important part of the research conducted in the laboratory could be explained and shared with the farmers.³⁷

It was also expected that poor farmers, besides their involvement in implementation, would also participate in monitoring and evaluation and impact assessment activities (DFIDB 1999:15). Most of the subprojects tried to implement this with variable success. It varied a lot because of the research teams' differences in facilitating ability and commitment level. This has been discussed in detail in Chapters IV and V.

³⁵ As owner, sharecropper or owner and sharecropper;

³⁶ An example can be given from the salinity-tolerant rice variety development subproject: Participatory Varietal Selection, Participatory Plant Breeding; Hybrid Rice Project: Poor Men & Women Farmers Producing Hybrid Seed; Chapter IV captures detailed discussions;

³⁷ An example was the Seed Health Improvement Project (SHIP) laboratory work. Farmers have visited the laboratory for practical experience and this visit helped develop their understanding of the research.

It was strongly recommended that most of the research should be undertaken at the farm level as opposed to the general practice of Bangladeshi NARS conducting research at the research station. Two different advantages of this recommendation were mentioned. First, it would ensure that the research was need-based and demand-led as farmers would be closely involved in its implementation. Second, this would help disseminate research results quickly to other farmers (DFIDB 1999:7-8).

2.3.4. Research priority setting through stakeholders

Unlike the conventional approach of priority setting by scientists, research managers, and sometimes by political leaders, the PETRRA project aimed to conduct stakeholder analysis nationwide, in the capital, Dhaka, and at different field sites, involving all relevant stakeholders—“resource-poor men and women farmers, research scientists, and social scientists from Bangladesh and IRRI, government officials, and representatives of NGOs and private sector firms” (DFIDB 1999:7). The list of stakeholders who need to be consulted indicates the flexibility in the approach that would identify the research priorities. Some of the pre-project communications between DFID, IRRI, and BIRRI that dealt with researchable issues reflect the traditional approach of deciding from the top. A start-up consultancy, commissioned with good intention to expedite the research commissioning process, came out with a list of researchable issues that did not include the farmers' views. In the beginning, there was some compromise with respect to the selection of the research agenda from the point of view of 'national interest'- e.g., to start 'a national hybrid rice research project' (DDGR 1999; IRRI 1999; Lenne and Chowdhury 1999; IRRI 1999a).

Despite these limitations, there was a continuous creative pressure to explore better ways of conducting stakeholder analysis to be able to make effective links between demand and research priorities (Orr et al. 2007). The challenge was to respond to demands that were directly coming from the concerned stakeholders. There was a suggestion to overcome the distortion and gap between farmer demand and commissioning of research. This was a concern because of the fact that, in some cases, stakeholder analysis was done in one community but research was conducted in another. The essence of demand was lost in generalisations and sometimes colored with technical bias (DFIDB 2002:7). A second-generation stakeholder analysis was pilot-tested with the aim of ensuring a decentralised approach of research commissioning, but it could not be implemented because of lack of time and the unavailability of representative civil society organizations (CSO) within the community³⁸. Research

³⁸ CSO involvement was suggested with the view that they will be able to represent the community to make research within a livelihood context and free from rice or technology bias. The project could not complete the experiment of suggested decentralised research commissioning model primarily because of the unavailability of a suitable civil society organization (DFIDB 2002). Bangladesh: PETRRA Mid Term Review Report, PETRRA Project, Bangladesh: 62. The timeframe of the project also meant that such an undertaking late in the project lifecycle was impractical for in-depth learning.

prioritization remains as a challenge. Poor farmers are often least organized and there are very few organizations (GO, NGO) that have the right strategy and ability to bring the priority of poor farmers to the fore.

2.3.5. Making women visible in agricultural research

The challenge for PETRRA was to make women visible in agricultural research. PETRRA's objective was to bring women in as equal partners to men in training and discussions around agricultural opportunities and problems of poor farming households. The mission started with the inclusion of women in the stakeholder analysis, as participating farmers and as participants in training and sharing meetings in the field. This approach of involving women in all activities emerged in the project during its first 2 years. It was a response to the demand of the women to get access to all kinds of knowledge. Women from small and marginal farming households argued that they work together with men in the fields. They also mentioned that men very often are involved in non-farm activities; they temporarily migrate for employment outside the village and when they were away, women need to take care of their farms. This reality demanded that women become equally knowledgeable to men in agriculture. This led to a conscious effort to take women out of the traditional notion of involving them only in postharvest research; they were included in all types of research as participants, either directly as participating farmers or as partners of participating farmers (Paris et al. 2005; Paris 2007).

PETRRA was adjudged successful in achieving its early target, but perhaps it did not concentrate sufficiently enough to understand the impacts of its efforts on areas such as decisionmaking power of women or increased/decreased workload placed on women because of technological development. The fourth OPR mission had the following comments:

Men and women are mentioned in the PETRRA logframe at both Purpose (OVI 1.2) and Output (OVIs 2.2 and 5.1) levels, but the concept of gender is not clearly addressed. The PMU has interpreted it in terms of gender equity or more specifically in terms of equal number of men and women participating in the project... The PMU's commitment towards increasing the number of participating women has translated into significant progress (Quin et al. 2003: viii).

Women were visible in all activities in PETRRA. Even the conservative scientists were impressed by the positive outcome of the research as they included women in various stages of their research. It was one of the great discoveries in their professional careers.

2.3.6. Identification of poverty elimination pathways early in the research

It was suggested that every PETRRA research subproject, before it was commissioned, should have a clear idea about the pathways by which it would contribute to poverty elimination {DFIDB, 1999 #79:13}.

This approach was not strongly followed by projects during the commissioning process. Therefore, the articulation of how each subproject was going to achieve it was not strong. But, in the end, except for a few subprojects, all had strong evidence-although not always articulated properly-of how they addressed the issue of poverty elimination through their research. The experience of a few of the technology projects was captured in the study 'Technology to Livelihoods,' which showed that subprojects did achieve a positive impact on poverty (Orr, 2004 #8).

2.3.7. Extension materials not research papers as outputs

Besides developing improved technologies, another important aspect to which PETRRA gave much emphasis was developing extension materials appropriate to poorer farmers {DFIDB, 1999 #79:5}. This reflected the unconventional nature of the research project, which put priority on extension materials that farmers could use immediately to enhance production and could feed into the extension system more effectively than conventional scholarly research papers.

PETRRA encouraged scientists and facilitated the production of extension materials by DAE and NGOs as primary outputs of the research projects; these were in the form of pamphlets and media outputs that were appropriate to poor illiterate farmers (DFIDB 1999:8). The main conventional incentive for scientists to conduct research was publication in professional journals (Chambers 1983). Scientists get points for publication and these are considered when promotion comes. Publications would give them the opportunity to attend national and international conferences and seminars. There would usually be no merit for them to produce extension materials. The PETRRA communication strategy provided scientists opportunities to take pride in their products and receive immediate farmer feedback. The impact that scientists saw in the field also worked as a great incentive for them. The detailed outcome of this strategy is discussed in Chapters IV, V, and VI.

Another issue that was given attention was the quick dissemination of research results, considering the fact that it usually takes long to make these findings available to poor farmers (DFIDB 1999: Social

Annex 4:4). Different strategies were adopted. Some of the CSO³⁹ partners who developed particular technologies were encouraged to disseminate these through their own networks; some presented the innovations at different forums – e.g., the uptake forums developed by PETRRA, the regional extension forums managed by the public-sector agricultural research and extension committees formed under the national agriculture extension policy (NAEP), and the focal area forums organised and facilitated by PETRRA. Different communication interventions (fairs, newsletters, popular Bangla agricultural journal for farmers and extension agents, videos, newspapers, and TV spots) were used to reach other interested stakeholders. All such communication products were made available at an IRRI-initiated, web based, knowledge bank site⁴⁰, which ensured the availability of the innovations and access by the public. Besides the PETRRA partners and DAE, a large European Commission-funded project, FoSHoL⁴¹, started activities to disseminate PETRRA innovations in 2005. The likely impact of such activities is discussed in Chapters IV and VI.

2.3.8 Communications profile evolved with project progress

The communication profile of PETRRA evolved through an on-demand process and through interaction with different stakeholders. Farmers, for example, asked for materials describing the technology and its use, which were developed and disseminated by researchers for adoption. The PSC asked for subproject briefs to understand the types of technologies being implemented under PETRRA. Journalists showed their interest in the project and wanted to highlight its innovations in the newspaper; potential partners asked for briefs on the project, its principles, and commissioning procedures. The project responded to these demands and, together with its partners, gradually developed a profile, which resulted in the emergence of a communication strategy formally developed in 2002 (Fredenburg 2007). The fourth OPR report of PETRRA noted the gradual achievement of the project.

PETRRA's stakeholders have learned that communication should receive attention as an integral part of the research design. This is a significant institutional gain (Quin et al. 2003:vii).

It sensitised some policy-relevant organizations and senior local professionals on policy issues around rice that are relevant to Bangladesh's rural and national economy (Quin et al. 2003:ix).

The process through which PETRRA has learned and responded to the demands also showed the innovative learning process that this project has facilitated and practiced.

A mix of farmers' demand and SPs' realisation of, a response to the need for communication materials that were accessible to intended beneficiaries and near-grassroots service providers 'saved the day.' This indicates considerable learning within SP teams on communication as a component of the uptake promotion plans of research assignments and is a significant institutional behavioural gain (Quin et al. 2003:4).

³⁹ Civil society organization

⁴⁰ www.knowledgebank-brii.org

⁴¹ Food Security through Sustainable Household Livelihoods (FoSHoL)

Communication, from its non-existence in the beginning of the project, turned into an output of the project logical framework, one among the six. It became an obligation, a responsibility of the project, and emerged as an important 'value' for such a project.

2.3.8. Strong local ownership

The project wanted to create local ownership of research outputs. Initially, the intention was to give BIRRI the leadership to conduct and manage research in partnership with IRRI and others. This was intended to ensure that research outputs were sustained within the system (DFIDB 1999:13).

The statement of the project memorandum suggested that BIRRI, with the assistance of IRRI and others, would have principal responsibility for conducting the research.

Sustainable ownership of research activities and outputs is a prominent feature of PETRRA. The individual research projects will be implemented by BIRRI staff with assistance from IRRI and others (DFIDB 1999:Institutional Annex 5:4).

This statement was not implemented as perceived in the project document. The above statement would suggest that there would be no competitive process to select successful submissions for research. This project document did not elaborate a competitive process, but implementation of a competitive process was followed. Besides being involved in a number of subprojects following a competitive process, BIRRI was intimately involved in the commissioning of the research through its chairing the Technical Committee that advised the PETRRA project manager. Management of the project by IRRI was through an autonomous Project Management Unit. All partners were chosen through a competitive commissioning system that allowed about 50 national, international, public, NGO, and private sector organizations to participate in the project. All potential local partners had the opportunity to become implementers and owners of projects that allowed innovations developed to be sustained within the system of the partner concerned. As leaders of rice research, BIRRI and IRRI remained linked with all these partners. Technology uptake subprojects developed their methods on the basis of their own comparative advantage and strengths, thereby firmly establishing their ownership.

The development of collective ownership of innovations was established by working together in forums⁴² too. Partners and collaborators⁴³ participated in sharing sessions and in the dissemination of innovations of PETRRA and thereby shared the ownership.

⁴² Such as uptake forum, focal area forum, and theme-based discussion groups

⁴³ Not a direct partner of PETRRA but cooperated in its implementation in a different capacity and only out of interest

2.3.9. Partnerships: from cost effectiveness to complementarity and sustainability

The initial objective of the partnership was to provide cost effective research. IRRI was mentioned as an obvious leader to form a partnership with other agencies, only if that was the most cost-effective way to deliver results.

The project will also work to develop partnerships between IRRI and other research partners such as the universities, the NGOs, and other international institutes, if that is the most cost-effective way to produce results (DFIDB 1999:12).

The project quickly expanded the partnership agenda. It started with different agencies participating in competitive bidding for research on the basis of stakeholder analysis in order to respond to a wide range of issues, including technology development, uptake method research, and policy. All such issues demanded different combinations of partners. Another issue with respect to partnership was strategic: to establish linkages between target groups and expert groups in terms of technical and social ability to conduct the research. These factors automatically brought in appropriate sets of partnership combinations; some of these were formed by the partners themselves and some were facilitated by the PMU looking at the demand, the comparative advantage of the partner concerned, its expertise, and the sustainability of the potential innovation. The comparative advantage of an agency in terms of location, leadership in a particular area of research and extension, experience, potential as a future extension agent and commitment toward agriculture in the long term were the qualities also considered in deciding on a partner. The other types of partners, beyond IRRI and BIRRI included other NARS (BARI, BARC, BADC), private sector firms (ABC, Syngenta), and government development institutes (BARD, RDA). NGOs (and CBOs selected by the lead partners) and private sector partners were selected as means to reach the resource-poor inasmuch as they had the comparative advantage in this area. Most of the partners led the uptake method subprojects, while they provided support to the technology development subprojects. For policy research, the subproject partners were selected to provide consultancy support in conducting village-level studies (private consulting firms and public sector research bodies) and advocacy NGOs played a role in policy dialogues.

The other types of agency partners that PETRRA had to select were specialised NGOs (*Steps Toward Development* for communication) and professional societies (*PRA Promoters Society* for facilitation support). These types of partnerships allowed PETRRA to keep its PMU small and gave flexibility in accessing support as needed.

Strengthening partnerships for collaborative research and extension was identified as an important task for the PETRRA project. Partnerships between BIRRI and other institutes were considered vital and were recommended to be strengthened through the project.

Most partnerships between BIRRI and other institutes and organizations in Bangladesh are in need of strengthening. PETRRA should provide a conducive framework to do this through strongly integrated, demand-led collaborative research projects. DFID support to DAE through the ASSP project will also facilitate linkage (DFIDB 1999: Institutional Annex 5:8).

BIRRI, once again, was put at the centre, as the prime body in partnerships through which, it was hoped, they would be strengthened. The project memorandum had the intention that PETRRA would maintain links with other projects financed by the DFID in the field of poverty reduction. It was expected that "the project will, when appropriate, work closely with other DFID development and research activities in Bangladesh" (DFIDB 1999: 8). These would include ASSP, Interfish, NGO poverty alleviation projects (e.g., Proshika and BRAC), and research projects funded by ESCOR or RNRRS.

On one hand, it was expected that PETRRA would make sure that BIRRI was strategically linked with other projects and departments involved in rice research and extension. On the other hand, PETRRA itself would sustain links with other projects that were not directly linked to rice-related research and extension but rather to poverty reduction. It might have been better to identify strategic partners who were involved directly and indirectly with the issue of rice and poverty from across the donor-aided projects or programmes, NARS, NGOs, the private sector, universities, and international research institutes, including BIRRI and IRRI. In fact, PETRRA successfully established linkages with such organizations. All concerned were involved either as partners, collaborators, forum members, PSC and TEC members, or as participants in policy dialogues.

In the project memorandum, NGOs were suggested as partners for dissemination because of their access to resource-poor farmers who were targeted to receive maximum benefits from the research innovations. The document suggested that, "the participation of NGOs in the dissemination of new technologies will be supported to ensure that the poor derive the maximum possible benefits" (DFIDB 1999: Social Annex 4:5). On the surface, this appeared straightforward. However, it was hard to implement because of the reality that the NGOs did not always have farmers as their main target group and that the agriculture programmes of many of these NGOs were either weak or non-existent. PETRRA provided the opportunity for NGOs to strengthen their agricultural programme through interaction with traditional research institutions. This was also seen as an opportunity for research partners to reach resource-poor farmer for technology dissemination. Chapters IV, V, and VI discuss their performance and describe to what extent they were successful in reaching the poor.

PETRRA's efforts were complimented by the fourth OPR mission. They commented that PETRRA has "changed the way in which some organizations in NARES and the private sector, including the lead national institute for rice research, have conducted adaptive research" (Quin et al. 2003:ix).

Strategic partnerships with the BIRRI and, through the BIRRI, with the Ministry of Agriculture, PSC and TEC members who represented most agricultural research and development public, private and nongovernmental agencies provided very strong support to the programme to ensure the sustainability of the project. BIRRI, as the principal authority on rice research and development in the country, provided PETRRA with adequate administrative, network, and political support in the implementation of the project. Even though IRRI was the manager of PETRRA, the relationship with IRRI's host institution (BIRRI) meant that BIRRI was, in many ways, the institutional base for the project. It was the strategic partnership between IRRI and BIRRI that gave legitimacy to PETRRA as a project that could experiment with innovative ways of commissioning and managing a rice-based poverty agenda and for discussing project outcomes within the national context.

2.3.10. Capacity building of local partners to ensure quality research delivery

From the outset, as outlined in project documents, it appeared that there was little difference in the way the term capacity was interpreted in PETRRA and other similar projects in the field of agriculture in Bangladesh. The statement below reinforces that impression.

The project will enhance the capacity of BIRRI and that of other partner institutes (university, departments and NGOs) to undertake rice research. This will be done through collaborative research projects and by training agricultural and social scientists in Bangladesh, at IRRI, and possibly elsewhere (DFIDB 1999:8).

But, in practice, there was a comprehensive effort in capacity development undertaken during the project that went far beyond the traditional boundary of capacity building. As regards the traditional component of capacity building, there were two aspects: degree training and short-term training. Both were tied to the outputs of the subproject concerned. In other words, any person trained (either in the short or long term) in a particular area had to have a direct link with an output of the subproject under which the person was sent for training. The PSC developed and approved a guideline that gave the authority to this approach (PETRRA 2001).

RDRS, a partner NGO of PETRRA, developed and implemented a concept, which proved to be an interesting case in that it reflected the capacity building portfolio of the PETRRA project. They established a model for demand-led farmer-participatory research and development that included national and international universities in the field of agricultural research and education. They also linked with regional actors in the ARD who were into this venture (Salahuddin and Magor 2008). (For detailed description please see section 4.7.2.) The extent of the impact of this capacity-building

approach is reflected in the impact of the subprojects. A detailed picture of such an impact is evident in Chapters V and VI.

The social science capacity of IRRI and B RRI as the main implementers was a big concern of the project. It was recommended that both IRRI and B RRI recruit additional non-economics social scientists due to the perceived need for a strong social science input in the project. Additionally, it was advised that B RRI and I RRI strengthen their human resource capacity in the field of plant breeding and agronomy, respectively (DFIDB 19 99: Institutional Annex 5:10). This was suggested with the expectation that these staff members would be needed to run the PETRRA projects smoothly. This recommendation was not implemented by either of the principal partners. This did not affect the project much because of the fact that the subprojects were commissioned with a team of researchers who had to come through a competitive review process. These teams proposed the research which they thought they were competent to conduct. The partners of the approved subprojects were encouraged to fill the gap by bringing partners from other agencies, whenever they encounter limitations during the preparatory phase of the project. The PETRRA PMU also facilitated the process (Magor and Salahuddin 2009). Chapter V captures the experience in detail.

In PETRRA, capacity building evolved as a cross-cutting issue and was linked with the effort of value-based agricultural research management. Formal training was only a part of the overall capacity-building portfolio. The short-term training was geared to building awareness of the PETRRA values with training in livelihood analysis, gender awareness, participatory processes, logframe development, and M&E (Magor and Salahuddin 2009). Facilitation workshops, seminars, issue-based discussions, and stakeholder analysis on different values were the basis for developing overall capacity of the partners. The project “created a cadre of local professionals that recognised the advantages and values of this mode of working” (Quin et al. 2003:ix).

2.3.11. Focal Area Approach (a concept of decentralised research approach and management)

Focal area meetings for research dissemination and interaction forums for researchers, dissemination agents, and resource-poor men and women farmers were another interesting concept developed and experimented within the PETRRA project. The project inception report foresaw the Focal Area concept as follows:

For ongoing partnership with resource-poor farm households and uptake agencies at the grassroots level, structure is needed. What follows is the proposed environment in which PETRRA research activities will take place. A focal area or key site will form the focus of all research activities in a given ecosystem. This will ensure that a structure for ongoing participation is established (DFIDB 2000:11).

These synergies will be through inter-organizational partnering and using common focal areas for research that provide a critical mass of interaction between scientists and uptake agencies. These persons may be working on different themes but with a common ultimate partner, the resource-poor farm households. The structural management of focal area research needs more thought and discussion. The focal areas will be, wherever possible, in locations in which the BRRRI has regional stations. This will augment institutional linkages to BRRRI, which must form part of the exit strategy of the project (DFIDB 2000:iv).

The first OPR (2000) team recommended the recruitment of a consultant social scientist to outline the *'modus operandi'* of the focal area research. They also suggested focal area sites to experiment with a decentralised, bottom-up approach to commission and disseminate research results to resource-poor farmers. They expected that this approach would help bring research and delivery organizations closer to their clients and enhance the quality and relevance of the research (DFIDB 2000a:8).

Three focal areas were organised and two of them continued to develop until the end of the project. One of the forums, the north-west focal area forum, continued to further develop beyond the project⁴⁴. The PMU facilitated the process by mobilising PETRRA research partners, members of the uptake agencies (GO, NGO, private sector) and participating farmers of PETRRA subprojects in the respective region. Researchers shared their research programmes and innovations and offered their services to disseminate the innovations. Uptake agencies asked questions about the suitability and relevance of the innovations. Farmers reacted to innovations and approaches and shared their views (negative and positive) on particular innovations and, in some instances, a forum designed programmes for joint implementation.

The most successful example was developed in the northwest region of Bangladesh. A leading regional NGO, RDRS, in close collaboration with the BRRRI regional station, established a permanent body to be the focal area forum involving all research and dissemination agencies, GOs, NGOs, farmer federations, and private sector of the region. The forum was officially endorsed by the government in 2004 (Van Mele, 2005 # 33:272). Forum members jointly shared experiences and planned and implemented a number of pilot initiatives in the region. They shared their resources and expertise in implementing planned programmes without any additional resources from the project. RDRS used its farmer organizations to conduct research and dissemination, BRRRI used its expertise in rice, DAE used its network of extension facilities for training, and BADC used its seed resources and expertise with seeds. Some other agencies also participated according to their capacity. This forum attracted the attention of national agencies (both GO and civil society) and became a centre for organising events that tackle agricultural and natural resource issues that affect resource-poor farmers of the region.

⁴⁴ A detailed discussion on its progress is captured in Chapter VI.

2.3.12. Uptake Forum

The uptake forum was another innovation that started very early in the project. All first-generation technology uptake research partners were the members of the forum. The forum taught PETRRA the art of multistakeholder project management. Interaction with the first group of partners helped in the design of the next rounds of project commissioning. The first review mission appreciated the establishment of the forum. They commented that the project

...created an uptake forum that brings together different agencies engaged in the promotion and dissemination of new technology. Nine projects on technology dissemination (promotion of new rice varieties) are currently under way and should help promote existing technologies to a wider user group (Output 4) (DFIDB 2000a:5).

Besides the nine technology uptake subproject partners, two members from the DAE head office were also nominated to the forum with the aim of involving DAE as the nationally mandated agricultural extension agency in the discussions and ensuring its support for the programme in the target areas. BRRl's Genetic Resources and Seed Division emerged as the most important member in the forum, being the source of quality seed. The Training Division and the Adaptive Research Division of BRRl also emerged as important members. Based on their research experience, they were in a good position to recommend and train extension agents on appropriate technologies for the regions. These three research divisions became important sources of knowledge for forum members. The NGO and private sector partners were found most effective in accessing resource-poor farmers as most of their clients were poor. They also emerged as potential clients for BRRl seed technologies, a group not fully explored and exploited before. The discussions and interactions in the forum became interesting and complementary for all members. Each member could contribute to the other members' programme planning and implementation by providing suggestions or by being directly involved as partners. The forum also helped PETRRA build its relationship with DAE and thereby ensure technical support for the subprojects by having access to the technical expertise of their field officers from across the country.

In the beginning, uptake research was 'unknown territory' because of the lack of experience in this area. It was not clear exactly how uptake research is to be conducted. The desired output of uptake research is likewise not clear. In spite of many dissemination projects being implemented in the country, there was hardly any one that seemed to touch on the areas of uptake research with any confidence or authority. The contribution of the uptake forum in such experience building was significant. The PMU facilitated the forum, did not pre-decide the agenda, and allowed partners to take the lead and to use their own potentials, strengths, and comparative advantage in shaping their own uptake methods through experimentation in the respective subproject that they thought had the best chance to succeed and be sustained.

The forum members, using peer-review techniques, had strong inputs in reviewing each other's programmes. They also provided insights into an uptake review mission that was held 2 years into the project by an external mission and together worked closely to draw out lessons from it (Alex and Halim 2002). The forum members also helped articulate each other's uptake method by participating in a series of national and group events held toward the end of the PETRRA project. The members also contributed to produce a book entitled *Innovations in Rural Extension—Case Studies from Bangladesh*, a milestone that the PETRRA project achieved within its lifetime (Van Mele et al. 2005).

2.4. Project management approach

2.4.1. Establishment of the Project Management Unit (PMU)

IRRI, through its country office in Bangladesh and in close partnership with BIRRI, was the implementer of the project. A PMU was established following a suggestion given in the project memorandum.

IRRI will establish a Project Management Office (PMU) at BIRRI. It will be headed by an internationally recruited Project Manager, with proven experience in managing multiproject research programs. The Project Manager will be suitably qualified agricultural or social scientist (DFIDB 1999: Management Annex 6:1).

The PMU was established initially at BIRRI, located out of the capital city, Dhaka, and the staff spent much of their time at BIRRI during the project's preparatory phase. Spending maximum time during the initial 2 years at BIRRI was very useful. It helped establish the project within a context, where BIRRI had an important role. The most significant aspect was building a relationship with BIRRI scientists and improving their capacity to enable them to participate in the competitive bidding for PETRRA research grants. As the project progressed, it was realised that maintaining a distance from BIRRI would be appropriate to maintain a neutral image and also to be more available to non-BIRRI partners. Gradually, the PMU decided to share its time between the BIRRI PETRRA office and the IRRI country office in Dhaka. This signaled to BIRRI scientists that PETRRA was not a project for BIRRI alone; rather, it was a project for Bangladesh and whoever would like to work on rice and poverty reduction issues and was interested to participate in PETRRA-commissioned research could be partners of PETRRA on the same footing with BIRRI. But, at the same time, the PMU wanted to give the impression to non-BIRRI partners that they have to recognise BIRRI as the main stakeholder and the principal source of knowledge in the field of rice research. For BIRRI scientists, it was necessary to understand the importance of development partners, especially NGOs, as they can get into the villages and gain access to resource-poor farmers. This has been considered an important issue for future agricultural research and it is further discussed in Chapter IV.

As to the qualification of the project manager, the project was fortunate enough to get one who fulfilled both requirements put in as alternatives. The project manager recruited was trained both in agriculture and social science and had work experience with NGOs, IRRI, and BRRI. His additional advantage was his experience in Bangladesh over a long time as a development worker, a researcher, and an academic. The background, experience, and qualification of the project officer were also complementary as he had additional expertise on programme and grassroots facilitation.

The PMU had to be expanded for a period beyond what was initially suggested in the project memorandum. The initial suggestion was: "The project manager will be supported by a project officer (later designated as manager-research programme), an accountant, and the necessary support staff" (DFIDB 1999: Management Annex 6: 1). Later, a manager-research management, a manager-monitoring and evaluation (suggested in the DFID, 2000), an assistant manager (facilitation), and a communication officer were recruited as the need for such positions arose. This was an example of how a project was able to respond to a need to ensure that appropriate human resources are available to accomplish the project's purpose.

It was anticipated that BRRI scientists, with assistance from IRRI and others, would implement the research subprojects. BRRI's lead role in implementing the research was mentioned as an indicator of sustainability.

Sustainable ownership of research activities and outputs is a prominent feature of PETRA. The individual research sub-projects will be implemented by BRRI staff with assistance from IRRI and others. It is not envisaged that there will be any long term TA appointments of staff to BRRI and that all collaborators will only work on a short term basis (DFIDB 1999: Institutional Annex 5:4).

The project memorandum argued that this approach of putting BRRI as the principal implementer would intentionally reduce the burden of employing a large number of technical assistance (TA) staff for project implementation, which other similar projects did. This advice, however, was followed only partially — not all projects were implemented by BRRI, but the PMU remained small. The subprojects recruited team members according to the nature and requirements of the subproject concerned. The PMU engaged a very small number of short-term consultants in areas where team members could not be directly involved either because of time limitations (participation facilitators) or lack of expertise (communication). Monitoring and evaluation (M&E) was the only area where both long- and several short-term consultants were recruited. The team, however, remained small despite the heavy workload and the diverse nature of project activities. This was possible as the PMU put in place an open approach to management that used all possible opportunities beyond PMU employing additional hands when and where necessary. Table 2.4 illustrates the PMU management efforts that included optimising its own resources, hiring experts from the outside, and using all other partners as needed and according to their potential.

Table 2.4. Project Management Unit: Actual versus Shadow

Area of work	PMU	Shadow
Project policies	Project manager, IRRI representative	PSC, minister and secretary of MoA , OPR missions
Project strategies	Project manager, other PMU members	IRRI and consultants
Subproject commissioning	Project manager, research management officer	TEC, external reviewers, project memorandum, PSC
M&E	M & E officer, other PMU members	M&E consultants, OPR missions, partners, other review missions (e.g., uptake)
Facilitation	Project officer, other PMU members	PPS, OPR, NARES, consultants (matrix, IMA)
Communication	Communications officer, other PMU members	Steps, Channel I, AIS (MoA), pvt companies, consultants

Keeping the PMU team active and effective as the programme expanded was a challenge. It was important that the PMU remains effective so that it can respond to the needs of an ever-expanding complex project such as PETRRA. At times, a lack of common vision among the team members was evident.

A lack of common vision within the team makes it hard for individuals to define their role, to prioritise their work, or to operate effectively within the team. This is especially important for a project such as PETRRA, which is relatively complex and relies upon strong teamwork for implementation (DFIDB 2001:10).

As per suggestion, a team-building workshop was conducted and this became instrumental in assisting staff to articulate a common vision of the project and to understand the relationship between objectives, indicators, assumptions, and risks. It thus helped them to work as a team. This also helped the team improve its understanding of the importance of internal communication and shared learning (O'Sullivan 2002). The challenge for the PETRRA PMU was to remain as a team of facilitators in line with its core values. Chapter IV reflects on how much it achieved and Chapter V reflects on the potential of the approach for the future.

2.4.2. Establishment of Project Steering Committee (PSC) and Technical Committee (TEC)

A Project Steering Committee (PSC) and a Technical Committee (TEC) were established early on in the project implementation phase “to provide strategic and policy guidance and to approve research programmes” (DFIDB 1999:13).

The PSC was formed with the secretary of the Ministry of Agriculture as chair and the director general of BRRI as member-secretary. The other members were the BARC chairman, the BADC chairman, the DAE director-general, the representative of the BIDS director-general, joint secretary (research) of the Ministry of Agriculture, the IRRI deputy director-general (research), the project manager PETRRA, the IRRI representative in Bangladesh, the DFID senior adviser (London), representatives from NGOs

BRAC and Proshika, and a member from the private sector. The major terms of reference of PSC are as follows: strategic overview of research priorities, policy guidelines, approval of research programmes, and annual review of progress. Altogether, seven meetings of the PSC were held in the 5-year lifetime of the project (IRRI 1999a). The PSC meetings were mostly used as a forum to report progress of the project but few decisions were taken. It recommended and approved the incorporation of member(s) onto the TEC and approved the training guidelines. There were discussions on how project outcomes could be integrated and sustained within ongoing national programmes. The Committee also discussed the annual workplans presented by the project manager. DFID representatives used the forum to explain their position to the secretary and to the other members.

Questions can be raised about the effectiveness of the policy decisions taken in the PSC as no monitoring cell on behalf of the PSC existed within the Ministry of Agriculture. The only place and time decisions were taken, reviewed, and discussed were during PSC meetings chaired by the secretary of Agriculture. It can hardly be said that the Ministry took ownership of the project and therefore led the project. Obviously, the PSC gave complete support to the project but not as owner but rather as a well-wisher. Full support of the Ministry was instrumental in resisting any vested interest group, which wanted to open up the project to access resources. The proactive support of the Ministry of Agriculture, mostly manifested through the participation of ministers and secretaries in PETRRA-organised seminars, workshops, training programmes, communication fairs, and field visits helped push the PETRRA agenda, attracting the attention of the media. This had influenced the research system, encouraging development partners to deliver improved outputs.⁴⁵ It also put pressure on the media to play a supportive role in disseminating project learning to different stakeholders. The PSC role was principally to ensure that the project delivers technologies and other innovations to achieve the national goals of food production and rapid technology dissemination; it was less concerned with demand-led pro-poor aspects of the project targets. The PSC provided further legitimacy to the PETRRA project in providing a top-level government reference point for lessons learned.

The TEC was established to advise the project manager. The director-general of BIRRI chaired the Committee, while the PETRRA project manager worked as a member-secretary. The other members of the Committee were the BIRRI director for research, the BARI director for research, the BADC member-director (seed), the BARC member-director (crops), the DAE director (field services), the MoA deputy secretary (research), a private sector representative (a former BIRRI director for research), the GKF managing director (NGO), the RDRS (NGO) director-agriculture, a representative from BRAC (NGO), the DFID programme officer (social scientist), and the IRRI-Bangladesh representative. One gender

⁴⁵ Chapter IV discussed the likely impact of such support on subprojects and Chapter V discussed how important this support was for future projects and programmes.

specialist from BIDS and a socioeconomist (a former BJRI director general) were co-opted in year three of the project.

The members of the TEC reviewed concept notes and proposals for research projects and advised the PMU on which projects to commission. The project manager informed and shared project progress and plans with TEC members formally in TEC meetings and informally through a number of other types of communications. Seventeen TEC meetings were held during the 5-year life of the project. The main responsibility of the TEC was to recommend concept notes and research proposals, to review mid-term and project completion reports, and to advise when outside specialists are necessary (DFIDB 1999:14). Besides all these activities, they also participated in project annual review meetings, together with the review missions, participated in project field visits, and actively contributed to the final evaluation of the subprojects. As most appointments to the TEC were by designation rather than by name, there was at times a high turnover in membership, but it did also mean that the TEC was a channel through which senior government officials were becoming informed about issues related to pro-poor research management. A brief summary of the decisions made by the TEC and other activities done by the TEC is presented below:

- All meetings (17), with the exception of the last, discussed, approved, or recommended resubmission of concept notes or research proposals.
- Project plans and progress on different activities were shared in 14 meetings.
- Recommended rules were discussed in seven meetings.
- Members in four meetings shared and reacted to presentations by either consultants or by the PMU or a partner on major issues: special workshop results, team-building results, KAP study findings, followup projects, BRKB, etc.
- Four meetings discussed and developed guidelines: training, assessment of partners, capital investment on scientific instruments, screening for concept notes
- Reviewed reports produced by the consultants or by the PMU (in four meetings)
- Discussed and recommended additional members to sit in the Committee in three meetings.
- Three meetings discussed and developed guidelines for the research budget.
- Discussed the need for training and identified potential training consultants in two meetings.

Constituting a balanced PSC and a TEC from the technical, socioeconomic, and gender points of view was a concern of the annual reviews, as the members represented were mostly technical (DFIDB 2000a). The main concern was to make these two vital committees more representative of resource-poor farmers. Accordingly, TEC membership was once reviewed and adjustments were made — one gender specialist (a woman) and a socioeconomist were taken in. A similar adjustment to the PSC membership was anticipated but never carried out. The impact incorporating two new members in the TEC on overall decisionmaking was not clearly evident, as they came in year three of the project, when most of the projects have already been commissioned.

The project memorandum viewed the role of the PMU narrowly:

The functions of the PMU will be to translate the policies of the PSC into practice. This will involve identifying and facilitating theme and project research leaders and teams required to address research problems, obtaining concept notes for the TEC to evaluate, commissioning research work, and monitoring progress (DFIDB 1999: Management Annex 6:1).

The PMU played the role of a facilitator. Instead of itself translating the policies of the PSC, it facilitated so that ideas were developed by all concerned stakeholders according to the scope of their involvement in the project. It was not always the PSC that developed the policies for the project. The ideas came from many different directions and, with facilitation by the PMU, these ideas were further articulated with support from the stakeholders and then translated into subprojects, new activities, outputs, and purposes. Both PSC and TEC sometimes developed the policies/ideas themselves or discussed policies/ideas developed by other stakeholders. Working papers developed by the PMU in preparation for the PSC and TEC meetings provided evidence that supports this explanation of their work.

2.4.3. Annual reviews

The project memorandum stressed that 'Annual joint (GoB-DFID) review missions would be undertaken' (Project memorandum 1999 management annex 6: 2). Annual review missions known as 'Output to Purpose Review' (OPR) teams played a very important role in project management. As discussed earlier, they were like an extended PMU, contributing to the review of the project progress in terms of project outputs and purpose, developing project approaches, identifying strengths and weaknesses, recommending adjustments to the programme and policies, and identifying the capacity needs of the parties concerned.

The PMU prepared an annual progress report for the OPR mission before the team's arrival. The OPR mission reviewed the progress from the report and used it to prepare their own report at the end of each mission. These reports recommended specific milestones that the PMU then followed up, as part of next year's programme. Usually, the OPRs were followed by a PSC meeting where the donor and the GoB discussed project progress.

The review mission met project partners, stakeholders, policymakers, subproject researchers and farmers, the PMU and the TEC and PSC members. They used a range of approaches for interacting with stakeholders - from group or individual discussion meetings to field visits to holding both formal and informal events.

In years four and five, the OPRs were linked with the review of other DFID natural resource projects in Bangladesh. DFID organised joint sessions with similar projects in a larger forum where all concerned

stakeholders were invited for joint learning. Findings from a group of projects constituted themes for discussions on broader issues.

Most of the time, the environment of the OPR mission operation and interaction with the PMU was very constructive and helped both parties to understand project progress and learning. On only a couple of occasions it was contentious.⁴⁶ Even under contentious situations, both parties appreciated each other's contribution to achieving progress.

The actual nature of the annual reviews in terms of how far it could keep making it a 'joint' activity can be questioned. The role of the GoB in these missions was as passive participants, while the DFID-engaged consultants used to take the lead. The implications of such a passive role and the potential for a more desirable proactive role of GoB for institutional sustainability of project learning are further discussed in Chapter VII.

2.5. PETRRA research-commissioning process

2.5.1. Identification of researchable issues

The project memorandum suggested that stakeholder analysis to identify researchable issues should be conducted during the inception period of the project.

Initial research priorities will be identified through a consultative process during the inception period... Participants [in the stakeholder analysis meeting] will include resource-poor farmers, research scientists and social scientists from Bangladesh and IRRI, government officials, and representatives of NGOs and private sector firms. The workshops will be organised by the PMU and will be professionally facilitated (DFIDB 1999: Management Annex 6:2).

It also suggested that the PSC would finally approve the research programme, whereas the TEC will be established to advise the project manager and to review concept notes and proposals.

A Project Steering Committee (PSC) will be established ... to approve the research program. ... A Technical Committee (TEC) will be established to advise the Project Manager. It will review concept notes and proposals for research projects (DFIDB 1999: Management Annex 6:1).

Conducting a stakeholder analysis as the basis for research issue identification, in consultation with resource-poor farmers, professionals, and scientists at the village, district, and national levels proved to be a pioneering strategy. It established, with all its limitations, the foundation of research management.

The stakeholder analysis was professionally handled by a group of facilitators from the PRA Promoters Society (PPS), Bangladesh, based on guidelines developed jointly with the stakeholders, including

⁴⁶ MTR and EoP were evidently contentious.

BRR and DFID (PETRRRA 2000c). Results of the workshops were documented into 10 volumes of reports⁴⁷ and were shared; research programmes were developed. The findings were shared in the PSC meetings (PETRRRA 2000b). A new idea to commission the research on a competitive basis was included in the process beyond the suggestion made in the project memorandum (DFIDB 1999). The researchable issues identified and prioritised by the stakeholders were synthesised and, through direct contact and newspaper advertisement, concept notes were invited from interested parties. The conversion of farmer-recommended issues into themes for a Call for Concept Notes was developed in consultation with experts in the concerned fields⁴⁸ (Orr et al. 2007).

Concept notes were reviewed initially by the PMU and subsequently by experts in the field of the proposed research and by TEC members individually and in group meeting. The TEC members either accepted/recommended the notes for further development into research proposals or rejected⁴⁹ them.

⁴⁷ A total of 10 volumes of stakeholder analysis reports were produced for nine different agroecosystems in Bangladesh. These are as follows:

Southwest (one report for Khulna, Bagerhat, and Satkhira districts)

Karim, A. S. M. R., et al. (1999). Stakeholder Analysis Report, Southwest Coastal Region of Bangladesh. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 38.

Southcentral (one report for Barisal and Patuakhali districts)

Mridha, M. A. J., et al. (2000). Stakeholder Analysis Report, Southcentral Coastal Region of Bangladesh. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 42.

Southeast (one report for Noakhali district)

Molla, H. R., et al. (2000). Stakeholder Analysis Report Majidi, Noakhali. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 32.,

Centralwest (two reports for Kushtia and Chuadanga districts) Alam, M., et al. (2000). Stakeholder Analysis Report, Central West Region of Bangladesh, Kushtia. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 32.,

Central (one report for Bhanga, Faridpur)

Howlader, S. H., et al. (2000). Stakeholder Analysis Report Bhanga, Faridpur. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 26.

and one report for Comilla,

Parul, S. S., et al. (2000). Stakeholder Analysis Report Comilla Region. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 35.,

Northwest (one report for Rajshahi) Mazid, M. A., M. S. Islam and K. A. Bhuiyan (2000). Stakeholder Analysis Report, High Barind Area, Rajshahi. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 23.

and one for Rangpur district

Sattar, M. A., et al. (2000). Stakeholder Analysis Report, Rangpur District. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 38.

and Northeast (one report for Habiganj)

Muttaleb, A., et al. (2000). Stakeholder Analysis Report Hobiganj District. Dhaka, Bangladesh, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 28.

Each report was produced based on stakeholder meetings conducted at three different levels, with resource-poor farmers at village level, with government and nongovernment research and development officials at district level, and at Upazila (subdistrict) level. Priorities set at the village and district levels were reconciled with both farmer representatives and representatives of the research and development agencies. In the first round, there were no women facilitators and there were no discussions with women; later women facilitators and women participation in the meeting were ensured PETRRRA (2000c). Revised Guidelines for Stakeholder Analysis, Poverty Elimination Through Rice Research Assistance (PETRRRA), IRRI: 9.

⁴⁸ A different set of stakeholder analysis processes was applied for some of the research themes, where a national-level expert meeting was followed by village-level analysis with resource-poor farmers, which helped to design calls for concept notes. This alternative path was followed for 1) nutrient management and 2) integrated pest management themes.

⁴⁹ About 90 percent of the CNs were rejected.

Promising concept notes, which were not immediately accepted, were given a chance to resubmit and were considered in a subsequent TEC meeting.

Research proposals were sent to individual technical experts and the TEC members by the PMU, their scores processed and presented back to the TEC. The Committee then reviewed the proposals and made a recommendation for selection or rejection. The PMU implemented the TEC decision and negotiated the contracts to transform the research proposals into subprojects. Very few proposals were rejected at this stage.

For some underdeveloped research proposals with potential, further steps were taken. The PMU organised workshops, field visits, and meetings to work on concept development, partnership development, or project planning with farmers in the village in order to have a sound research proposal.⁵⁰

2.5.2. Research commissioning on a competitive basis

A new idea to commission research on a competitive basis was included in the process, which is beyond the suggestion made in the project memorandum. There were, however, a few research projects commissioned outside this competitive bidding process for specific reasons. The competitive system for research commissioning proved to be effective in identifying competent scientists and organizations as research partners. It eased the management procedure for research selection as well. The advantages and disadvantages of competitive research, as perceived by the partners, are further discussed in Chapter IV.

Almost all subprojects were commissioned on a competitive basis. Four of the 45 subprojects commissioned were noncompetitive as there were specific reasons for including them. Even the four had to go through a process; they had to demonstrate their relevance and show compliance with the PETRRA objectives.⁵¹

⁵⁰ Examples are rice duck (SP 19), USG (SP 21), NW ICM (SP 25), and the Biodiversity subproject (SP 22).

⁵¹ Among the four, the first one was the Seed Health Improvement Subproject (SP 00 SHIP), which was commissioned by DFID as an independent project before PETRRA was officially started. Later, SHIP was included under PETRRA. The second one was Hybrid Rice (SP 15) with traditional partners for which there was no competitor at the time in the market. The third was the Nutrient Management Subproject (SP 10), which was commissioned initially for 6 months and had to show compliance with PETRRA objectives and values while preparing a complete proposal for 3 years. Two policy research projects (SP 11 & 16) were taken up from the point of view of the national interest. The first one helped PETRRA to introduce a series of policy dialogues and the second one gave entry into a research that involved the very serious issue of arsenic contamination in the food chain and linked with a group of other simultaneous research activities being led by CIMMYT.

Within the competitive system, there was considerable debate over the issue of making a clear distinction between research suppliers and research purchasers. This was raised because of the fact that, among TEC members 谁 who should represent the interest of the resource-poor farmers, the ultimate purchasers of research 谁 there was domination of representatives from agencies who were potential suppliers of PETRRA research. The first OPR mission suggested the inclusion of members who represent the primary clients of the project, the resource-poor farmers. Accordingly, three additional NGO representatives were added (DFIDB 2000a). This remained a contentious issue for quite some time (DFIDB 2001; DFIDB 2002). It was argued by the reviewers that the project could not maintain true competition but favored its main stakeholders (IRRI & BIRRI). In some occasions, this resulted in the commissioning of research to inappropriate groups (DFIDB 2002:20). The criticism was, however, responded to by IRRI indirectly. Part of the reason IRRI and BIRRI were the biggest recipients of resources was their comparative advantage in rice research, nationally and internationally. As most of the research conducted under PETRRA involved, partly or fully, technical aspects of rice science, even for uptake research projects, IRRI and or BIRRI were the obvious choices as partners for the source of rice technology. They had few competitors in the market. The other reason was perhaps the access to and familiarity with the project of the IRRI and BIRRI scientists.

2.5.3. What research to commission?

Although there was a strong suggestion that researchable issues should be decided through stakeholder analysis, there were a number of indications in the project memorandum pointing to the kind of research that PETRRA has to conduct. The following are some of the clues given in the documents.

New technological breakthroughs are needed to meet demand e.g. developing hybrid rice and new plant types with higher yield potential; developing MVs with tolerance to drought, salinity and prolonged submergence; evolving strategies to match better soil nutrient and water supplies to crop demands; improving pest management practices to reduce the use of crop losses due to poor seed health and post harvest practices and enhancing the adoption of MVs by farmers (DFIDB 1999:8).

Emphasis will be placed on the production of technologies and extension materials appropriate for poorer farmers (DFIDB 1999:5).

The livelihoods of both poor consumers and poor producers can be protected through further technological progress to raise yields; increase efficiency in the use of scarce natural resources and material inputs; reduce unit costs of production; and maintain farm profits, even at lower prices. The PETRRA project will make a significant contribution to this goal (DFIDB 1999: Institutional Annex 5:2).

Many of these recommendations were actually supported by the subsequent stakeholder analysis. Research was commissioned on those issues not because these were recommended in the report but because they arose from the demands of the primary stakeholders; the farmers. As mentioned above,

there were exceptions; some research projects were commissioned on the basis of national priority, for example, the hybrid rice subproject.

As discussed before, there was pressure from the PSC to immediately start some research activities as the stakeholder analysis process would take some time to organise and conduct. The research priorities put by the first PSC were i) improving the uptake of farmer-endorsed new varieties and ii) development of hybrid rice and salt-tolerant rice varieties for coastal areas, among others (PETRRA 1999). The PMU, in consultation with PSC, started by commissioning nine pilot technology uptake (seed) subprojects with BIRRI, seven NGOs, and a private sector organization as part of the first call for concept notes. These subprojects later formed an uptake forum, which helped the PMU to mobilise the relevant partners and to generate ideas. One other project, the Seed Health Improvement Project (SHIP), was approved by DFID before the signing of the memorandum for PETRRA and was later mainstreamed as one of its subprojects.

Research was commissioned in three major areas: technology development, technology uptake pathways, and pro-poor policies. Among a total of 45 research subprojects commissioned, 20 were on technology development, another 20 were on technology uptake, and 5 were on policy research. A list of PETRRA subprojects is presented in Appendix 1.

2.5.4. Who chose the partners?

The project memorandum provided the impression that research would solely be conducted by BIRRI. It recommended thus: "The individual research projects will be implemented by BIRRI staff with assistance from IRRI and others" (DFIDB 1999: Institutional Annex 5:4). This suggested that BIRRI and IRRI would always lead the projects while others would collaborate.

The document also recommended that "the functions of the PMU will be to translate the policies of the PSC into practice. This will involve identifying and facilitating theme and project research leaders and teams required to address research problems, obtaining concept notes for the TEC to evaluate, commissioning research work and monitoring progress" (DFIDB 1999: Management Annex 6:1). As we have earlier seen, this approach was not implemented by the PMU. It instead adopted a competitive research commissioning process. This decision had the strong recommendation and endorsement of DFID, which was not negotiable (NP Magor, personal communication).

The competitive process of research commissioning provided an advantage as it transferred the task of partnership selection to the research proponents, not to the PMU directly. The PMU facilitated the

partnership process a great deal by identifying, linking, nurturing, and building capacities, but it was the joint responsibility of the parties to form the team in each subproject. It was an open approach linked to the competitive system; PMU facilitated to make the system responsive to the values that PETRRA pursued.

There were, however, a number of subprojects where the role of PMU was critical in helping each respective group to find and form partnerships. In the rice-duck subproject, (SP 19), B RRI was introduced to FIVDB, a regional NGO specialising in ducks that has worked with poor farmers for a long time. In the USG subproject (SP 21), B RRI was introduced to IDE, an international NGO working on enterprise development with small and poor farmers, the latter worked on the market linkage part of the subproject. In the ICM subproject in the northwest (SP 25,) PMU had facilitated a meeting between B RRI, R DRS (regional N GO), and G KF (regional N GO s pecializing i n agriculture) t o bring t hree different concepts into one integrated project for two sites. A B RRI irrigation engineer was introduced to NGOs (Proshika and H EED B angladesh) t o form t he partnership as b oth t hese N GOs had s trong farmer linkages and o ne (Proshika) had s olid experience on w ater management with s mall farmers. These are examples of how the PMU engaged with partners in the subprojects.

2.5.5. Learning from other projects

The memorandum suggested in keeping close contact with other DFID-funded natural resource development and research projects (DFIDB 2000). PETRRA did maintain contact with the projects in different ways: (i) it participated in DFID-organised projects on experience sharing through meetings, workshops, and seminars; (ii) the project team leaders participated in joint reviews of projects; (iii) they invited each other to special events of their respective project; (iv) they used a common resource pool for review, training, and facilitation; (v) they participated in DFID policy meetings and retreats where there were opportunities to learn about each other's programme; (vi) they sent trainees to each other's major training programmes; and (vii) they shared the external review findings in common forums.

Among the DFID-supported NRM projects, there had been limited exchange of learning. This was one area where better planning by DFID⁵² was needed. This could have been inclusive of similar projects across donors and across disciplines.

⁵² At the time, DFID had research projects in Farm Power and Fisheries and development projects in Extension, Fisheries, and Livelihoods.

2.5.6. Monitoring and evaluation of subprojects

There was a suggestion to employ a review team for each subproject:

To assist with project monitoring the Project Manager will appoint review teams for each project, comprising agricultural and social scientists of relevant disciplines (DFIDB 1999:Management Annex 6:1).

Actual action by the PMU regarding monitoring and reviews differed from the suggestion given in the project memorandum. Instead of engaging review teams for each project, an M&E subteam was employed full-time, working on a regular basis with occasional support and advice from the PSC and TEC. The M&E system was linked with the financial system. The subprojects received their quarterly funds upon submission of acceptable quarterly reports. The PMU reviewed the quarterly report and identified issues, if any, for followup discussions or field visits to the respective subproject. The quarterly report included progress on technical, social, and communication aspects of the subproject.

There were several approaches to subproject M&E in the project, apart from the quarterly reporting and field visits by PMU members. These included joint workshops and discussion meetings on thematic issues such as poverty, gender, environment, communication, development of formats and guidelines for annual reviews, subproject evaluation and subproject completion. Peer review was one of the tools used – i.e., partners reviewed each other's subproject. TEC members, on a few occasions, also participated in such monitoring activities. Their participation was most intense in the project evaluation and completion phase.

Self-evaluation by each subproject was introduced upon completion. Each technology subproject produced two reports, one evaluation and one completion; and technology uptake subprojects included an evaluation within single completion reports. A guideline was prepared jointly with the partners in a workshop and each subproject separately produced their evaluation plan. A competent team of freelance consultants was employed on a short term basis to support each subproject to produce quality reports. These consultants were hired through advertisement nationally and worked closely with the PMU. This process helped improve the quality and acceptance of the reports. There were two separate completion workshops organised for report presentations by the partners. With that, the process was finalised and reports were submitted, incorporating the comments from the workshops (Biswas et al. 2007).

The project M&E team received a lot of support from the annual review teams in the development of M&E concepts and in the implementation phase.

2.5.7. Impacts assessed during the life of the project

There were some attempts to assess impacts as the subprojects were completed. The Seed Health Improvement Project (SP 00) conducted its impact study systematically; they had a baseline study to compare with. The PMU engaged a team of consultants to conduct a participatory impact study in a group of subprojects to get a feel about the type of impact PETRRA technology subprojects were going to deliver. The study selected four subprojects from four different regions and assessed their findings. All studies showed positive impacts of whatever project PETRRA was engaged in with resource-poor farmers in different parts of the country: livelihoods improved; returns from land were higher than micro-enterprise or wage labour; payback period of the rice technology was short; costs were low as the technologies were simple and built on the strengths of the organizations and exploited harnessing unused resources; and income from new technology was reinvested in agriculture as well as in non-farm activities. The studies found that women received training on all aspects and this was especially useful as it contributed to mainstreaming women's role in the households. Reports also discovered new relationships and growth in partnerships among different stakeholders, thereby contributing a lot to the impact achieved (Bayes 2007; Orr et al. 2007). Another study only focused on a particular subproject that focused on livelihoods and explored appropriate strategies that suited the poor households. This study concluded that comprehensive change in the nature of the technology can transform farm systems and that by putting together these changes, the lives and livelihoods of the resource-poor can be transformed as well (Gibbon 2007).

Similarly, an environmental impact assessment study was conducted. This study found a number of advantages for some of the technologies developed and practiced in a number of PETRRA subprojects. These included less or no pesticide use in rice, less or balanced fertiliser use, sustainable use of canal water in coastal areas, and organic practice in integrated rice-duck farming (Riches 2007).

2.6. 'Values' of values-based agricultural research management in PETRRA

Values have been mentioned and discussed in this chapter on several occasions. These played a very important role in conceptualising and implementing the PETRRA agenda. The following chapters will discuss the values, their evolution process, and effectiveness in great detail. Values have been defined as central beliefs and purpose of a society [≡] in this case, the organization or the project (Jary and Jary 1991). PETRRA strove for best practice in the following respects. The core values it adopted were as follows:

- Working with resource-poor farmers to address *poverty*.

- Conducting research as per the *demands* and priorities of the resource-poor farmers.
- Conducting, sharing, and evaluating research with both *men and women* members of resource-poor households.
- Conducting research that ensured *participation* of resource-poor men and women in all stages of the project cycle: planning, designing, implementation, monitoring, and evaluation.
- Conducting research by establishing appropriate and effective *partnership* of agencies to ensure the use of pro-poor technology, dissemination methods, and policy.
- Ensuring that research outputs were sustained through *linkage and network* development so that the interests of the poor were represented.
- Communicating innovations effectively with farmers and policymakers to disseminate, scale up, and consolidate learning.
- Using a *competitive process* as a way of identifying competent suppliers of agricultural R&D to facilitate the achievement of pro-poor outcomes (Magor et al. 2007).

These practices evolved while working with poor households. At the same time, PETRRA established the definition, scope, concept, and practical means to translate the values into action. All these elements together formed PETRRA's *value-based research management approach*.⁵³

The values adopted by PETRRA were not new; and much literature dwelled on their usefulness for developing a pro-poor agricultural research system. The significance of the PETRRA project was to identify the important values for a poverty focus, through action and reflection with partners, and then to incorporate these into a management system that was coupled with capacity building to facilitate the process. The actors in each subproject incorporated the values through action and then, as a collective of subprojects, shared that experience (Salahuddin et al. 2008a).

2.7. Conclusion

The way the project document outlined the scope of the project was rather limited, but it appeared that this did not restrict the project in becoming innovative. In a way, it helped the project to blossom as needed. The donor and the host agencies also did not take any rigid position; they were rather appreciative of new ideas and innovations. However, the anomalies in project objectives, productivity-production versus institutional change in research management policies, sometimes caused confusion in setting project priorities. But those concerns only prompted those managing the project to think of alternative ways to address issues and engage all concerned to develop new directions.

⁵³ There were other elements of values that evolved over time as well. But the ones mentioned here are the core values on which the concept was established.

The PMU was responsive, open, and able to respond to the needs of the project. It initiated ideas, included new outputs or adjusted project purposes, invited and entertained new ideas from project stakeholders and outsiders, reviewed suggestions from the context of the project, and reacted according to the situation. It exercised its freedom to be neutral, even towards its own organization, IRRI. The gradual expansion of the team as the need arose appeared to be a good strategy to keep the team active and the process cost-effective.

Making a balanced research portfolio was an issue throughout the life of the project. It involved issues such as adaptive versus basic research, technology development versus technology uptake, and policy versus technology versus uptake. There were issues to balance within and among the technical disciplines (pest, soil, breeding, agronomy) as well. This was a very complex issue for PETRRA and perhaps there was no easy answer. Balance would perhaps have to come from poor farmers' priorities.

PETRRA was an interesting but a complex project as it introduced many new ideas. It had to adopt an innovative approach to R&D management. As was mentioned in Chapter I, some have already claimed that PETRRA was a successful project (Risner et al. 2004), but a question can be raised: was it *really* successful as some of these people claimed? This thesis aims to learn the answers to some of those questions through a post-project study of one of its core group of stakeholders, the research partners. The next chapter introduces the methodology of the thesis, indicating how the investigation was conducted and how the findings were analysed. The subsequent chapters capture the actual learning and present the analysis.

Chapter III

3. The concept and method of capturing learning

3.1. *Introduction*

This research has used two complementary pathways of exploration. First, it explores arguments that helped understand and address issues related to agricultural research and its contribution and potential for pro-poor impact. Second, it has explored the practical examples and experiences of the PETRRA project to determine whether its method of a values-based research approach to agricultural research is a potential pathway to achieve pro-poor impact. Could the practical experience of the PETRRA project fill gaps in the rhetoric? The first chapter presented and established arguments that primarily focused on the existing gaps in literature and in the system in achieving a pro-poor approach. The second chapter introduces the PETRRA project and places it in the context for this research. This chapter introduces methods and tools that were applied to capture the experience from the project case study. The methodology used is to let the PETRRA partners tell their story in terms of impact on themselves, their organizations, and resource-poor farmers. These experiences were then captured, analysed, and interpreted in the subsequent three chapters. Interpretation was then used as a reflection point to provide new insights into improving the pro-poor impact of agricultural research.

3.2. *A qualitative research approach was used*

The exploration process followed a qualitative method. While qualitative research can be defined in many different ways, a simple definition that differentiates between qualitative and quantitative method is “any type of research that produces findings not arrived at by statistical procedures or other means of quantification” (Strauss and Corbin 1998). As this research aimed to understand what the stakeholders, especially the research partners of PETRRA, thought about the likely impact and effectiveness of the values-based approach, it was important to choose a research approach that helped capture such responses easily. The nature of the qualitative research stated below matches well with what this thesis explores:

...which is a naturalistic, interpretative approach concerned with understanding the meanings that people attach to phenomena (actions, decisions, beliefs, values, etc.) within their social world (Snape and Spencer 2003:3).

The ontological position, 'or what we believe is possible to know about the world' of the qualitative research approach used here is somewhat close to what has been described as 'subtle realism'⁵⁴. "That is, we accept that the social world does exist independently of individual's subjective understanding, but that it is only accessible to us via the respondents' interpretations (which may then be further interpreted by the researcher)". This interpretation to the ontological position supports the concept of shared understanding. As for the epistemological position which 'is concerned with the nature of knowledge and how it can be acquired,' it associates itself with 'interpretivism' as opposed to 'positivism'⁵⁵. 'Interpretivism' provides the researcher a scope "to explore and understand the social world through the participants' and their own perspectives; and explanations can only be offered at the level of meaning rather than cause". The research used both induction and deduction as logic for the investigation process, instead of only induction that the qualitative research approach would ideally prefer to follow (Snape and Spencer 2003:19-23).

The exploration process was also based on the principles of 'learning-oriented evaluation'⁵⁶ that aimed to learn from PETRRA project partners by engaging with them in a process of reflection following an interactive interview process (Watts 2005). This research is limited in the sense that it also learned mostly⁵⁷ from the positives⁵⁸ as far as its evidence base is concerned. Learning from the positive is a concept that aims to learn from the positive examples from the PETRRA project and intends to learn lessons from it in order to guide the future (Biggs 2006).

This research aimed to unfold the project experience from a lessons-learning-perspective from the point of view of its main players, the research subproject partners (mentioned as 'partners' hereafter), as they were at the frontline as the change agents who interacted with what was called a values-based agricultural research, development, and management approach that the PETRRA project had claimed to have adopted (section 3.2.2 provides additional justification). In addition, the personal experience of this researcher as a member of the PETRRA project management team was used to unfold and to analyse the learning, from both 'emic' (as an insider) and 'etic' (as an observer) points of

⁵⁴ There are other ontological positions (realism, materialism and idealism). "Realism claims that there is an external reality which exists independently of people's beliefs or understanding about it; materialism holds that there is a real world but that only material features of that world hold reality; and idealism asserts that reality is only knowable through the human mind and socially constructed meanings." Snape, D. and L. Spencer (2003). *The Foundations of Qualitative Research. Qualitative Research Practice*. J. Ritchie and J. Lewis. London, SAGE Publications: 23.

⁵⁵ For positivism, "the natural sciences are appropriate for social enquiry because human behaviour is governed by law-like regularities; and that is possible to carry out independent, objective, and value-free social research" Ibid.

⁵⁶ which is different from the 'evaluation for accountability' approach.

⁵⁷ The limitations of the project are also captured. but they are mentioned from positive intention so that such limitations can be avoided in the future.

⁵⁸ Learning from the positive is a concept that aims to learn from the positive examples from the past and intends to learn lessons from it in order to guide the future. Biggs, S. D. (2006). *Learning from the Positive to Reduce Rural Poverty: Institutional Innovations in Agricultural and Natural Resources Research and Development*, School of Development Studies, University of East Anglia, Norwich: 16.

view (Krishna and Bunch 1998). The partners and the researcher together, through an intensive interactive interview process, constructed the lessons. The approach supports the tradition of qualitative research used in sociology known as constructivism that displays 'multiple constructed realities' through shared investigation (by researchers and participants) of meanings and explanations" (Snape and Spencer 2003:12).

This research is labelled as a case study on the PETRRA project as 'PETRRA' was studied as a case project under IRRRI from the understanding that "[C]arefully designed and documented case studies are probably the best tool to understand why people do what they do" (Orr et al. 2009: 33). IRRRI is one institute within the CGIAR where PETRRA was one among the different types of projects. Under PETRRA, there were 45 subprojects, the majority of which were used as 'cases' and were investigated through interviews. Interviews from subprojects were treated as individual cases to highlight experiences on a particular subproject context; these sub-project cases in combination finally helped shape the PETRRA case. 'Cases' here helped sharpen the facts in the circumstances they hold true. Long quotations from the partners are used to illustrate particular experiences. They are examples of diverse realities from people of different backgrounds and context and should not always be construed as generalisations (Orr and Adolph 2007).

The interview process partly followed a pattern of storytelling. The partners were free to talk on issues from their experience that involved comparison, examples, present and past work experience, and impressions about other colleagues, other partners, and the context in which they had to operate. All such elements inspired them to bring in stories that helped them to make their point. This also involved stories that were real-life examples from their respective subprojects. There are examples where such a storytelling method was used as an instrument to capture organizational learning (Tineke 2003).

3.3. The conceptual framework of the inquiry process

A framework is presented below to interpret, understand, and capture the learning through the PETRRA case toward a greater understanding of the potential of a values-based agricultural research for national-international agricultural research centres. The 'learning process of evaluative enquiry' has been outlined as a framework to understand the analytical process. The framework is captured in Figure 3.1 below. This framework has been adapted from Preskill and Torres (1999) and used to understand the overall framework of potential learning from the outcome of PETRRA. This shows a dynamic process of learning that existed in the project in different implicit forms and manifestations. Although it was a fresh start, this research was the continuation of the preexisting implicit learning cycle. The interviews, which are discussed more in the later part of this chapter, especially the

interactive nature of the process, capture the analysis of the learning that each individual respondent has experienced. In a way, the interview process was able to bring back the dynamics of the learning that each of the PETRRA partner had experienced during the operation of the project. The analytical tool helped both respondents and the researcher to uncover the learning through the interactive interviews.



Figure 3.1. The conceptual framework of the learning process for PETRRA

Adapted from Preskill and Torres (1999)

The inquiry phases start (Figure 3.1) with focusing, carrying out, and applying the learning. The 'applying the learning' phase is critical as it demands careful consideration of what, how, and when learning is implemented into action and monitored. Organization members and stakeholders together engage in the process of dialogue, reflect, ask questions, identify and clarify values, beliefs, assumptions, and knowledge. This takes place in a facilitated environment with capacity building as needed. In the process, learning takes place at individual, team, and organizational levels (both for the team and for the farmers) as organizational learning. This should not be considered as a linear process as the environment is dynamic. It starts at any place by interaction among members.

In the case of this research, the interview process was operated within a learning-oriented environment, which was led by the researcher who basically facilitated and managed the learning process. He intends to communicate the collective learning elements to keep people informed of what learning has

taken place. Chapters IV, V, and VI capture the learning in detail. Research questions that were used to guide the enquiry process are already indicated in the Chapter I.

3.4. The Method

The overall objective of the research is reflected in the hypothesis statement and in the research questions stated in Table 3.1. It also indicates the methods that have been used to respond to the corresponding question. This section elaborates on the method that was specifically used to tackle the last question. This involves in-depth interviews conducted to respond to the question and to understand the PETRRA learning in support of the values-based research management approach that was claimed to be implemented in the project. Specific objectives of the research are stated below.

The first objective of the research was to understand the process and to assess the actual experience of the respondents while they interacted with the values during the implementation of the respective subprojects. This also aimed to understand the respondents' experience of what values were operationalised and how this was done, and the respondents' assessment about the effectiveness of the values. The operationalisation process involves experiences that were personal and organizational and included the research community as partners of PETRRA.

Second, to assess and investigate the extent of actual achievements in the respective subproject as they used the PETRRA values-based research approach. The interest was to assess actual achievements as outcomes of the research that involved the contribution of values and the capacity development process associated with values. This included involvement and utilisation of values in different combinations, which might or might not necessarily have involved all values.

Third, to assess the level of sustainability achieved by each subproject. This included progress after the project was closed, information on progress regarding mainstreaming of the innovations within organizations, further concept development in the form of new projects or publications in journals, communication material development, consolidation of innovation within the farmer community, establishing MoUs with other agencies to continue to work on a PETRRA innovation, mainstreaming farmer participatory research within the existing post graduate agriculture education system, etc. This included activities and achievements within government, NGOs, and private sector partner agencies.

3.4.1. Who to learn from and why?

Learning from a project (PETRRA) to understand the whole system of international research may seem ambitious where many stakeholders are involved at different levels. Studying one group of actors or stakeholders, the partners, within a project may appear even more ambitious if the objective is to learn lessons from the whole system. The researcher purposely decided to learn ‘a lot about a little (problem)’ from the partners as an entry point (Silverman 2006). The intention was to learn about their experience and, through them, learn about their clients and their organizations and about the potential impact that these people had anticipated from the intervention of the project they each had worked with. This was the group that had been involved in a values-oriented, capacity-building, and facilitation process together with other stakeholders in the project and they were expected to influence impact on the livelihoods of poor men and women farmers, the extension agents with whom they worked, and their organizations towards a sustainable research and development outcome. Figure 3.2 presents a simple logic that shows why partners are the focus of this research.

Figure 3.2. Partners as the focus of research



Also strategically, for IRRRI, it was aligned with how it operates with national partners to conduct research in partnership. Each partner had an organizational link, which was indirectly responsible for participating in and delivering research. Interviewing individual partners and understanding their individual and organizational response to PETRRA values was a test for IRRRI to understand the potential for such a research approach in future collaborations. This was important for IRRRI because many of these partners and their respective organizations are existing (mainly NARES⁵⁹, NGOs, private sector) or potential partners for IRRRI in future in-country collaboration in research and development. This also concerns the developmental outcome of research for which an institute such as IRRRI is accountable for:

While the developmental impact is notoriously difficult to assess, indicators of organisational uptake can provide reliable proxies or ‘leading’ indicators of developmental impact. This implies that overcoming the lack of connection between research outputs and development impacts should not be pursued through impact assessment studies alone but through appropriate systems that account for organisational

⁵⁹ This could be considered as an opportunity to expand the definition and coverage of NARES membership as well.

uptake and research outcomes, which will provide the clearest evidence of likely developmental impact (Smith and Sutherland 2002:6).

PETRRRA partner groups were very diverse and therefore have much potential and importance as it can be seen from the emerging trend. The emerging international and national research and development environment encourages such partnerships for better impact for poverty elimination. Such existing and potential partner groups can be considered as the gateway and therefore are primary clients for research and development for institutes like IRRI or any other international centre, as through this group can they reach the poor and work for them.

3.4.2. Who are they?

A total of 40 persons were interviewed for this research. This represented 35 out of a total of 45 PETRRRA subprojects. A complete list of interviewees' names, the subproject they represent, and the organization to which they belong is attached as Appendix 1. Table 3.1 below presents a brief summary of the coverage. Six persons interviewed were involved in more than one project. The persons together represented 19 partner organizations. Fifteen persons represented the Bangladesh Rice Research Institute (BRRI) and four persons represented International Rice Research Institute (IRRI) as they led 27 subprojects of PETRRRA, respectively.

Table 3.1. Representation of persons interviewed

Subproject category	Total no.	Subprojects covered	Persons interviewed	Person as leader of subproject	Person as senior team member
Extension methods development	20	16	19	15	4
Technology development	19	17	24 (6)	21	3
Policy research	6	2	3	2	1
Total	45	35	46 (6)	38 (5)	8 (1)
Total actual			40	33	7

Note: Numbers in parentheses indicate the number of persons who represented more than one subproject

Additionally, four persons were especially interviewed; they represented four different followup projects that were developed on the basis of PETRRRA innovations, both technological and socio-technical. These projects included two CGIAR challenge programmes on water and food projects (CPWF7 & CPWF10), and the FoSHoL (Food Security for Sustainable Household Livelihoods) project that the IRRI Bangladesh office coordinated during the period 2004-09. Two persons who shared their FoSHoL experience also had PETRRRA working experience as senior team members. The other two represented

IRRI—they were not involved directly with any PETRRA project but had access to PETRRA experience through fellow colleagues.

3.4.3. Questions to the respondents

The interview process was informal; partners were given freedom to talk about their experiences about PETRRA on the basis of a very loosely structured checklist that centred around values and their actual operationalisation in real life project management. A copy of the checklist is attached as **Appendix 2**. The persons interviewed for this research were asked to reflect on how they looked at and interacted with the values that were promoted by PETRRA in different stages of the project cycle. The investigation process continued to concentrate on issues relating to a particular partner interaction with each value and what each of them achieved in the end of PETRRA as outcomes in the form of innovations and impact on the resource-poor farmers.

- What elements of values worked in the respective project and why did they think that they did or did not work?
- How did they operationalise values in their respective research? And what were the evidences that showed the performance of the values-based approach: successes and failures?
- What elements of their learning from the project were they going to sustain and how?

Interviews were conducted mostly with the subproject leaders. In some cases, two persons, the second leader, or the alternate leader of the respective subproject also joined in the interview. In exceptional cases, separate interviews were conducted with two persons from the same subprojects as they were not available for a joint interview. Each interview reflects the opinion of the individual but at the same time represents his/her organization and the type of larger group category to which each belonged (e.g., government- research or development, NGO, private sector, international organization). The expressions of such broad categories of opinion differences or similarities are captured in chapters IV, V, and VI.

3.4.4. Different stages of the interview process

A piloting exercise was conducted to develop an interview protocol to make an appropriate and effective checklist. A first draft of the checklist was prepared at the research proposal development stage. To test the appropriateness of the checklist, a meeting was organised with one of the partners of PETRRA. It was revealed in the meeting that asking questions and taking notes at the same time was difficult and there was the risk of losing information. Therefore, the output that would be received from the interview could be very brief and mechanical and would miss explanations as to how and why the respondent gave such opinions and answers to the questions asked.

The checklist was further expanded to make it a more comprehensive one so that partners could clearly understand each question and could write their responses on their own. It was anticipated that the checklist could be sent by email with a request to fill it in and send it back to the researcher as early as they could do so. Accordingly, the checklist was sent to each and every partner. But, after a long interval and a number of followup reminders, only one answer was sent back. The method of filling in a questionnaire for the nature of the study was, however, found inappropriate.

The researcher then conducted a number of interviews using the revised checklist and noted down the answers himself. In some cases, a tailor-made, short checklist was also used for partners who had limited engagement with the project. This was especially useful for partners from IRRRI. The depth of informal conversations during this round of the interview process inspired the researcher to opt for a more comprehensive documentation of the interviews as he realised the value, extensiveness, quality, and diversity of information and the level of personalised experiences and intensity of emotions and engagements that were evident from the interviews. The researcher then decided to capture the voices. A digital recorder was used. Partners agreed without any hesitation to have their voices recorded. A transition from semi-structured interview to a non-pen-ended interview method was applied, which provided additional opportunities for probing and active listening during the interview process (Silverman 2006:110). Thirty-five interviews were recorded out of the total 40 interviews actually taken. This method of interview added new advantages – interviews were far more interactive, lively, informative, and analytical. The other five were direct interviews with IRRRI scientists in the beginning of the interview process, which were not recorded; responses were noted down on paper by hand.

Initially, an attempt was made to quantify and assess the performance of each subproject by adopting a scale from the point of view of PETRRA partners, in addition to an interview with each partner. This idea had to be abandoned after it became evident that respondents found the exercise to be inappropriate for assessing the type of activities in which they were involved in PETRRA. They failed to justify their achievement against values with a number. The researcher also was uncomfortable with the outcome, as the relative difference of score given by a partner failed to provide him any significant impression about the impact of values. The idea was dropped.

Partners were encouraged to talk freely on issues they wanted to discuss and to put emphasis on issues as they liked to, which facilitated a reflection process. Partners enjoyed the freedom and felt comfortable to reflect on the values. While reflecting, they concentrated more on some questions, partially responded to some of the questions, and skipped some based on their depth of experience.

3.4.5. The processing and analyses of interviews

Interviews were taken in Bangla. Questions were asked in an order appropriate to each individual. Respondents were given freedom to talk freely on issues they felt appropriate at a particular point of time during the interview process. The following steps were followed in information processing.

- Audio interview files were transcribed into Bangla scripts by research assistants; these scripts were edited further by the researcher listening to the audios.
- Each interview content was analysed using 'the analytic hierarchy' approach (Ritchie and Lewis 2003:212), which means placing data according to hierarchy of themes and adjusting content as and when a change is needed to restructure; different sections of the interviews were marked and they were compiled in an ACCESS database file under different broad headings; the content of all 40 interviews was extracted from the scripts and put into ACCESS boxes in English by the researcher.
- After compilation, theme-wise ACCESS report files were prepared under different headings.
- Printed copies of texts were then marked manually according to themes and subthemes and labelled along the line of chapters.
- Different theme-based reports were again compiled into potential chapters and sections under chapters under different sections and subsections; chapters on impact of different values, capacity building, and sustainability from the point of view of project impacts were produced based on partner interviews.

In carrying out the inquiry, a step-by-step process was followed. An assessment was made to understand the types of inputs provided and outcomes achieved by each of the subprojects⁶⁰ in implementing values in the respective research.

3.5. Reflection on the method

3.5.1. Open-ended interviews opened up the boundary

The respondents were asked to mainly talk about their own experience based on the project in which they were involved in PETRRA. But very often, they commented on the others, the fellow subproject leaders, or organizations who were PETRRA partners. This, on one hand, provides evidence of their familiarity with other partners with whom they had interacted and shared experience and, on the other hand, demonstrates that they used others as cases for making comparison. This also reflects how much they have interacted and learned from each other.

Although there was no benchmark project or programme used for making a formal comparison with PETRRA, in a number of cases, the respondents have compared the PETRRA experience with other projects/programmes they were involved in or that were in operation during or after the PETRRA project

⁶⁰ PETRRA had 45 subprojects, and these were distributed under three major themes: technology development, uptake pathways/extension methods research, and policy research. A list of projects and research partners interviewed is attached at the Annexure I.

was closed. They also made comparison of the way the respondents have changed their knowledge, attitudes, and practices at different points of time. There were comparisons made as to how the learning varied between broad categories of stakeholders; the partners from government agencies showed their similarities to and differences from NGOs, and the partners from NGOs did the same with government and international agencies.

3.5.2. Each case interview was different

Interviews were quite different from each other. Research partners were asked almost the same set of questions, but they came up with quite a variety of responses. This happened for various reasons. The backgrounds of the respondents were different. They belonged to different categories of disciplines, managerial positions, roles in the PETRRA project, positions in the organization, attachment to the PETRRA project, opportunities experienced to use the PETRRA experience during and after the project, their present activities, relationship with the PETRRA team, personal ability, exposure to research and development, and many other factors that were unknown.

There were five major categories of respondents: the largest group was from the national agricultural research systems (NARS) of Bangladesh; the second largest group represented the NGOs in Bangladesh; the third largest was from IRRI, which was labelled international agricultural research centre (IARC); the fourth group was from government development organizations; and the last was from private sector organizations. There were two respondents from NARS who had the opportunity to look at PETRRA impacts from two positions, as a subproject researcher/leader and as research manager of the NARS. There were two persons from the NGOs who worked in PETRRA and also in a PETRRA follow-up project, FoSHoL⁶¹. In BIRRI and IRRI, there were two subproject innovations that were transformed into new projects under different donors. Some of the same people who worked in PETRRA continued to work in those new projects and carried the PETRRA learning forward. They all had additional opportunity to observe PETRRA impacts in their successive projects.

In the case of the smaller NGOs and a private organization, the lead partner-researchers were the heads of their respective organizations. Interviews with this category of respondents were different compared with the others who could not represent their organization so easily. There were exceptions as well; some individual champions could influence their respective organizations strongly. Figure 3.3. below presents the possibility of a respondent to be at anyone of the farthest three levels. It indicates

⁶¹ The FoSHoL project started in August 2004, immediately after the closing of PETRRA to disseminate PETRRA innovations. The project was funded by the EC and coordinated by IRRI. Three international NGOs (CARE Bangladesh, ActionAid Bangladesh, and Practical Action Bangladesh) implemented the project until August 2009.

the likely cause in the variation of the position that a respondent could belong to. This might also have caused the variation that might have occurred in the depth of the interview.

Figure 3.3 Possibility frontiers for a respondent position



This was why the interviews were used according to their merit and the quality of the statement to formulate descriptions on PETRRA performance. There was no effort to construct a collective reality; rather, it was the highlights that came out from the interviews that were captured. Every effort to highlight an experience by the interviewee was considered valuable and was used for making descriptions.

3.5.3. “It was a shame for me, I could not recognise you”

When M.A. Salam, a PETRRA partner, was approached by the researcher for an interview, he was initially reluctant to give an appointment. He showed his busy work schedule and wanted to avoid it as he thought it was not worth talking to a stranger from IRRRI. But, as soon as he realised the identity of the researcher as a former PETRRA-PMU member, whom he knew very well then, he did not waste a second to sit for the interview. For 10 minutes, in the beginning of the interview, Salam was explaining his reasons for not responding and the ‘mistake’ he made and how ashamed he was. He labelled himself as a ‘product of PETRRA’ as he has been operating his business to date based on the experience he gained from PETRRA. The statement below captures his remarks.

It is a matter of great shame for me that I could not recognise you as you said you are speaking from IRRRI. You should have told me that you are from PETRRA. I am made of PETRRA. PETRRA made me what I am now. Whatever business I am involved in now, 75 percent of it is the continuation of PETRRA. Please forgive me, please forgive me...

PETRRA has helped me to develop my worldview about aromatic rice production, processing and marketing. I am involved in seed production, import and sale of a colour sorter for rice mills, which was introduced by PETRRA. It is all PETRRA in my business. People know me now as the PETRRA man; formerly, I was known as a tobacco man, but now, I am known as a rice man. PETRRA made me busy as I am now. I am still surviving on PETRRA innovations. I cannot forget PETRRA and you: Noel Magor

and Ahmad Salahuddin. It was a shame for me; I could not recognise you (M.A. Salam, SP 29, APEX, NGO).

Even the busiest persons were generous in giving more time for interviews than they had initially agreed to when the researcher made appointments with them. In most cases, they were found to be very engaged and nostalgic about what they had done or been involved in during PETRRA.

3.5.4. Personal experience as observer and investigator

For the researcher, this experience of engaging with partners after a long interval following the completion of the PETRRA project was a unique opportunity as he himself was a team member in the project⁶². Simple responses and gestures that each of the interviewee showed during the appointment and during the interview were all positive, which inspired the researcher in his work. Each partner accepted the researcher very positively. All selected interviewee researchers were very busy with their work. The researcher had thought that not all of them would be positive and available for the interview; some of them might even refuse to give time. And even if they agreed to be interviewed, they would soon be bored during the interview and might press to make it very short. The researcher thought that the interviewees might consider the process not so interesting as the project was closed more than 3 years ago (at the time of the interviews). They had no obligation and no hope for any new collaboration for research. There might have been risks in agreeing to record the interview also. Partners forgetting the story and the experience of PETRRA could have been a nother possibility as they have become involved with many other issues since the project ended.

But, surprisingly, the experience was very different. The bulleted statements below might be claimed as evidence of how positive the project experience was for each of the researchers of PETRRA.

- None of the partners refused the interview.
- All were happy to give the interview and meet the researcher.
- All gave more time than they initially promised; for many, the 1-hour interview continued for 2 hours.
- None of the interviewees rescheduled their time of appointment.
- All of them entertained the researcher with tea and snack.

⁶² The researcher worked as the Manager of the Research Programme in PETRRA.

Chapter IV

4. PETRRA values in practice: early evidence of impact

4.1. Introduction

This chapter presents the experiences of the partners, individuals, and organizations, as they interacted with values in their respective PETRRA subproject in particular and the way they interacted with the PETRRA project in general. These are the points of view of the project's partners as they reflected on the values by way of their own and their organization's participation in the PETRRA project. The partners outlined the benefits and advantages of using values in carrying out agricultural research and development activities and also identified relationships between these values. As mentioned in Chapter III, these reflections were elicited from the partners during individual interviews. The interviews were conducted to capture reflections: first, how each individual partner experienced and interpreted the values; second, how their respective organizations experienced and interacted on the basis of these values. In the course of the interview process, it was realised that the partners had diverse levels of engagement with the PETRRA values that were briefly mentioned earlier in section 2.6 of Chapter II.

Different partners had different levels of understanding and interpretations of the values⁶³. As a result, each had reflected upon the values differently. It was interesting to observe a wide range of interests and interpretations of the values by the partners. The actual interpretation and application of a particular value within the subproject's context varied with each individual and the organization that managed the subproject; each had their own particular context and level of understanding of these values. They may all have claimed that they practiced a value, but this may not indicate the same level of accomplishment. There was a shift in the process of understanding and subsequent operationalisation of the concept into practice among the partners over time (as presented in Table 2.3), but that might not have followed a consistent order. There were differences among the values in terms of their position, interconnectedness, and hierarchy within the respective organizational management system as well. Chapter VII captures the dynamics and put them into a management context.

⁶³ For example the working definition of resource-poor farmers in PETRRA was "Households with three to eight months' net household food security from own rice production and where more than half household income derives from own farm production" (Orr & Magor 2007: 6); but partners had the scope and freedom to justify their own definition based on their own experience.

Partners are classified into five major categories in terms of organizational affiliation. It is anticipated that opinions will vary from one category of partners to another. Partners associated with BIRRI, BARI, and BARC are labelled as NARS (national agricultural research systems) and are officially known as such. IRRI partners are labelled as part of the IARCs (international agricultural research centres). All nongovernment organizations are labelled as NGOs despite the fact that there can be subcategories among them — e.g., national, regional, local, and international. Two national rural development organizations are labelled as government development organizations. Finally, two private firms are labelled as private organizations.

The partners referred to three periods while responding to the interview questions: i) pre-PETRRRA, ii) during PETRRRA, and sometimes iii) post-PETRRRA. As they discussed a particular PETRRRA value, they compared their past experience with PETRRRA and thereafter and commented on the future. For many partners, the interview was an opportunity to review their positions on values over time. The interest of the researcher was to elicit and illustrate these reflections from the partners and to present them in a context that captures their learning. Individual statements on issues made by the partners were used extensively to illustrate an opinion or a position, sometimes highlighted as an independent opinion and other times in support of others' position, or simply to show differences. These illustrations, as stories, are used as key evidence and an effective tool to make a point.

The partners often compared their PETRRRA experience with the traditional forms of research and development activities they were engaged in the past. The PETRRRA experience provided them new tools to compare, as they were exposed to values that provided the rationale for including certain concepts such as poverty-focus, demand, and gender, in agricultural research and development. These constituted strong evidence of the advantages of partnership-linkage-networks and communication of innovation activities.

This chapter captures partner reflections on such major values as they each interacted with them personally or as members of an organization. The sections and subsections are structured around a particular value. While discussing the major values, the partners also referred to other related values and issues such as capacity development, facilitation, and flexibility in project management. This chapter sets the ground for the next two chapters (V and VI) that continue to capture the learning by the partners and their respective organizations as they go through capacity building and engage in discussions on overall impact and sustainability. The three chapters together present the experiential learning of PETRRRA, providing evidence of the effectiveness of the values, explaining the way these values are interconnected, and showing how the potential for pro-poor impact is created.

4.2. Poverty focus

There was no major controversy among the different groups regarding the importance of linking agricultural research and development (R&D) with poverty elimination. All partners recognised its importance, but their understanding of the best means to address poverty issues varied because of differences in conceptual clarity that exist among the different groups. As mentioned earlier, the project strategy paper identified 'poor farmers' rather than 'technology' as the target of P ETRRA (Orr and Magor 2007a). There were differences in terms of internalising the concept when partners operationalised it in their respective subprojects. There were also dissimilarities in the interpretations and actual levels of meeting the objective and accomplishing the poverty focus strategy by partners. One surprising finding is that not many NGOs work with the poor when it comes to agricultural programmes and that some NGOs lack the appropriate strategies to locate the resource-poor farmers.

4.2.1. Targeting poor farmers for agricultural R&D: a contested strategy

Awareness of the importance of targeting the poor for R&D depended on the partner's background and level of practical experience in working with farmers. It was also an issue of setting priorities. In this case, priorities varied in terms of strategies that exist in the mindset of each individual partner, which, in turn, was determined by the individual's assumptions. The organization within which a partner operated also determined the mindset because the starting point for each was different, be it an NGO, a government research institute, or a private agency. But once they had practical experience of targeting the poor and they had been convinced positively of the benefits of directly working with them, the initial assumptions began to change \rightleftharpoons from a rigid position toward a more flexible one, which, in most cases, was favourable to a pro-poor strategy.

For some (mostly NGOs), it was obvious that they would focus on the poor as they had already worked exclusively with the poor and that their respective organizations had poverty focus as one of the core values. They argued that resource-poor farmers are those who are directly engaged in farming and those who employ their own labour, not like the non-poor farmers. Partners directly linked this approach with their ultimate objective of development and poverty elimination. They considered technology as a strong means to increase the income of the poor and thus help eliminate poverty. For such organizations, it was not necessary to incur additional costs to organise the poor as they had already organised poor farmer groups. So, for them, transaction costs to reach the poor and involve them in agricultural R&D activities under the project were low (CA Mannan, SP28, HEED Bangladesh, NGO; M Nuruzzaman, SP09, Shushilan, NGO; MG Neogi, SP07, RDRS, NGO).

Those who believed that they should work with the poor argued that land ownership and operation patterns in rural Bangladesh have changed.

Those who are well-off do not want to cultivate their own land; rather, they are interested in leasing it out on a yearly basis to tenants. The poorer sector (the landless, marginal, and small farmers) is directly engaged in agricultural production activities. The high cost of production, especially that of labour, discourages rich landowners from cultivating their land and employing hired labour. The marginal and small farmers see this as an opportunity as some of them could use their underutilised labour. Small and marginal farmers are desperate to improve their condition. They want to maximise production on whatever piece of land they have to ensure food security. Most of the poor become part-time farmers, they also work as off-farm labourers, they pull rickshaws (tricycles), or they engage in other non-farm activities in the village. The transition from sharecropping to a lease system and the increasing cost of labour are the two issues that would continue to emerge in Bangladesh in the coming days. These two together would continue to make marginal and small farmers take the lead in agriculture as it would increase land operation opportunities for the poor. So it was important that agricultural R&D projects like PETRRA work with them and set an example for the future (CA Mannan, SP28, HEED Bangladesh, NGO).

A similar observation was made by Dr. M.A. Razzaque of BARC (SP32). He commented:

Targeting poor farmers can be beneficial for many reasons. Increasingly, most of the land is being operated by the landless and marginal farmers as sharecroppers or tenants. Labourers working in rich farmers' land can also disseminate technology faster. The land operation system also brought in an important role for the resource-poor farmers. This group has been able to adopt new technologies to make profits out of leased land (Dr MA Razzaque, SP32, BARC, NARS).

This situation suggests scope for direct intervention that targets the poor, directly involving them in agricultural R&D activities. It also suggests that, instead of alternative poverty-reducing strategies through non-agricultural means, agricultural R&D interventions can provide an effective response to poverty alleviation.

Some partners belonging to government institutes argued that projects such as PETRRA should also work with non-poor groups. According to them, the non-poor farmer group would not allow the voice of the resource-poor to be heard. The poor own small areas of land and are dependent on the non-poor for access to additional land. They also thought that most surplus production would come from the non-poor as they possess larger farms. The poor are less likely to adopt new technology enthusiastically because of uncertainties related to the right to operate the land. They cannot make use of the land any way they want to. For example, in the instance when an irrigation canal might need to be excavated, a sharecropper or a tenant would not have the right to decide on it. It would depend on the actual owner. If she or he would like to use different inputs in that land, there would be no guarantee that the landowner would share the cost. Even within the resource-poor, there are leaders who would dominate the less powerful members. So, one should be cautious about this reality. The voice of the poor farmers who have less power can hardly be heard. They also argued that, inasmuch as the non-poor group owns a major land area, this must be managed as well to increase production (Dr. M.A. Saleque, SP17, BIRRI, NARS; Dr MA Taher Mia, SP00, BIRRI, NARS).

From this brief contrast, it can be seen how partners differed from each other and what contemporary debates in agricultural and rural development are concerned with. Government organization partners were more interested in the political situation that exists within a rural society. They did not deny the importance of working for the development of the poor ⁶⁴ they after all constitute the majority of the population ⁶⁵ but they were concerned about the vulnerable situation within which the poor groups operate. They highlighted the challenges for the poor and emphasised the importance of not neglecting the large land area owned by the non-poor.

It must also be acknowledged that some partners, even from the same government research institute, expressed their strong support for conducting R&D activities with resource-poor farmers. They highlighted their experience of working with the resource-poor as excellent. One partner, Mr. A.B.S. Sarker (SP34, BRRI, NARS), commented, "I liked the pro-poor approach from my heart." These partners thought that the poor were more enthusiastic. The rich had no time to join such programmes as they did not interact much; they send their representatives. They also understood that resource-poor farmers badly needed technology support. One such argument is captured in the statement below.

I believe that we can involve resource-poor farmers in agricultural research. The very poor people get support from the government and the other non-rich also benefit from the government as they get different forms of subsidies. But resource-poor farmers do not get anything. I have observed marked changes among the resource-poor group as I had interacted with them in the field on different occasions; I met each one of them almost 10 times during the project period. The farmers themselves told me that they had benefited from their involvement in the research, having received knowledge and inputs directly from us. When the farmers know that I am around, they would come see me and give me a big hug to show their feeling of appreciation.

From our work, we could convince concerned stakeholders about the utility of our contribution and we can say that such a (pro-poor) model really benefits the resource-poor very easily. It was also easy to prove that research can contribute to achieving the national goal of poverty reduction. This work helped us to succeed (in developing a technology) and the people (the resource-poor farmers) for whom we were working were benefited too (Dr. M.A. Salam, SP13⁶⁴, BRRI, NARS).

This quote illustrates the potential that exists within the poor farmers as affirmed by two partners from a traditional government research institute. Perhaps, the research agenda that they set were based on farmers' demand and the results they brought to fruition together (farmer and the partners) under the project must have successfully contributed in creating great enthusiasm among the client groups. Whatever positive factors contributed to this success were reflected in their own accounts, proof of the great potential of conducting agricultural research with poor farmers. Later, in the chapter, some other factors that contributed to the farmers' enthusiasm will be highlighted.

⁶⁴ SP13 was a subproject that dealt with the development of salinity-tolerant varieties in the southwestern part of Bangladesh. Farmers, men and women, collaborated with scientists in the conduct of participatory varietal selection (PVS) work; one variety was released out of this research. The first research of this kind, it was able to establish a model for variety release within BRRI.

4.2.2. Strategies and tools to make the programme poverty-focused

It is not enough to just introduce a concept without first giving an operational definition and without providing indicators by which to measure progress. In PETRRA, an operational definition of resource-poor farmer was given and partners were advised to use that as flexibly as possible in their respective subproject in order to identify and engage with that group of farmers. The identification of a resource-poor farmer was based on the poverty situation in Bangladesh and was defined in terms of rice-provisioning ability of the household as rice provisioning indicates the level of household food security. PETRRA defined 'resource-poor' households as "those with 3–8 months' net household food security from [their] own rice production and where more than half the household income [is] derived from [their] own farm production" (Orr and Magor 2007a:6)⁶⁵. It was up to the partners to engage with the resource-poor farmers, keeping in mind this broad category, depending on the situation they were working in. From PETRRA they were encouraged to target the poorest group possible. This working definition was used also to update the progress at the subproject level. Partners found the definition to be practical, useful, and effective with respect to the subproject contexts.

I must appreciate PETRRA's effort of introducing the concept of the rice provisioning ability and to link it with the impact of the project. The project was very focused on that and did create pressure on researchers to come out with an improved result. PETRRA pressed the researchers to review their programme along that line, which was very effective. Very often, we notice people making commitments but who do not take these seriously. That was a good indicator (Dr. M.A. Razzaque, SP32, BARC, NARS).

Partners appreciated the importance of targeting poor farmers as the increasing land tenancy market also brought in an important role for resource-poor farmers as tenants. This group achieved the ability to adopt new technology to make leased land cultivation profitable. The new system of contract farming introduced by seed companies for seed production also brought in opportunities for the poor as they offered packages of inputs together with the land (Dr. M.A. Razzaque, SP32, BARC, NARS; Fashiur Rahman, SP08, ABC, pvt. organization).

Partners travelled through the same learning path, but their performance varied, depending on their actual organizational situation and personal commitment. They had to accommodate the new approach of targeting within their existing practice. But, as they became convinced with the new definition, they were able to develop innovative pathways to make progress. BARD (SP 23) used to work with village institutions and have collaborated with all categories of farmers, but under PETRRA, they did achieve much more in targeting the poor. The story below tells the need for team commitment and appropriate

⁶⁵ This definition was innovative in the sense that it includes farm production coming from operated land, owned-operated, or operated only.

strategies to deal with specific socio-political situation in the village to achieve progress. Partners also needed time to learn new concepts and tools⁶⁶ to facilitate the work and to be convinced of new ideas.

In the first phase, we could not be that target-oriented as much as we would like to. That does not mean that we did not have it at all. The proportion was roughly 60:40, 40 percent were poor farmers. It was very difficult to intervene in the village and bypass the village leaders. If you want to organise anything in the village, you have to take them along. And you have to keep some positions as those held by leaders of that non-poor group. As our focus was on seed production and dissemination in the first phase, we tended not [to be] that serious about targeting. We gradually realised the need to involve the poor as this group cannot fulfil their need by themselves. They looked for support and the village institutions constituted that support. These poor farmers were so interested in testing different technologies that they always asked about it. Gradually, we found ourselves working with 80 percent of the farmers. We explained the purpose of the project and gave the responsibility of selecting the poor farmers to the village leaders. They helped us reach the maximum number as they also realised the intention of the project. The leaders allowed us to work with the 80 percent poor farmers. As there was not much direct benefit involved, getting the cooperation of the rich to work mostly with the poor posed no big problem. As we worked through the village institution, they got benefits from the activities indirectly and they cooperated in our work. Those were my feelings. As long as the institution exists, it was likely that all would benefit from the activities done there. Because of the village institutions, we had a place where we can discuss, there was good shelter, and a good atmosphere prevailed (Tapash Bose & A.K. Azad, SP 23, BARD, govt. development organisation)⁶⁷.

Partnerships and networks were used as a means to achieve a poverty focus. This was especially useful for organizations that did not have a mandate or direct access to resource-poor farmers. One example was the SeedNet subproject (SP 02) of BIRRI. There was no direct emphasis on poverty, but as part of their efforts to make their seed programme poverty-focused under PETRRA, they partnered with agencies that operate in remote areas and work with both resource-poor and resource-rich farmers. The latter benefited from the availability of quality seed, which otherwise could not have been guaranteed through the existing government agency-led (e.g., BADC) seed system that only runs at the district level. For poor farmers, accessing BADC seed at the district level was difficult as only rich farmers usually have access to this. Under PETRRA, most SeedNet partners came from NGOs who work with the poor. This automatically ensured access to quality seed for the resource-poor. The availability of quality seed in remote areas itself extended a great opportunity for the resource-poor (Dr. M.K. Bashar, SP02, BIRRI, NARS).

Women already involved in agriculture were targeted by the partners as the primary target groups in R&D activities. They (both PMU and partners) thought that targeting women, given the backdrop of the present trend of feminisation of poverty⁶⁸ in agriculture, would automatically help targeting the poor.

⁶⁶ For example, partners learned PRA tools for identification and selection of resource-poor farmers.

⁶⁷ The failure of the BARD model of rural development to reach the poor farmers is extensively discussed in the literature. The good intention of reaching poor farmers was sidetracked as large farmers took advantage of the weakness in the targeting approach. Magor, N. P. (1996). *Empowering Marginal Farm Families in Bangladesh*. School of History & Politics, Adelaide, Adelaide University.

⁶⁸ 'The feminization of poverty is a change in poverty levels that is biased against women or female-headed households' Medeiros, M. and J. Costa (2008). "What Do We Mean by "Feminization of Poverty"?" *International Poverty Centre - One pager*(58): 1.

The family approach of training, which involves men and women heads of households in all kinds of sharing sessions, also resulted in better targeting (Harun Ar-Rashid, SP39, 44, AAS, NGO).

Another strategy of PETRRA to access poor farmers was to work in the most vulnerable areas of the country (in terms of natural resource base) where most poor people live. Partners identified regions to be their R&D sites where they could work with resource-poor farmers in response to calls for concept notes (SP13, 25, 22).

Working with a simple technology such as the leaf color chart (LCC) (SP 10) could benefit the poor as well as the rich. The simplicity of the technology worked for the poor. Many people continued to work with the tool, including the DAE. This was so simple that it was disseminated widely. Its limitation was that it could not be made available in the market for large-scale national-level extension (Akhter H. Khan SP10, 43, BRRI, NARS).

In the case of farm machinery, it was possible to ensure the poor farmers' access to machines (thresher, improved mills for improved rice recovery), the result of collaboration with scientists of BRRI, NGOs, and rich farmers. Through NGO collaboration, it was also possible to ensure ownership of small tools such as weeders (US\$7 each) (Dr. Saidul Islam, SP33, BRRI, NARS).

The NGOs serious enough to have a poverty focus had to work together with the poor, responding to farmers' call and conducting R&D activities in such a way that suits their organizational mandate. The NGOs worked with the poor because the latter had collaborated and had given time. They collaborated when the partners clearly showed them the result, additional production. The poor farmers were trained and many of them became seed-producing contract farmers in some subprojects. They were given the necessary inputs: credit and a guaranteed price for their produce (Fashiur Rahman, SP08, ABC, pvt. organization).

With marginal and small farmers, the experiments and demonstrations would be implemented in smaller plots of land. Big demonstrations on non-poor farmers' land are risky; if one fails all would fail as they are only a few. Many demonstrations in many poor farmers' plots would have much more impact. Partners from government development institutes such as BARD observed that there was hardly any R&D scheme for the marginal and poor farmers. The Extension Department could think about introducing it as it involves little risk. They also believed and observed that information flows easily from the poor to the rich and not the other way around (T. Bose & A.K. Azad, SP23, BARD, govt development organization).

Gopal Chowhan (SP40) believed that one can easily find poor farmers who can take risks with a technology. But, even in a situation where they do not want to take risks, this can be addressed by using appropriate strategies. Any risk that poor farmers face when they accept a technology can be addressed. In their subproject, they proved that the risk could be avoided substantially.

On the part of the organization, there is a responsibility to be careful. They have to think ahead in addressing the risks that a poor farmer faces. Necessary measures must be taken so that the poor-at-risk can be compensated. The risk needs to be assessed well ahead of time to understand its extent and timing. Issues have to be discussed with the poor farmer partners and they must be informed about potential risks so that proper risk management strategies can be prepared beforehand (Gopal Chowhan, SP40, SAFE, NGO).

Performance in targeting the poor varied from partner to partner. Some tried to follow the PETRRA guidelines strictly; the others could not, but, over time, all have subsequently improved their targeting performance. Most partners claimed their client farmer group's improvement in rice provisioning by 1-3 months through improved production and adoption of innovative technologies and practices.

4.2.3. Implementers' attitudes affect targeting performance

Traditionally, farmers who are able to make organisers happy would be selected for R&D activities as farmer cooperators, regardless of whether they are resource-poor or resource-rich. 'For an extension worker, it might be important to get a chair to sit on or have a cup of tea while visiting a village; in most cases, a poor farmer would not be able to provide this' (ABS Sarkar, SP34, BRRI, NARS). Initially, some partners (mostly scientists) started to work with resource-poor farmers with the expectation that they would be quiet cooperators and would listen to advice fully. Gradually, the impression of the partners was changed when they engaged more fully with resource-poor farmers in the field. Many myths were demystified and turned into tested knowledge through the practical experience of working together in a partnership that helped everyone identify the rationale for working with resource-poor farmers.

In the past, there was a belief that if you want to go for technology identification, validation, and dissemination, you have to work with educated and enlightened farmers, those who have risk-taking ability. We used to select that group of farmers. But, later in the PETRRA project, we realised that it was not entirely true: those who have less education, less available food, and little risk-taking ability can be very helpful, if we only involve them. In the project, they participated with eagerness and identified useful technologies that can solve or minimise their poverty level. And we were, are, and will be in consensus that we should act together for poverty reduction. This is our millennium, national, and individual goal (as scientist) 幸 to give attention to poor people. We have to try hard to minimise their poverty level (Dr. M. Musherraf Husain, SP01, BRRI, NARS).

Over time, they also developed an argument in favour of working with resource-poor farmers:

There are technologies that are knowledge-intensive, requiring farmers who have risk-taking ability. For those technologies, working with the poor might be too risky. In those cases, we might need to work with innovative farmers. But the technologies generated from there could be used by the poorer section of the community. We should prioritise. The rich people get opportunities everywhere, they have

adequate land, they can go to the scientists, they can access technology from the NGOs, and they have greater access to media compared with the poor. For the poor, access to all facilities is limited and sometimes discriminatory. For such reasons, I believe that we should always give more attention to the poor (Dr. M. Musherraf Husain, SP01, BRRI, NARS).

R&D persons prefer to go to rich or influential farmers who may or may not need a technology; for many of them, achieving a status in the community is very important. This group of farmers may be happy to see some officials visiting their houses and regard this event as conferring on them a certain status in the community; the input received may or may not have contributed to his/her household livelihood (ABS Sarker, SP34, BRRI, NARS). Even a scientist who did not strongly believe in the idea that working with poor farmers would solve the poverty problem felt the importance of the issue and expressed the need for engaging both social and technical research to have a better understanding of such issues and thereby respond accordingly. Interestingly, the scientist recognised this to be a huge issue, which requires extensive social studies to identify appropriate ways of addressing it, so that research and dissemination are conducted at the same time. According to him, study and reflection should be part of the cycle: understanding, implementing, learning, and incorporating the experience in the next cycle of research and development as well as spending adequate time in the field (Dr. M. A. Saleque, SP7, BRRI, NARS). The importance given to social studies by this technical scientist signals a far-reaching positive attitude change. Here is another supporting statement:

I am now totally convinced about the importance; I am now conscious about it one hundred percent. PETRRA helped me grow. Still, the influence on me is active. I can now understand that technology cannot run alone. You need technology, but you need human inputs to run it. Nurturing the human being, coming in contact with these people, and thinking about the livelihoods of these people are important; I learned these aspects from PETRRA (A.K.M. Zakaria, SP00, RDA, govt. development institute).

Mofizur Rahman, (SP00) a man with a long background of working with NGOs, had a unique all-inclusive perspective on the responsibilities of an R & D practitioner to ensure equal treatment of resource-poor farmers. He would like to expand the area of interventions beyond agriculture for poverty elimination.

I believe that the poor have less land, but we cannot exclude them from the services. DAE, in its services, traditionally helps the non-poor and we (NGOs) try to help the poor as much as possible. We together ensure the services for the whole country. Each of us has a role to play to cover all the farmers of Bangladesh. If the non-poor produce 100 maunds (1 maund = 37.32 kg), the poor produce 10 maunds, but we cannot say either party had done all. We cannot exclude either of them. If we exclude them, we cannot ensure the full use of resources.

If we want development, we have to do it according to each of these parties' own convenient way. We need support from all concerned for development to take place, but we have to address the problems of each group separately. We need a livelihood approach to ensure the development of the poor. If we cannot provide the particular service that this group needs, we can give them advice as to how to acquire it (e.g., school, health centre) and from where. So we need to ensure total support for development. If the poor live well, the non-poor can also live well. But if the non-poor live well, there is no guarantee that the poor can also live well. For example, if we train the poor on ICM, if they cannot use the knowledge in their own land, they then use this knowledge in the land of the non-poor, where

they work as part of the labour force. The poor cannot cheat the rich (Mofizur Rahman⁶⁹, SP00 & FoSHoL, CARE & ActionAid, NGO).

The importance of working with the poor and the rationale for that were articulated by partners from both NGOs and government research institutes. The need to involve the poor in agriculture to address the developmental goal was clear in the mind of a partner from BRRI (SP19). He thought that, if the objective of the project is to improve the livelihoods of the poor, then there is no alternative but to work with the poor.

There was a need for a special programme for the poor as they comprise about 40 percent of the total households in Bangladesh. But, if the aim was to improve land productivity in the whole of Bangladesh, we need to work with people, whoever have the land, farmers who had the courage to take risks in using a new technology and the ability to invest in dissemination activities in wider areas. To fight poverty, we need a special programme (e.g., homestead-based, women-led agricultural activities) that could support them. In the last 30 years, we had increased our agricultural production threefold. But in the same period, the number of landless people also increased, from 22 percent to 40 percent. These people (poor farmers) did not benefit from the increased production. This should not have continued. We should have a special programme for their development. We have to ensure enough scope for them to be involved in agriculture through different appropriate programmes and policies; otherwise, in the next 30 years, these people will have to take shelter in urban slums, which is not acceptable (Dr. G.J.U. Ahmed, SP19, BRRI, NARS).

The experience of working successfully with the poor helped create a positive attitude toward the poor farmers. It depended also on one's depth of engagement with the farmers no matter what category of organization the person belongs to.

What I learned was that the poor want to get knowledge, they want to learn more, and they do not want relief or subsidy. If we can provide proper technology that matches their needs and livelihoods, that will be sustained, and farmers need not ask for any incentive for their participation in research. I observed how farmers were benefited from the technology⁷⁰; when the ducks were grown and were no longer used in the field, they sold them and got a good amount of money. They were very happy. This was an additional source of income for them. The farmers were very satisfied. Some of them kept the ducks for a longer time and also got benefits. Many of them would invite us to dinner, offering us duck meat. This was a great achievement for me, this was evidence that my farmers have gotten benefits from the technology that we worked on together. I felt great pleasure and satisfaction working with marginal and small farmers (Dr. S.T. Hossain, SP19, BRRI, NARS).

The PETRRA PMU staffs were surprised to discover that many NGOs did not always work with the poor, despite the usual claim. The surprising lesson PETRRA learned was that many NGOs did not know how to target and achieve participation of the poor in agriculture. In their work with PETRRA, they gradually learned this process, deepened their commitment, and achieved varying degrees of success. Table 4.1 shows the gradual achievement in terms of poverty focus by five PETRRA partners. As they operated micro-credit programmes, the NGOs mostly focused on recovering the inputs given to clients. This attitude made them take the safer route of targeting the comparatively better-off segment of the rural people. Through their partnership with PETRRA, many NGO partners rediscovered this limitation. Improving their targeting of poor farmers has been accepted as a challenge. Over time, using different

⁶⁹ Mofizur Rahman worked in PETRRA on behalf of CARE-B and in the FoSHoL project for Action Aid Bangladesh

⁷⁰ Integrated rice-duck farming

mechanisms in PETRRA, they increased the percentage of poor farmers included in their programmes⁷¹.

Table 4.1. Coverage of poor farmers over time by five PETRRA NGO partners (in percentage)

Partner	Phase 1 (1999-2001)	Phase 2 (2001-2003)	Phase 3 (2003-2004)
GKF	43	75	100
AAS	15	34	93
Proshika	85	90	100
RDRS	39	91	100
Shushilan	98	91	93

Source: (PETRRA 2004)

4.2.4. Engagement with the resource-poor: constraints and prospects

Resource-poor farmers have limitations and they need support. Nevertheless, by adopting appropriate strategies, they can be meaningfully engaged in the R&D process, which can provide them the chance to benefit from it. The fact that resource-poor farmers are involved in many other non-farm activities, in addition to agriculture, means that they may take some time to adapt to the process [≠] i.e., they may initially miss critical dates of transplanting or may be unable to use optimum levels of inputs in their field on financial grounds. But, with proper support from partner organizations, such limitations can be addressed. Here is a story where poor farmers were introduced to the SRI⁷² technology for the first time in a BRRI-led subproject in partnership with a local partner NGO, Uttaran.

In the beginning, the resource-poor farmers took some time to accept the new technology. A few of them had abandoned and damaged the field in the middle of the season, withdrawing from the experiment as they had thought that they might lose the harvest. The non-resource-poor farmers waited to see the result of the experiment, even risking their crop. While the resource-rich could afford to wait, the resource-poor did not want to face the risk of starvation. But once an understanding among resource-poor farmers and partner organizations was established and they got good results at the end of the season, trust was built as the partner organization stood as the guarantor for any likely loss of crop to their poor farmer members. The provision of such guarantee eliminates the fear among the resource-poor, especially if the technology is totally new. The role of a supporting organization was critical⁷³ (A.B.S. Sarker, SP34, BRRI, NARS).

⁷¹ PETRRA-PMU used to organise partner meetings to review their performance on different aspects of values; partners shared their self-evaluations, challenges, and the process they were engaged in to improve the performance; such sharing sessions provided space to learn from each other and engage in praxis; PMU would facilitate such meetings and capture the learning.

⁷² The System of Rice Intensification (SRI) is a technology that was first practiced by farmers in Madagascar in collaboration with a group of missionaries. SRI involves a set of principles: use of very young seedlings, wider plant-to-plant and line-to-line spacing, alternative irrigation instead of continuous retention of water, use of organic fertiliser, etc.

⁷³ The director of the NGO went to the field to talk to the farmers. He told them that the NGO (Uttaran) will stand as a guarantor if they lose a crop. After that, the poor farmers did not hesitate to continue their experimentation.

Appropriate technology selection also helped the poor. A technology like the USG⁷⁴ (SP 21), promoted under PETRRA, suited the poor as they had enough labour to engage in it. It also saved scarce resources (such as nitrogen fertilizer), thus reducing the cost of production and saving the environment. In that way, it included major pro-poor and sustainable technology development elements. Some technologies (e.g., integrated rice-duck farming, SP 19) presented many positive features: additional rice production; organic, chemical-free product; nutrition from duck and egg, engagement of women and children; and double income for poor households leading to livelihood improvement. Diversifying the income of the poor with such efforts solved part of the problem of poverty. For some technologies, such as SRI⁷⁵ (SP 35), the researchers had to compromise with the selection of the farmer participants, even though they had intended to work with the poor. They had to include farmers under a STW⁷⁶, which did not allow them to exclude rich farmers; moreover, not all poor farmers agreed to join the experiment. Similar situations arose with the LITE⁷⁷ (SP 27) and coastal water management (SP 20) projects. In these, all categories of farmers had to be involved, although the researchers were strongly committed to poverty-focused research. However the pro-poor bias was maintained as they worked more closely with the resource-poor than with the non-poor (USG: Dr. M.A.M. Mia, SP 18, BRRI, NARS; Rice-duck: Dr. G.J.U. Ahmed, SP 19, BRRI, NARS; SRI: Dr. M.A. Latif, SP 35, BRRI, NARS; LITE: R.B. Shafali, SP 27, AID-Comilla, NGO).

Among the PETRRA NGO partners, there were some who guaranteed compensation for crop loss and, similarly, others linked the support of their micro-credit programme to provide another degree of guarantee for a more sustainable approach⁷⁸. These efforts were innovative and helped partners from government and international research institutes to discover and strengthen the rationale behind the collaboration with NGO partners to make R&D more pro-poor (A.B.S. Sarker, SP 34, BRRI, NARS; M.G. Neogi, SP 07, RDRS, regional NGO; M. Nuruzzaman, SP 09, Shushilan, NGO).

4.3. Women in agricultural R&D: PETRRA learning laboratory

When the PETRRA project introduced gender issues to its partners as one of the key values, the concept was not clearly defined and there was no clear strategy to implement it. Later, a strategy was

⁷⁴ USG stands for urea supergranule; instead of topdressing nitrogen, USG is applied sub-surface, thus allowing the slow release of urea for a longer period of time; this can also minimise loss of urea from tidal inundation of the land.

⁷⁵ This is the second group of SRI, also BRRI-led, but with another NGO, AAS.

⁷⁶ STW stands for shallow tube well.

⁷⁷ LITE stands for Livelihood Improvement Through Ecology; this subproject experimented on integrated pest management and nutrient management practices with poor farmers.

⁷⁸ BRRI and Uttaran (SP 34) agreed with their farmers to compensate in case the technology (SRI) they tested does not give farmers adequate yield; while NGOs such as Shushilan (SP09) and RDRS (SP07) linked their micro-credit program with the technology dissemination method experimentation approaches.

developed to guide partners. The principle of the strategy was to involve women as much as possible in research issue identification, in the conduct of the R&D process, and in monitoring and evaluation. Partners adopted this general guide according to their own interpretations and commitment. Over time, the PMU used all different initial field-based lessons and experiences to facilitate the creation of a learning environment. Gradually, a realistic approach to gender-balanced R&D in PETRRA evolved. It allowed each partner to adopt its own strategy based on its scope. Over time, as partners sat together in PETRRA and the PMU facilitated meetings and workshops to discuss progress on gender issues, they came closer together and developed a common understanding. Gender became an integral value in their overall approach. Most partners began to discover and appreciate the contribution that these poor women could make to their household. Initial antagonism turned into a strong logical realisation in favour of women inclusiveness in all potential activities as they went through a process of action and reflection.

4.3.1. Organizational background helped

NGOs already involved in social mobilisation activities involving women groups (such as HEED Bangladesh, SP 28) took up agricultural R&D activities with women very quickly. These women groups were already exposed to an external environment beyond their homestead and had developed their ability to participate in such activities side by side with their male colleagues. It was easy for them to take up agricultural R&D activities because of their previous experience in working together in other development activities.

We had a social development programme with the women. They are now involved in social mobilisation activities, they learn leadership issues; local village women leaders learn how they can get involved in development activities, they celebrate different important days—through such activities, they learn a lot and it becomes easy for other programmes such as agriculture to get women involved and to ensure their effective participation (C.A. Mannan, SP 28, HEED Bangladesh, NGO).

The NGOs (such as Shushilan, SP 09), which had preexisting women-focused programmes, performed better in the project. They developed a special emphasis on women and achieved more than 50 percent female participation in their agricultural programmes. They continued to maintain progress, even after their project partnership ended, as they inherited and further expanded the approach from PETRRA (M. Nuruzzaman, SP09, Shushilan, NGO).

Women-led R&D model subprojects implemented by different partners (such as Shushilan, SP 09, NGO; NGO; RDRS, SP 41, NGO; EPRC, SP 42, NGO) had particularly shown the potential of R&D activities that involved resource-poor women farmers or farming households where women played a significant role, in the process helping to rediscover the role and strength that poor women already have and play in agriculture. Such subprojects were especially commissioned for poor women farming household members and led by women scientists or development practitioners. These subprojects

were able to create enthusiasm among the partner organizations as they were able to develop a cadre of women leaders through whom they could easily reach the poor women in the rural community and they can work on issues that involved women. A number of these women-led subprojects continued to work on rice seed as a very viable enterprise for poor rural women after the PETRRA project ended. None of these partners were involved in rice seed with women before their experience with PETRRA (A.K.M. Zakaria, SP 37, RDA, govt. development organization; Sufia Khanam, SP 42, EPRC, NGO).

A government development organization such as BARD (SP 23), which has been engaged in agriculture for a long time and had a good foundation in rural development and training with men only, was able to discover its strength in working with women as emphasised by PETRRA. In previous other programmes such as family planning and homestead issues, women were already involved at the village organization level, so involving women in agricultural R&D activities in PETRRA was easier for them.

In BARD, the participation of both men and women to discuss, interact, and exchange knowledge on rice issues was a unique event. It had not happened before at such a large scale. Whatever has been done on rice in the last 19 years was with the men only as I have seen it. Women were involved at the samittee (cooperative) level on family planning and homestead issues. I don't remember any such large-scale activities on rice with women (T. Bose & A.K. Azad, SP 23, BARD, govt. dev. organization).

Proshika (NGO, SP 06) already had organised women groups who were convinced about the importance of women participation in R&D and thus could achieve the 50 percent women participation target easily. They could easily select women who were already engaged in agriculture from before and especially from households headed by women. It was a matter of selecting the right ones (resource-poor) from the existing groups and reorganising them into groups that fit the PETRRA requirement (A. Hossain, SP 06, Proshika, NGO).

4.3.2. The potential of women-inclusive agricultural R&D

It was easy to sustain a technology if women were given priority as they give much more importance to it than do men. Chashi Mannan (SP 28) first thought that he would provide men with field technologies and women with postharvest technologies and training. But he changed his strategy as he engaged with the women.

From the experience of working with the women, I realised that if knowledge is provided to both men and women, then they together could learn and share it better and, as the men were much more busy with off-farm work and could not give enough time and attention, I thought women would be a better choice to use the knowledge. Women would be much more sincere. If knowledge is given to women, it would become household knowledge, which could be shared within household better compared with knowledge given to men alone. In areas where women were not exposed to agricultural field activities, they could be trained gradually and they could learn fast. In most areas, women were increasingly getting more involved in field activities as the crisis of labour was rising. Use of women labour also helped households to reduce hired labour cost. Women-to-women technology dissemination was

easier done than men-to-women. A male worker would not do it as quickly as a woman would (C.A. Mannan SP 28, HEED Bangladesh, NGO).

Under PETRRA, several women-led extension models for technology dissemination were piloted. Most of them had positive experiences, discovering a niche for women-led agricultural R&D in most rural areas. Women's hunger for total agricultural knowledge was reflected in the success of these pilot projects (SP 09, 39, 41, and 44). Starting with 18 women-led farmer field schools (FFS) on a pilot basis under PETRRA, RDRS, in 3 years, organised 2,500 FFS, the majority (about 70%) of which were women-led (M.G. Neogi SP 41, RDRS, NGO).

As many partners tried to ensure women participation in all R&D activities, they acquired rich experience from the field. They found women to be particularly sincere participants, religiously collecting data for the research they were involved in. In training programmes conducted under the PETRRA subprojects, both men and women household heads were encouraged to participate. In those programmes, it was discovered that, besides household responsibilities, women also carried out agriculture-related activities in the absence of their male partners and a significant number of women were directly involved in agriculture, doing all kinds of agricultural activities. One hundred percent of them were involved in postharvest activities. But, unfortunately, before PETRRA, they did not get any training from any formal sources (M.G. Neogi, SP 07, 41, RDRS, NGO).

The approach worked well, women could use their acquired knowledge in their field. RDRS found that their decision to form more women-led FFS was justified as they observed participation of women in FFS activities \approx 90 percent compared with 48 percent for men. This extra emphasis on women did not pose any conflict within the household as RDRS was engaged with their husbands regularly to keep them informed about the activities (M.G. Neogi, SP 41, RDRS, NGO).

On some occasions, such as during workshops and training courses, both husband and wife could join and both were comfortable as they could gain knowledge equally and complement each other (T. Bose & A.K. Azad, SP 23, BARD, govt development organization).

It was observed by some partners that when both husband and wife attended, they got better research results. They could easily resolve problems at home, which helped sustain the use of the technology. This made women confident enough to show their ability to contribute to household income and decisionmaking and thus earn social prestige. The partner also claimed that both results and impact of research were attained because of women participation (R.B. Shafali, SP 27, 30, AID-Comilla, NGO).

Sometimes, it was the nature of the technology that helped to reintroduce the role of women, which appeared to be very logical to resource-poor farming households. One such example was the integrated rice-duck farming technology. The statement below captures the experience.

By tradition, in our country, women take care of livestock resources in the homestead. That was why we trained women partners of our listed men farmers. We organised training for both men and women on different issues of the technology in areas where women were not traditionally involved. We adopted the whole family approach where both husband and wife attended. They used to attend seasonal learning sharing workshops as well, as a couple. The training had good impact on production; both men and women learned how to keep good seed, store rice seed, and side by side, they also learned how to take

care of the ducks. This rice-duck farming enterprise would not be possible without the active role played by the women.

Each farm household was like an independent production unit, a factory. The roles of men and women were defined; the women looked after the livestock, kept seed properly, a very important role. It was revealed from experience that, besides men, the women partners of the households should also know such knowledge equally (Dr. G.J.U. Ahmed, SP 19, BRRRI, NARS).

A.K.M. Zakaria worked with rice seed primarily and had to work with women who were mostly poor. It was again the nature of the technology that determined the importance of the involvement of the poor women. The partners learned to work with the poor women; having observed their potential, they continued to work with them after PETRRA, especially in the field of rice seed production, storage, and marketing (SP 00, RDA, govt. development organization).

The lack of attention on women by the existing R&D system was observed by the partners. The system seemed not aware of the fact that women members from poorer households are already heavily engaged in agricultural activities. 'Women's knowledge in agriculture would benefit the household when their male partner would be away.' This was the experience in a subproject where very few women worked, but their sincerity to learn and skill to use that knowledge impressed the partner (Dr. M.A. Latif, SP 35, BRRRI, NARS). Another sub-project achieved only 10 percent women participation on a regular basis but found in workshops and meetings that there were many more women. The partner thought that the social norms were not favourable for large-scale female participation and it required time to achieve that (Gopal Chowhan, SP 40, SAFE, NGO).

Discovering the importance of women's contribution to agricultural R&D was exciting for Dr. S.T. Hossain. He discovered the unique characteristics of agriculture-dominated rural Bangladesh socio-economy and the role being played by women. The statement below captures his experience.

This (participation of women) was an interesting area in our research. I discussed the experience of the project when I was in Japan last time. In one of my papers published in Korea, I mentioned that, in Japan, they practice this integrated rice-duck farming from the point of view of environment and organic production. The price of the product in the market would be high as it is organic. For them, the gender issue is not important. They find it very interesting when they see the importance of gender issues there. Nutrition and gender issues here are not important for them; they do not have a nutrition problem, but for us, it is a big problem.

Women have a big role in our farming system. When we started, we did not think about women first. But, over the period, we observed that women are participating in the process heavily, they are organising room for the ducks, taking ducks to the field, bringing them back home, and arranging feed and medication. The children are getting involved in this as well. Women are getting credit and honour in their families for their contribution in terms of hard work and good income they earn from such farming. It puts them on a special status among relatives as well as in the community. This opens up a huge opportunity for women in a country like Bangladesh (Dr. S.T. Hossain, SP 19, BRRRI, NARS).

It was interesting to take note of the poor women's appreciation about production increase as an outcome of subproject performance. They valued quantity more than quality as they had a shortage of

production. Inclusion of women training and women field workers was deemed positive factors for women participation. Dr. M. Mondal shared the experience on his subproject on coastal water management.

Women welcomed the additional production; for them, 'rice is like our goddess, Laksmi; the more it comes, the better it is for us'. They seemed to be concerned about quantity not quality that much 幸 the more it comes, the more it would be good for their children. There was strong support of women in the research as they were oriented toward the technology by the subproject staff in the hope that, if their husbands forget about the technology, they would be able to remind them. Training both men and women was done to ensure that at least one of them carries the learning home and that it is not lost. The inclusion of a woman scientist in the team had been very positive; it got good response from the women in the project area. Women were encouraged to participate in project activities and discussions. It helped a great deal to change the mindset of the people there and to get enthusiastic women participation with support from the men (Dr. M. Mondal SP 20, BIRRI, NARS).

PETTRA must have made a big impact in Bangladesh as the partners identified some evidence of it as a flow-on to what was initiated by PETTRA in involving women in agricultural R&D, especially in extension. Dr. M. Musherraf Husain noticed the silent change.

If not in all research activities, one can easily observe at least 50 percent women participation in any meeting organised by government extension workers. These poor women used to play an important role in terms of decisionmaking in the absence of their male partners (Dr. M. Musherraf Husain, SP 01, BIRRI, NARS).

4.3.3. PETTRA emphasis and followup helped partners achieve women-inclusive R&D

Based on field experience and women demand in a number of subprojects, PETTRA decided to emphasise the importance of giving equal access to knowledge by men and women. PETTRA also followed up the progress from time to time. Most partners responded positively and tried to comply. They also wanted to ensure and deliver all kinds of knowledge to women. From experience, they learned that reality would vary from one area to another. They were cautious about giving more burden to women as they are already overburdened. If an R&D issue demanded women participation, extra effort was given to engage and to bring women in the front. They continued to include women as much as they could by engaging different strategies in PETTRA (Harun Ar-Rashid SP 5, 17, 44, AAS, NGO). As a result, one IRRI scientist has commented:

Women were shy before, but in the process, they became active seed growers in the project (L. Dias, SP00, IRRI. IARC).

Dr. M.A. Salam, an inspired BIRRI partner, recognised the importance of empowerment and explained how it contributed to the greater good.

PETTRA tried to empower women through their involvement in all stages in the decisionmaking process. We observed significant advantages of the approach: women who have experimented with the technology were empowered, and they were empowered to give decisions. They (women) have closely

observed the quality of grains of all the lines that were included in the trials⁷⁹. If we could involve women more, the more they could be empowered. It was very useful from the perspective of Bangladesh. Women in Bangladesh are not empowered. If we could reduce the disparity between men and women, then a balanced situation would be created; society and family at large would benefit from it (Dr. M.A. Salam, SP13, BRRI, NARS).

Over the period of 5 years, partners experimented with many different approaches and a number of good models emerged. Among those, the family approach, as indicated above, stands out as an important model for involving women effectively in R&D. The statement below describes how A.B.S. Sarkar experienced it in his project (SP34).

We have used a family approach to involve male and female heads of the households we worked with. As participating farmers, where we had a male member listed, we included his female partner and where we had a female, we involved her male partner. For different reasons, if the main member could not attend, then the other member could attend and carry information back to her/his partner. It was often the case in the research area that a male member needed to go out of the household for non-farm activities and the female member played an important role in managing the farm. It was important that both male and female members of the household had the knowledge. We used to make sure that, in every discussion, both household heads were present. When it was related directly with the work, then only the main member was invited. Even if women were not directly involved in all kinds of work, they needed to manage household activities in the absence of men, and that was why their involvement was regarded important but not forced. If we would force women participation, the community could take it differently and could react negatively. It was a very sensitive issue. We had to judge the sensitivity of the project area. Very often, we had invited both husband and wife to the workshop so that both get the knowledge, which was very important (A.B.S. Sarkar, SP34, BRRI, NARS).

PETRRRA helped its partners to learn to work with women. Partner-researchers learned that women need help for some time to get the knowledge. They also learned that working with women in agriculture is one of the best options to achieve household food security. They learned from their experience that women are sincere and are not risk-averse in applying newly gained knowledge. They proved their skill in the fields to their partners by successfully utilising the scientific knowledge that they gained from their involvement in the PETRRRA subproject. The women groups, who worked successfully with the partners showed gradual development and, through their contribution, earned the confidence and trust of their male partners. With their newly gained knowledge, the women received honour in their respective households and also in their community (Dr. S. Islam, SP 33, BRRI, NARS; S. Khanam, SP 42, EPRC, NGO).

The PETRRRA experience helped partners to quickly realise that both male and female heads⁸⁰ of households have a critical role to play in productive activities; they both need to get knowledge to optimise their income. They learned this very quickly from PETRRRA and it became general practice in all of their other programmes. HEED Bangladesh (SP 28) used the same approach in their other

⁷⁹ This was a project to develop a salinity-tolerant variety; they used participatory varietal selection (PVS) technique with farmers for technology development.

⁸⁰ In most cases, it is the wife of the male head; but in some cases, it can be the mother of the male head or the daughter of the male head in the absence of an able wife.

programmes (e.g., sanitation, arsenic mitigation) and used the family approach⁸¹ to train for their mobilisation activities (C.A. Mannan, SP 28, 20, HEED Bangladesh, NGO). Dr. M. Musherraf Husain thought that the PETRRA partners would continue to place great emphasis on gender issues. PETRRA had a strong emphasis, which successfully influenced and convinced most of its partners positively (Dr. M. Musherraf Husain, SP 01, BRRI, NARS).

4.3.4. Approaches need to be strategic and culture-sensitive

Partners mentioned the importance of being strategically and culturally sensitive while facilitating a project such as PETRRA. Dr. Thelma Paris of IRRI was involved with PETRRA as she jointly developed the gender strategy with the PETRRA team. She also reviewed the progress on gender towards the end of the project. She presented her independent view here.

Gender audit was requested by the project at the beginning, others did not do it this way. PETRRA had already indicated the importance of women at the preparation stage of the concept note for the project. A bonus point was declared for women taking the lead in the proposed research projects. There was always one woman in the PETRRA team. External reviewers emphasised gender and the PETRRA team responded. The team persuaded project partners to include at least 40 percent women as participating target farmers in the research. It was not lip service; the project was serious about it.

In areas where women were already active, it was easy for the partners to get women's participation. If women did not feel like attending a group meeting, they did not put pressure on them. It was up to the women to decide whether they wanted to join or not. Partners tried many different strategies to involve women: they organised separate meetings with male and female groups or convened a mixed group as the social environment of the area allowed. They were flexible in their approach (M. Rahman, SP 00, CARE-B, NGO). One other partner had a similar experience:

We gave priority to organising women-headed households into groups. Once they participated in the group meetings and have discussed problems and issues, they became empowered. We approached this slowly and cautiously avoided the risk of creating any social or family conflict over their participation (A.K.M. Ferdous, SP 5, 17, AAS, NGO).

In some places, women's involvement was obvious for economic reasons. The partners were successful in areas where labour costs were high and where farmers wanted to save on labour costs by encouraging women to participate in all kinds of agricultural work.

In places where women used to work in the field, we could involve a large group of women in the project. Those women knew a lot about farming, their husbands allowed women to do that, they rather cooperated with the women as there were needs in the family (Harun Ar-Rashid, SP 05, 17, AAS, NGO).

⁸¹ Family approach involves both male and female heads of the household for training. The assumption of the approach is that, if both husband and wife (in most cases) get the knowledge, then they can effectively use the knowledge for productive purposes compared with training only men or only women. PETRRA advocated the use of this approach among its partners.

There were some concerns expressed about the sustainability of involving women in R&D. Pragmatic well-wishers of the approach pointed out the need for restraint and to take one step at a time, instead of moving too quickly and then risking a collapse. It was important not to lose what was achieved because of overenthusiasm. It is wise to move along the mindset change of the greater society to achieve sustained progress. Overenthusiasm might jeopardise the progress already made.

Sometimes, it was noticed that some people want to bring about a quick change in rural society—to involve women in activities beyond their traditional area, which could appear harmful and unsustainable in the long run, as the community might consider it as being imposed from the outside. What could be seen in television that shows women doing many things (most of them fake) would disappear when project support is withdrawn (Dr. M.A. Mazid Mia, SP 21, BRRI, NARS).

Finding an appropriate approach to ensure women's participation in R&D that would not create antagonism in the community was a challenge for partners. The statement below indicates the advice participants gave about the importance of being cautious in the process of formulating strategies to include women. Partners recommended conducting a situation analysis to understand the roles of women that are accepted in the community where the R&D activity is being proposed. They advised that researchers should not bring in women and compel them to participate in R&D activities if they find out that they already are playing a role there.

We had female farmer partners in our research. It is very important that we engage women especially as we need to communicate the knowledge to them. It is very effective, appropriate, and important, but we need to improve the methods of doing it so that it becomes socially acceptable. Sometimes, we apply socially unacceptable approaches. We need to create an environment of interaction, which can eliminate hesitation among the women and which does not create any bad reaction in society. Any bad reaction can affect the adoption process negatively. The important areas where women's participation is necessary include seed production, variety selection, and selection for a particular variety, etc. We have to do it sitting at their place.

Sometimes, we want to adopt our own approach, or organise the music or the dance. We think it is effective, but it is not. We should be able to ensure the participation of women in discussing and deciding on how we could include them (Dr. M.A. Saleque, SP.17, BRRI, NARS).

As partners looked into the future, they appreciated the achievement made and wanted to overcome the inherent limitations.

I observed some limitations of the household approach - it cannot always accommodate many participants in meetings, training, and workshops. NGOs could be given credit for the present enthusiasm about the inclusion of women. Women extension workers working for poor women farming households would be effective in rural societies in all parts of the country that are not completely ready yet (Dr. M. Musherraf Husain, SP 01, BRRI, NARS).

4.3.5. Working with women became the most important strategy for some partners

Some partners started working with women for the first time in their life in PETRRA and, as they gained experience, they recognised the importance of working with women, an area that remained neglected in the AR&D act. They witnessed the change among the women during and after PETRRA. A.K.M.

Zakaria observed the process of graduation among the women who were involved in the PETRRA in seed health improvement project (SP00). These women later took the challenge to start their own seed business. Gradually, after PETRRA, they got involved in vegetable seed production and marketing, besides growing rice seed with support from RDA (A.K.M. Zakaria SP00, 37, RDA, govt. development organization).

EPRC was an organization that was transformed. Having no agriculture involvement before, they were attracted to work in this field as they wanted to provide women with knowledge and skills in agriculture for whatever project and programme they would be involved in. EPRC learned for the first time, from their experience in PETRRA, about the way women are contributing to agriculture and its importance in the livelihoods of the poor households. After PETRRA, they further enriched their experience profile by engaging in other followup projects, in the process learning that, if women are supported, they can improve their practices in utilising food and providing support to women on food issues that benefit women directly. Using their experience with PETRRA, EPRC started to include agriculture components in all their projects. They appreciated PETRRA's approach of giving all agricultural knowledge to women. They thought that no other project had so far given such emphasis on women in agriculture, and this commitment of PETRRA helped them change also (S. Khanam, SP 42, EPRC, NGO).

Many PETRRA followup projects continued to duplicate their PETRRA experience of focusing on women and providing them with knowledge equal to men. Dr. M. Mondal (BRRRI, SP 20) had a positive experience as they had the advantage of working with men and women members of the farming households. In their PETRRA followup projects (e.g., CPF10), they continued to include both men and women in field activities and training. They wanted to be sure that at least one of them would carry the learning back home, so that it is not lost. They likewise encouraged both men and women heads of households to decide together on what innovations to accept or reject (M. Mondal, SP 20).

4.4. Demand-led R&D

There was no denial about the importance of demand-led research on the part of the partners, but each of them had a unique way of justifying their work as being demand-led. The diversity of opinions and claims in favour of a particular approach of demand-led research made different versions of their arguments interesting. It became much more interesting as the partners tried to justify the version of demand-led research that they tried in PETRRA vis-à-vis what they usually did in their respective organizations before and now do after their engagement with PETRRA.

4.4.1. Engagement with farmers: key to understanding their demand

Engaging very early in the demand analysis phase with resource-poor farmers in the community was the key to successful demand-led research subprojects. This helped partners to understand the problems and priorities of farmers as well. Those who experienced the benefit of such an approach argued that it was necessary because it was impossible to find solutions to such problems at the national or regional level. There was no alternative but to engage with farmers at the local level. The problems varied from one community to another and so did the solutions and recommendations. They felt a strong need to talk to the resource-poor farmers who were directly engaged in farming.

Dr. M.A. Mazid Mia encountered a farmers' problem in the southwestern part of Bangladesh. Farmers there could not apply urea (nitrogen) fertiliser in their rice fields as the land gets inundated every day during high tide. Dr. Mazid suggested deep placement of USG as a potential solution to the problem. Farmers agreed to test the technology and an adaptive research programme was conducted for 3 years. Together with research partners, farmers developed their own protocol for adoption to make feasible use of the technology. It was a good example of matching farmers' demand with a technology that was available but not readily accessible to them. The poor farmers, over their engagement period of few seasons, considered the technology appropriate and ended up using the technology in other crops as well (Dr. M.A. Mazid Mia, SP.21, BRRI, NARS).

Partners who seriously conduct demand-led research were engaged in a participatory approach that helped them gradually discover farmers' demands related to rice cultivation. A.B.S. Sarkar outlined his experience in a statement that explained the approach used to make his SRI research (SP 34, BRRI) demand-led. A similar experience in another SRI subproject (SP 35) showed the gradual discovery of farmer demand by researchers in the process of engagement.

In our participatory engagement process with farmers, we gradually discovered their rice cultivation-related demands. Farmers used overaged seedlings, a lot of seedlings per hill; and small gaps between hills. This meant that they were not aware of standard recommendations. When we discussed these with the farmers, they realised their misuse of resources in different forms. These issues came out as demands from the farmers and they asked for solutions to these problems. Of course, they did not mention SRI as a solution because they have not heard of the technology before. So, we presented the technology as an alternative to the traditional practice, which causes huge input erosion. The introduction of SRI matched what they needed, proving that a demand orientation could be brought into the research (A.B.S. Sarkar, SP 34, BRRI, NARS).

When researchers encounter something new, they need to go slow in offering a range of options that will form the basis of selecting the best practice in the field. First, they need to tell some success stories on the ground, set examples, and create demand. Small-scale experiments, if successful in the current season, can generate dramatic responses and demand from farmers in the following season. The

integrated rice duck subproject (SP 19) had such an experience. In the first season, there was very little response from the farmers, but the success of the first season created a lot of enthusiasm among all concerned and motivated many other farmers to adopt it in the next season. In coastal areas, farmers had limited options to grow an additional crop. The coastal water management subproject came up with an innovation, which through farmer participatory research was taken up successfully.

Whatever we did there, we did it on the basis of farmer demand. Farmers had been looking for options but had no concrete ideas. We first had to give them an idea based on our research knowledge. Then, the farmers wanted to give it a try and, as we were with them, we worked together. They were encouraged to give it a try. Farmers did not exactly know about the timing of salt water coming in and the duration of sweet water available in the river. But we had data from the last few years and we knew exactly the period that was critical. We had the technology in our hands. We had to work with farmers closely to let them know the possibility of a second crop. Through their engagement in the process, they were convinced about the technology and they readily accepted it. They had to adjust to the rule of nature, had to bring their aman⁸² ahead so that they could go for a safe boro⁸³ (Dr. M. Mondal, SP 20, BRRI, NARS).

4.4.2. Ecosystem provides clues for effective technology

Sometimes, partners identified existing opportunities within an ecosystem outside the knowledge of the farmers; they wanted farmers to see the unexplored part of their system that could still be tapped. Integrated rice-duck farming was one such technology. Not coming through as a direct farmer demand, it was introduced to farmers in northeast Bangladesh. Farmers were convinced to use the technology as they found it cost-effective to do so. This experience suggests that if farmers see a technology as effective, they can always give it a try. The ecosystem provided the rationale as the farmers anticipated a niche for their choice of technology, which offered them an opportunity to get double benefits from an integrated system (rice and duck). So the researchers' anticipation of farmers' demand based on cost-effectiveness and ecosystem-friendliness could also work sometimes.

When we started the work, we discussed the technology with the poor directly. I wanted to know if they will be interested. In the beginning, we did not get enough response. Initially, we could work with 20-25 farmers in each district of the Sylhet region⁸⁴. But, in the immediate next season, when the farmers saw the results in the field, the neighbouring farmers and their relatives got interested in the technology. They wanted to get knowledge and showed keen interest to learn the technology. Ultimately, within a short period of time, 500 farmers expressed their interest to try it. As far as I know, the farmers in that area are still using the technology. We have to understand the scope of the technology (Dr. S.T. Hossain, SP.19, BRRI, NARS).

Demand for a particular technology in a particular ecosystem does not undermine the importance of that technology; one technology would not fit in all ecosystems. Locating an appropriate niche for a technology, therefore, would be a very important part of the demand orientation.

In areas where farmers suffer from lack of a particular technology, it is obvious that their demand for it would be created very quickly. This happened in the case of rice seed in several areas. Seed became

⁸² Monsoon rice crop

⁸³ Winter rice crop

⁸⁴ Northeastern region in Bangladesh

one of the most demanded technologies all over Bangladesh in several PETRRA subprojects (Harun Ar-Rashid, SP 05, AAS, NGO).

4.4.3. Addressing farmer demand is a challenge

There is overall agreement that agricultural research should be demand-led. But the processes used to determine demand were very diverse. The main priorities of farmers can at times be very different and lie well beyond agriculture.

An important point is how to determine and quantify farmer demand. Scientists used to go to farmers with very narrow views on things. But, in our case, farmers' demands were far wider and much more diverse. The many problems that farmers face were not all agricultural; starting from social life, it could include almost anything. Sometimes, the security of their resources was their main concern. Finding it hard to seek justice in society, farmers had to spend a long time to solve a simple land dispute. Sometimes, the possibility of a marginal increase in yield might not be a priority need for a farmer as it involved higher input cost. Scientists used to talk about farm problems from their own point of view; they want to pursue and concentrate on these issues for research purposes, which may not necessarily be the priority of the poor farmers. It could be that, instead of food security, health is a more urgent concern for them at the time. Present R&D systems have yet to make a real effort to adopt a good approach in conducting a good demand analysis (Dr MA Saleque, SP17, BRRI, NARS).

Agricultural scientists were interested in discussing agricultural problems, especially the ones that pertain to their own discipline. When they have in-depth discussions with farmers, they were able to link farmer problems with theirs and a good result was obtained.

Sometimes, it was a priority issue among poor farmers; other times, it was not. I have to agree that sometimes it may appear imposed. When we started our research, the farmers did not give too much importance to the issue of fertiliser use. But when they engaged us in a discussion, they realised what an important issue it was. When we demonstrated the fertilisation benefits in the field for a few seasons, their interest increased and they came forward (Dr. M.A. Saleque, SP 17, BRRI, NARS).

In partnership through engagement, both scientists and farmers gradually changed their respective positions, thereby effectively closing the gap.

Sometimes, farmers need encouragement and a strong push to make them articulate about their demands. Mukti (SP 31) was convinced of the importance of responding to the need and demand of the farmers, but sometimes they experienced that farmers did not even want to talk. They were hesitant to present their demands, perhaps because of a lack of trust or a bad experience in the past. They needed help from the partners. The partners responded and assisted farmers by creating an environment where the latter can raise their voice and present their demands (Momtaz Roomy, SP 31, Mukti, NGO).

Responding to farmer demand requires motivation and commitment. Once an individual or an organization takes this to heart, the importance angle can be looked at differently. M.G. Neogi

expressed his conviction about the demand-led approach. This statement shows the linkages between demand, participation, and the poverty focus.

Research priorities are identified by the farmers. Therefore the issues on which research is conducted refer to problems of the farmers, local problems. Such problems do not have solutions at the national or regional level and only by engaging the farmers at the local level can these be solved. These vary from one community to the other; the solutions and recommendations also differ. You cannot decide on the research agenda and do research on your own; you have to sit with farmers, identify their problems, and know their priority. We have to talk to endusers, especially the group directly involved in farming, not those who are not even engaged in farming. We have to work with the resource-poor (not only with them but also together with them) and we must know which way they want the research to take (M.G. Neogi, SP 07, RDRS, NGO).

The big question now is how to make research demand-led? Herein lies the challenge:

There is no compromise on the fact that agricultural research should be demand-led, but the more important point is how to determine and quantify farmer demand (Dr. M.A. Saleque, SP 17, BRRI, NARS).

4.4.4. Demand-led R&D: reality and rhetoric

For most of the NGOs, agriculture is just one of the many areas in which they engage with their clients. They very often fail to recognise and judge the demands of their clients. Agriculture does not get the 'proper' treatment, even when the client base of the NGO is predominantly rural. Even when agriculture is the main source of livelihoods, more often than not, micro credit receives far more prominence than agriculture per se. Micro credit is not used as a strong supportive/complementary programme of agriculture, although a large percentage of the NGO clients depend on agriculture. This lack of recognition of the potential of agriculture in poverty elimination seriously constrains the understanding of development issues and imperils potential interventions.

Under PETRRA, many NGOs discovered the value of agricultural programmes as a tool to obtain community trust and as one short path to sustainable poverty elimination. Before participating in PETRRA in 2000, RDRS, a renowned regional NGO in the northwestern part of Bangladesh, had no rice programme. By the time PETRRA ended, RDRS had established community-based rice seed production, processing, and marketing enterprises in many of its community-based organizations (CBOs). RDRS recognised agriculture as a vital programme for poverty elimination where rice played the role of pathfinder. Another NGO, Shushilan, had no agricultural programme before their partnership with PETRRA in 2000. With PETRRA, they started a rice technology dissemination programme for their clients, predominantly women. Now, they have a large agricultural programme, even owning an agricultural farm. They have created an innovative folk-music-based cultural approach for agricultural technology dissemination, which is used in the production and marketing of services they provide to their clients (MG Neogi, SP07, RDRS, NGO; M Nuruzzaman, SP09, Shushilan, NGO).

HEED Bangladesh (NGO), which previously did not have any clear understanding of demand-led R&D, realised after their PETRRA involvement that they actually had not followed a demand-led path in the past. They thought that deciding a 'good' technology on farmers' behalf was their responsibility, and they did not even think of asking farmers what their priority needs are. With PETRRA, they knew that they had missed the point. With exposure to the concept, they started to discuss with farmers and allowed them to make choices. In the past, they also did not care about farmers' acceptance of the technology that they were promoting. Later, they found that their approach has been traditional one-giving farmers' instructions on what needs to be done (C.A. Mannan, SP 20, 28, HEED Bangladesh, NGO).

4.4.5. Conducive policy, strategy, and environment for demand-led research

A systematic understanding of farmer demand requires a systematic approach. PETRRA, before starting its research commissioning task, conducted a countrywide stakeholder analysis in nine ecoregions with village-, subdistrict-, and district-level stakeholders to identify researchable issues (Orr et al. 2007). The respective partners also conducted further stakeholder analyses to match research agenda and farmer demand.

We first analysed the demand side of the potential technology sitting with the farmers; we conducted PRAs. We only worked in areas where farmers seemed not to be aware of IPM⁸⁵. We also tried to understand the demand of the people for IPM as the concept was new to them (R.B. Shafali, SP27, AID-Comilla, NGO).

In their participatory engagement process, in some cases, partners had to discover the actual demands of the farmers, as most of these were not stated in a straightforward manner. Consequently, both farmers and researchers failed to recognise them immediately. They needed to sit together and analyse the existing system, gradually finding gaps in farmer practices. A.B.S. Sarkar (BRRI, SP 34) and his team discovered a knowledge gap in the farmers' management approach to rice cultivation. He then linked this farmers' knowledge gap with his research agenda. Over time, farmers also saw the gap and realised how they were misusing inputs. The researcher then aimed to minimise these knowledge gaps by introducing technologies that the farmers agreed to test and verify. By then, mutual trust have already been established (ABS Sarkar, SP34, BRRI, NARS).

The lack of appreciation in the system did not prevent scientists from conducting demand-led research. Many scientists and researchers appreciate and are willing to conduct demand-led research, given an environment within their respective organization that appreciates such a need. 'The agenda for research in such institutes would be determined by the scientists from their respective disciplinary perspective' (Dr. M. Rafiqul Islam, SP26, BRRI, NARS). They would claim that these were 'demand-led'

⁸⁵ Integrated pest management (IPM)

as they personally 'knew the demands of the farmers very well,' having collected them from multiple sources (e.g., extension departments, media, and others). They would specifically mention major demand issues from a national perspective: 1) productivity increase and yield gain and 2) reduced cost of production.

But a number of individual scientists from the same institutes proved themselves to be champions of demand-led research. They adopted the approach systematically in their work when they had the opportunity and the environment such as what they found in the PETRRA project. Some of them would continue to conduct systematic demand analysis with farmers in the village where the research output would be used.

Partners from BARD had a long-term association with farmers through village institutions at the community level. They claimed that they knew farmer priorities and demands broadly from before but still they continued to enquire about needs from farmer clients, in the process discovering new elements during project implementation. They appreciated the approach and what they learned from it (T. Bose & A.K. Azad, SP 23, BARD, govt. development organization).

Private entrepreneur Syngenta (SP 40) reported that it continued to follow a need-based analytical process and tried to accommodate the needs of marginal and small farmers. They would produce smaller packs of their agro-products to make these less costly for these groups. They also paid attention to cheaper common products instead of the expensive premium products. This was based on their learning from recent agricultural projects they had with PETRRA. Mahbubur Rahman observed that most farmers are becoming marginal and small and, because of the growing commercialisation in agriculture, more and more are becoming land operators. They would aim to respond to the demand of these groups of farmers (Mahbubur Rahman, SP 40, Syngenta, pvt organization).

4.4.6. Disseminating technologies that farmers demand through networking

National-level farmer demand for technology can be created and addressed through different means. The use of a national seed network of multiple partners who work closely with resource-poor farmers (SP 02) proved to be an effective strategy in responding to farmer demand.

Demand for seed technology depended on the media. Some varieties of seed were popularised on TV, which create effective demand ... It is important that good varieties of seed are advertised in the media so that an effective demand for quality seed is created for better adoption and production. But a national-level seed network proved to be one of the most effective pathways for rice seed dissemination. Demand was communicated through the network of member organizations under the PETRRA project. The members could communicate the specific variety of seed that they need long ahead of the season, like a year before. And BIRRI was able to supply breeder seed in response to the demand of the network members (NGOs, government agencies, private sector agencies). As these were coming from all farmers across the country, the network made that link very easy and useful (Dr. M.K. Bashar, SP 02, BIRRI, NARS).

Engaging with the farmers and organising them as partners proved to be a good initiative. A contractual relation was introduced for a seed business on the basis of local demand; this involved production and marketing by small-scale entrepreneurs under the auspices of a private-sector agency-led extension research project under PETRRA (ABC). This agency was able to respond to local demand for technologies (mostly seed). They changed their business strategy according to the demand of their immediate clients, the resource-poor farmers. The statement below provides an example of demand-driven, private-sector-led entrepreneurship.

We took a special programme for the marketing of rice seed. In the first year, we produced 10 tons of boro (winter rice) seed. We also decided on our seed marketing strategy. We introduced 2-kg packets instead of 10-kg packets for a bigha (0.33 acre) of land based on poor farmers' demand. Because of the good quality of our seed, 2 kg was enough for a bigha plantation. This had a huge impact; our seed quickly became very popular. Although the price per kilogram of our seed was higher than that of BADC, farmers found that using our seed is economical because of its productivity value.

Through our dealer network nationwide, we also got information about demand for varieties in different areas. We could also provide feedback to BIRRI⁸⁶ on varietal performance and help them decide which variety of seed to grow for which areas (Fashiur Rahman, SP08, ABC, pvt. organization).

The innovation of this demand-led extension method required an engagement with farmers for whom the method was targeted. Partners, as external agents, had to follow and facilitate the process to allow farmers to discover the most effective approach for them. The role of the partner was to capture the steps and elements and forge them into a systematic approach (Harun Ar-Rashid, SP 05, AAS, NGO).

⁸⁶ BIRRI is the source of our breeder seed and is responsible nationally to develop rice varieties that satisfy farmer requirements from different parts of the country.

4.5. Participation of poor men and women farmer in R&D

The concepts of participation and participatory research were introduced in PETRRA as a tool to organise and manage R&D more democratically using the bottom-up method. Building partnerships based on the partners' comparative advantage in conducting participatory research was a strategic requirement in the PETRRA approach. The assumption was that this participatory approach would help the project achieve a better pro-poor outcome.

Some partners, especially scientists from government institutes, wanted to differentiate between two aspects of participation. They thought that farmer participation in adaptive research and in technology dissemination would be important. Knowing how farmers could use a technology, what would be its impact, how it would work in the field - all these they could learn from such a research. But they felt that farmer participation in research to generate 'new technology' would be of limited use because not all these studies would end up producing a viable technology. In other words, scientists believe that participation of farmers would be useful in 'adaptive' research but not in 'basic' research. As the PETRRA research portfolio mostly involved adaptive-type research, the participatory approach was an appropriate tool to adopt in most of its subprojects (Dr. Mazid Mia, SP 21, BRRI, NARS).

4.5.1. Defining participatory research: pushing the boundary

In PETRRA, the participatory approach was used not only at farmer level. A culture was developed to practice it at all levels: farmer, partner (researcher), and organization. It involved all stages and all major activities. R.B. Shafali presented it nicely from the example of the LITE subproject (SP 27).

We have achieved 100 percent participation. On a regular basis, we (IRRI and BRRI) sat together with farmers, the field staff, and the lead farmers. Every 3 months, we planned, designed, and evaluated activities and took up activities for the next 3 months. We distributed our responsibilities, evaluated and corrected the mistakes we committed in the past. We tried to capture our learning points together, tried to document the learning, and shared it with others. We facilitated so that the farmers themselves noted the information in their notebooks, which were checked regularly to maintain data quality. We visited the field on a regular basis together with field workers and farmers. We had lead farmers who took charge of a group. There were workshops every 3 months during which we recorded progress and distributed responsibilities. We extracted findings from these workshops and reviewed them from time to time (Rokeya B. Shafali, SP 27, AID-Comilla, NGO).

And there were examples of partners who had prepared themselves to work on a particular research issue for quite a long time, even beyond the tenure of the research contract with PETRRA. Dr. Manoranjan Mondal (SP 20), having lived in the coastal region for most of his life, prepared for his research even before he submitted a proposal to PETRRA. His personal interest in a particular area added to his emotional commitment.

From the beginning of my research and even before that, I have discussed with farmers and local leaders and extension workers to the possibility of testing the concept of water management that I pursued in the subproject. The farmers and leaders had mixed responses, but since I originally come from that region, I could facilitate the discussion better and convince them pretty quickly. We planned the project together with the farmers even before we submitted the final proposal to PETRRA (Dr. M. Mondal, SP 20, BRRRI, NARS).

He involved local farmers, agricultural professionals, and local political leaders in the process. As the research issue touched on a strong local need, he readily got the attention and participation of all parties. This enabled him to plan, design, and implement project successfully. Because of the trust built on the basis of ownership, the farmers worked hard and achieved an additional crop (boro, the winter rice), a feat they could not believe they could do. Being a member of the community, it was easy for the partner to earn the trust of the farmers and other actors. He was able to plan and implement relevant participatory activities that were essential in coming up with a socially acceptable and technically appropriate technology for the region. Because of the nature of participation that was achieved in that subproject, it did not remain only as a water management project as initially planned. Rather, many other complementary components (variety selection, conflict management, etc.) were added to it. In the course of the project, both farmers and partners learned much from each other.

Enthusiastic partners explored their own definitions of participation, which had been developed in the course of their involvement with the PETRRA project. This is another example of a case where an innovative interpretation of the concept resulted from an engagement process that the partners were exposed to in PETRRA. The statement below captures one such attempt made by Dr. M. Musherraf Husain, who admitted that he had no previous experience working with resource-poor farmers before his engagement with PETRRA.

We do not need a formal definition of participation to work with. I think that stakeholders, scientists, extensionists, and development workers must work together within the system; all concerned need to know the technique, technology, and knowledge to allow farmers to make the decision.

If you test a technology by adopting a participatory approach, you can arm farmers with experience so that they can make decisions easily. The sustainability lies with the extent of participation of the farmers. If they have the impression that it is the task of scientists and extension agents (they are paid to do it) and that farmers have nothing to do with it, then it will not be sustained. This is what I personally pursued whenever I am in the field; I try to get feedback from farmers in every possible way and as much as possible. I request them to take the lead in conducting, observing, evaluating, and deciding based on their best judgement. Every time you ask farmers, you get a new dimension, you learn new things about a technology in terms of its advantage, disadvantage, or need for adjustment, which is a very important element of technology screening and refinement.

You can have permanent relationships with farmers who become competent enough over time to serve their community without getting any help from government or nongovernment extension agents. I know such farmers who keep regular contacts with me; they experiment and disseminate technologies they got from me and disseminate it to their communities. Then they send me informed feedback. There is a tendency among technology developers to hide the weaknesses and highlight only the strengths of the product; this will not result in sustainable technology. We need to explain the strengths and weaknesses of a technology to farmers and empower them to deal with these (Dr. M. Musherraf Husain, SP 01, BRRRI, NARS).

4.5.2. Organizational commitment was crucial

The participatory approach was part of the organizational commitment for some partners. But their actual practice varied over time, depending on resource availability, continuity in interest, and constancy of benefits incurred from the practice. M. Nuruzzaman mentioned that, when they enjoyed PETRRA support, they could afford to give much time to the practice of participation but, after PETRRA ended, they had to change their style. They claimed that they still decide on a technology, through a process where farmers play a deciding role, but that the intensity of involvement varies. The participatory approach is part of their organizational culture. It is also strongly linked with the whole organizational approach of awareness development, social mobilisation, and empowerment. They thought that PETRRA was successful in bringing farmers and scientists together, in a way that immensely contributed to the quality of participatory research and development activities that they organised (M. Nuruzzaman, SP 09, Shushilan, NGO).

Partners observed a limitation in the use of a farmer participatory approach within the government agricultural R&D system. There is no clear rule to ensure farmer participation and to conduct R&D activities in farmers' fields to derive results. The government system does not encourage researchers to go to the field as it has no adequate budget provision to support physical mobility in terms of transport and lodging costs. Such limitations discourage researchers from conducting farmer participatory R&D at appropriate field locations. In addition to requiring the use of participatory R&D in PETRRA subprojects, these government researchers also received support and were able to show their skills and commitment to conduct participatory R&D. They proved that they would love to do that, provided adequate administrative and financial support was in place.

Within the government system, there are limitations of farmer participatory research. The regional stations are supposed to conduct region-specific research. These stations are supposed to provide necessary research results that do not necessarily have to be with the farmers and in their fields. The government system does not support researchers' interaction with farmers and does not provide financial support or transport assistance to do so. There is no rule that encourages research stations to disseminate the technology they develop. Even if government sees the limitation of the regional stations in technology dissemination, the scientists feel discouraged because of the lack of rules that recognize this as their work (Dr. M.A. Salam⁸⁷, SP 13, BIRRI, NARS).

Even for some IRRI scientists, PETRRA was their first experience of farmer participatory research:

This was the first time as a researcher that I was involved in farmer participatory research (Dr. G. Gregorio, SP 13, IRRI, IARC).

Individuals are putting pressure to change the system as they got the exposure from PETRRA. BIRRI is gradually accommodating these into its system.

⁸⁷ During the time of interview, Dr Salam was director for research of BIRRI.

In the government system, our hands are tied, even if we want to, we cannot do it. But now, we are trying to work closely with the Adaptive Research Division jointly (as only they are officially responsible for farmer interface with research). It is agreed that we will work in groups jointly in the field with this division and with scientists directly involved in technology development. We tried this approach recently in a BARC project. This was done after PETRRA (Dr. M.A. Latif, SP 35, BIRRI, NARS).

4.5.3. Partnership made participation easy

Both government and NGOs learned how to partner with each other. Government research institutes mainly provided technical support to the NGOs, which made the latter's work with farmers easy.

There was unique participation in the project; the farmers plus two NGOs — GKF and RDRS. They used to work with resource-poor farmers. PETRRA helped us form the partnership between GO, NGO, and DAE. Through this partnership, we have learned how to go to farmers and disseminate technologies to beneficiaries; all these were new to us (Dr. M.A. Sattar, SP 25, BIRRI, NARS).

Awareness was built on participation. I will not call it a success story, but I should say that it was good sensitisation that taught us — yes, we can work with the NGOs to organize participatory research, we have the opportunity and the scope to work together, and that is beneficial (Dr. M.A. Razzaque, SP 32, BARC, NARS).

PETRRA support provided extra emphasis and resource to achieve comprehensive gains in participatory research. We could scale it up, and the volume of work was big. We researchers had limited work before. With NGOs and farmer involvement, we could increase the volume of our work. With limited resources, we could cover a lot. We could involve a large group of people (Akhter H. Khan, SP 10, BIRRI, NARS).

Harun Ar-Rashid found his partnership with a BIRRI scientist as a nice marriage between farmer knowledge and formal science. There was a similar comment by Nuruzzaman.

In our subproject on participatory nutrient management, we included farmer knowledge and formal science (from BIRRI) that perfectly matched. Dr. Saleque (his partner at BIRRI) was a discovery in our participatory research collaboration with BIRRI (Harun Ar-Rashid, SP 17, AAS, NGO).

PETRRA was successful in bringing scientists (as partners) in the field. This was an opportunity for scientists and farmers to work together closely (M. Nuruzzaman, SP 09, 18, Shushilan, NGO).

4.5.4. Participatory R&D helps improve capacity of researchers and ensures quick adoption

Strong confidence in participation provides strong arguments in support of the use of the approach in R&D by practitioners. Once one has mastered participation, one can make full use of its multiple advantages. The approach is such that it can be used in many other development activities as long as a practitioner knows how to apply it. Dr. M.A. Saleque has his own wisdom to reflect on his experience with PETRRA:

I want to strongly support the participatory approach. Not only in research can this be followed, in all development activities as well. It hastens the work and, with participation, adoption of research innovations in the field is better. Researchers can improve their capacity. I am always positive about participation, I always advocate it. Participation has many advantages: when we conduct and formulate research with participation, it becomes easy, the methodology becomes accurate; a application of

research innovations and outputs also becomes easy. Because ideas and concepts of farmers in different parts of the country vary, we make sure that, wherever we go, we get participation; all other work then becomes easy. Researchers should be able to appreciate the advantages of participation; they have to be able to organise the research as well. One cannot do it instantly even if he would like to. In my own research, I am mostly following participatory approaches, if not at all levels, to a certain extent. I always try to practice participatory approaches. I organise workshops in my station with extension people and farmers. I use participatory approaches to conduct those sessions (Dr. M.A. Saleque, SP 17, BRRI, NARS).

The motivation of the researcher is critical in getting good results out of participatory approaches; otherwise, one would not be able to use these instantly. Many motivated researchers said that they continued to use the approach in their work after PETRRA.

Participatory approaches very often break the traditional linear model sequence of 'research then extension'⁸⁸, working in a continuum. This is one of the biggest advantages of the approach: it helps save time in bringing results to poor farmers.

In a participatory process, a farmer would start to use a technology the moment he liked it. So there would be a big gain here. In a normal rice variety release process, it would take at least 3 years to develop a variety and an additional 2 years would be required to multiply the seed. By the time a farmer could access a seed variety, the variety would have already lost its full potential as 5 years is the time period when seed replacement is recommended. In the case of rice participatory varietal selection, the process could save at least 3 years here (Dr. M.A. Salam, SP 13, BRRI, NARS).

The farmer participatory approach that was used in PETRRA was very good and was useful in getting the technology to the field and for upscaling. The research that PETRRA was mostly involved in was adaptive in nature; for technology verification and upscaling, the participatory approach was very good in achieving quick impact on the livelihoods of the resource-poor farmers (Dr. M.A. Razzaque, SP 32, BARC, NARS coordination).

The adoption of a systematic approach to conduct participatory research was useful in getting positive research outcomes. Applying the approach in the middle of a research project could hardly provide good results. A.B.S. Sarkar, an agronomist partner (BRRI, SP 34) presents his opinion about the usefulness of participatory research in the field of agronomy, arguing that it can lead to quick adoption.

Being an agronomist, one should work in the field, not in a research station. I can learn practical experiences from the field, which I cannot do in a research station. Research that does not need lab-based work should be done in the field. In a traditional research system, if we take a long-term research programme and at the end of the research, we realise that the technology we developed had very little or no acceptance by farmer users, then the whole objective of the research would be useless. In a traditional system, there is no opportunity to get feedback from users during the development of the technology. After 5/6 years of research, the farmer may not just accept the technology, which would mean a total loss of resource and time. But, if we conduct the same research in a participatory way (like we did in the case of this research), we can continuously receive information and feedback in the process. If something does not work, I can immediately rectify the error (A.B.S. Sarkar, SP 34, BRRI, NARS).

⁸⁸ This is also referred to as the pipeline model of extension. Biggs, S. D. (1990). "A Multiple Source of Innovation Model of Agricultural Research and Technology Promotion." *World Development* 18(11): 1481-1499.

If, for some reason, the farmers do not want to participate seriously in research, researchers can not expect good results. Sometimes, it could be the rigidity and the traditional beliefs and practices on the part of farmers (and researchers as well) that could limit success.

Participation was an effective means for farmers to gain knowledge from scientists directly. Many of the participating farmers had no exposure to such knowledge because they did not have any chance to work with scientists at such a scale before. This also indirectly helped expedite the technology dissemination process. Partner-researchers learned to conduct research using participatory approaches from PETRRA and applied the experience in projects they got involved in after PETRRA (Dr. M.A. Sattar SP 25, BRRI, NARS).

NGOs involved as PETRRA partners had previously been involved in R&D only as extension agents. But with PETRRA, they were involved as active actors. This opportunity gave them extra confidence in the technology that was developed with their active participation; it provided them ownership of the technology as well. This involvement in the technology development process made them responsible for disseminating the technology, thereby increasing the likelihood that the technology would be sustainable (R.B. Shafali, SP 27, AID-Comilla, NGO).

Participatory research offered the opportunity to accommodate and adjust a technology or an innovation as they evolved through a process. In the process, both farmers and researchers could change their initial positions and compromise with a new product. In the case of the SRI subproject (SP 35), for example, the concerned research partner observed that farmers accepted some elements⁸⁹ and not the total package of the technology as they were convinced about those elements only. In some cases, farmers also made compromises on the recommendations and agreed to change their position. Over time, through participation, relationships and trust developed among farmers and researchers, both of whom changed their positions and compromised with their egos. Researchers developed an appreciation for long-term engagement with farmers in order to fine-tune a technology that would be lasting (Dr. M.A. Latif, SP 35, BRRI, NARS).

4.5.5. Participatory research has a niche

The participatory approach has a niche for R&D, especially in an unfavourable ecosystem. The diversity found in unfavourable ecosystems demands diverse and flexible approaches to capture learning from immensely diverse micro-ecosystems within a broad region. The farmers who live there are also very

⁸⁹ Elements found useful were the use of lesser number of seedlings per hill, spacing between seedlings and the use of organic manure but with a supplement of inorganic and alternate wetting and drying (water saving technology).

diverse in terms of socioeconomic condition, conflict of interests, and choices. Micro ecosystems vary from one plot to another and farming conditions also vary from one farmer to another. When such diversity comes into play, there is no other option but to allow participation and to work closely with farmers, to take into account all plots and the people who own them, men and women. Most of them are poor farmers. Dr. M.A. Salam (SP 13) very interestingly and uniquely explained how he discovered his own conviction about participatory research.

Farmer participatory research is a real need to capture the variations that exist in different plots. We had a challenge in front of us in the PETRRA project: we had to develop a saline-tolerant rice variety within the life of the project. We conducted soil analyses on different farmer plots to understand the soil salinity conditions in each plot. We identified that the salinity level of each parcel of land is different. We could not replicate this variation in on-station trials. If we had completed our observations on the basis of on-station trials, it was likely that it would not perform well in different environments where different group of farmers operate. That was why, in the past, varieties found good in on-station trials did not ultimately perform well in farmers' field. Keeping this problem in mind, we were exploring different options to capture the variation in the environment in the selection process. And we thought that participatory varietal selection could be the solution for it. Through farmer participatory variety selection trials, we involved farmers to get quick feedback about their choice of variety and so that researchers could judge the impact of the variation in farmers' field on variety. The variety that came out of this process had wide popularity. The variation occurred in many forms because every farmer was different⁹⁰, every farmer had different constraints: some people transplanted 40-day-old seedlings, some used 20-day-old seedlings, some were able to follow recommendations regarding different cultural practices and fertiliser application and others were not able to. Such variation could not be controlled by the farmers, it happens in the environment. We wanted to capture and utilise such variations in our participatory research. That was how we wanted to conduct the experiment, to judge whether the technology we were offering would be suitable in the farmer environment. We also wanted to make sure that farmers take the lead in the demonstrations, by creating competition and ownership of the experiment. We wanted to give farmers the credit for their good performance in maintaining their plots. We introduced prizes for the farmers and recognised farmer performance through different means. Farmers, when they conducted their own baby trials, included one or two varieties of their own for comparison with the new variety. It was seen as a significant contribution of the farmers and the process helped to develop ownership among the farmers. Fellow farmers could judge the management practice each of them adopted in the field. Nothing was on time in a farmer's field and every farmer's management style was different. We scientists could advise that we would go for 30-day-old seedlings, that fertiliser would be applied on a particular date, and irrigation would be organised at a certain time, etc., but such a time-bound schedule of activities does not prevail in farmers' fields. If we fail to accommodate and if we do not adjust our research according to farmers' practices, when the experiment fails, the farmers would go back to their own previous practice. We get ideal conditions in farmers' field very rarely. In stressful environments, it would be even more variable. Drought for 5 days would be different compared with drought for 15 days, which could be a real drought. The irrigation system might delay irrigation to the field. Such stressed situations would automatically be created in farmers' fields. If we want to address such situations, farmer participatory evaluation becomes essential. If we can address this, we can easily get a technology which is adaptable to such an environment and we can ensure the participation of farmers. As they get credit in the process, they give their time. They accept the process wholeheartedly and they extend all possible cooperation (Dr. M.A. Salam, SP 13, BRRI, NARS).

The statement above strongly stresses quality participation that is empowering (Pretty 1995) on the part of both farmer and researcher. Both seemed to be empowered in such a research process. Superficial participation would not serve the purpose and would lead to a futile experiment. This needs to be done very carefully; the goal to achieve sustainability should be at the heart of this approach. Dr. M.A. Mazid Mia warned about the artificiality in participatory research as he noticed pressure in many projects. He

⁹⁰ this is true even in a good environment

suggested that researchers need to ensure that research is linked to farmers' needs and priorities. He noted the tendency of some researchers to adopt participatory research artificially; providing short-term financial support to farmers. But, in such cases, he cautioned that the technology would not be sustained and it would disappear as soon as the project support is withdrawn (Dr. M.A. Mazid Mia, SP 21, BRRI, NARS).

Participatory research can eliminate the need for an intermediate phase of research that research institutes such as BRRI traditionally follow: adaptive research on pipeline technologies immediately before officially releasing a particular technology. Dr. M.A. Latif thought that participatory research has a contextual niche to avoid this phase as genuine feedback accumulates from the beginning of the research through farmer participation. His experience in participatory research in PETRRA helped develop a direct bridge between farmers and researchers (Dr. M.A. Latif, SP 35, BRRI, NARS).

Participatory research also helped researchers to understand farmer clients better. This involved culture and other essential social issues such as gender. Trust-building efforts among researchers and farmers in the course of the participatory research contributed to lasting impact. It also helped them to understand the socially defined role of women in society. Because of the understanding built during the participatory process, both farmers and the partners could maintain their relationship and use opportunities for interaction, even after the project ended (Sufia Khanam, SP42, EPC, NGO).

If research is done using a participatory approach, researchers would realise that it is not enough to conduct the research and submit a report after the data have been gathered. Only if farmer groups are motivated and if research is conducted in the manner farmers are most comfortable with, there is a greater chance of the technology being sustained. And that was what they did in PETRRA (Dr. S.T. Hossain, SP 19, BRRI, NARS).

Projects and programmes that adopted the innovations of PETRRA obtained results which they know have been tested and validated through a participatory process. They were confident with the product as they knew farmers had already practiced them in the field beyond their respective experimental plots. A.K.M. Ferdous claimed as a unique achievement their being able to successfully facilitate a process that helped farmers develop their own fertility maps and decide the dose of fertiliser they thought appropriate, based on their long experience with their own land (AAS & BRRI, SP 17). And, as anticipated by the partners, through this process, farmers were able to come out with an optimum dose. This farmer-participatory fertility mapping was accepted as an effective tool by other projects and programmes under DAE (A.K.M. Ferdous, SP 17, AAS, NGO).

Individual champions from the NARS and NGOs made the difference; they came up with ideas and innovations by seizing the opportunity, which was available in the project, to use their personal wisdom. The partner-researcher from BRRI who was involved in the participatory soil mapping innovation under the joint BRRI-AAS project was referred to as 'a discovery' by his partner from AAS, Harun Ar-Rashid (NGO, SP 17). Lina Diaz, an IRRI scientist, observed a marked change in the attitude of their BRRI colleagues while directly working with farmers, evidently an impact of participatory research in the Seed Health subproject (IARC, SP00). For many IRRI researchers (such as Dr. Glenn Gregorio, SP 13, IRRI, IARC), the PETRRA experience was an exposure to farmer participatory research. For Mahbubur Rahman, a private sector partner from Syngenta (SP36, pvt organization), it was the beginning of the practice of participatory approach, which he has continued afterwards, eventually incorporating it as their key organizational approach.

4.5.6. From concept to practice—the PETRRA experience helped them walk an extra mile

Partners described their experience of how they have organised and interpreted participatory research into practice. It was interesting to see how each partner looked at participation as an important value in pro-poor research.

We conducted and designed the research in such a way that farmers can easily manage the research. The experimental design that suits them most was developed together with the farmers. Farmers, on their own, collected data of interest such as duck weight at the end of the season, the volume of paddy harvested, the price of duck they sold in the market, crop cut, etc. together with field researchers engaged by us. The plot size of the experiment and the design to compare farmer practice with the improved practice were decided by the farmers at their own convenience.

Together with farmers, we organised seasonal workshops to review the completed seasons and to plan the next. This was an occasion where we got farmer feedback directly, received comments from them, and got the agreement to revise the research approach to get better results in the following seasons.

Based on feedback from these seasonal sharing sessions, we increased our knowledge on supplementary feeding and extra care of the ducks; all these ultimately helped farmers to have healthier and bigger ducks, meaning better prices and greater income (Dr. G.J.U. Ahmed, SP 19, BRRI, NARS).

Akhter H. Khan (SP 10) mentioned that the farmer participatory research they were involved in was a natural process. He claimed that their approach was completely participatory in farmers' fields. Farmers discussed the advantages and disadvantages of the technology; scientists took immediate corrective measures as they got feedback immediately from farmers.

One such example is the transformation of the leaf colour chart (LCC⁹¹) design from six colours to four. Farmers from different experimental areas argued that there is no use for the two additional colours, which were included in the previous design. We scientists had to be convinced by farmer observation to exclude the two screens from the chart. This result was endorsed by IRRI and later followed by all

⁹¹ This is a simple plastic colour chart used to diagnose the deficiency of nitrogen in a rice plant. Different shades of green dictate the dose needed.

others who used this in Bangladesh and elsewhere. This change in design was widely recognised as being made on the basis of farmer feedback (Akhter H. Khan, SP 10, BRRI, NARS).

Partners also tried to understand and interpret the boundary of participation as they worked with PETRRA. They thought that PETRRA had helped them define boundary, helping them to widen it and achieve a certain scale together with other actors. The word 'participatory' meant participation of many other actors such as NGOs. It could be multidisciplinary as well, but mostly, it referred to participation of farmers. Akhter H. Khan found that PETRRA support provided the extra emphasis and the resources to achieve comprehensive gains in participatory research, enabling his organization to scale it up. The volume of work in PETRRA, he found, was big. Most researchers at BRRI had limited work on farmer participatory research before their PETRRA involvement; with NGO partners, they were able to increase the volume of their work. Even with limited resources, they could cover a lot of area and could involve large groups of people (Akhter H. Khan, SP 10, BRRI, NARS).

PETRRA helped some partners begin with the concept of participatory research, which changed their mindset completely. The statement by A.K.M. Zakaria below is a living testimony. .

I learned participatory research from PETRRA. Now, I think I am on the right track. Now, whatever I do is fully participatory. Now, I work with people and I work for them. I used to work with the technology before. My only concern was yield and that is all. I follow this approach in all of my research. When I report now, I try to bring in the opinion of the people, the way they have experienced the technology in their life, their choices, their priorities, etc. (A.K.M. Zakaria, SP 00, 37, RDA govt. development organization).

Change did not stop with the partners. It had impact on the farmers as well. This shows how changes in attitude and mindset of the partners start to change its target clients, which could be far-reaching. R.B. Shafali (SP 27) observed a marked positive change among the farmers due to their involvement in participatory research in a conducive environment, where the research process could deliver such quality change. As LITE farmers grew with their new knowledge, she was informed that farmers from outside the project area visited project farmers to learn from them. In some cases, project farmers were offered fees for their services by the non-project farmers as they found their services worth paying, directly contributing to increase farm productivity.

4.5.7. Impact of participatory research approach of PETRRA

C.A. Mannan (HEED Bangladesh, SP 28, 20) believed that it was possible for PETRRA to break the tradition, they were successful in bringing scientists to the farmers and making the research participatory. PETRRA was able to inspire scientists, ensuring that they work in the field and conduct farmer participatory research. This change in the research approach on the part of the scientists helped reduce the physical proximity gap between the farmers and the scientists. He observed how the

farmers developed confidence as they interacted with researchers face to face; this would have been impossible in the traditional research approach. He thought that this was a big achievement for PETRRA: poor farmers received the technology very quickly in their hand; it would have taken 7–8 years to reach them through the traditional extension system (C.A. Mannan, SP 28, 20, H EED Bangladesh, NGO).

Researchers enjoyed working with PETRRA. According to Dr. M.A. Mazid Mia (SP 21), there were many joyous moments in the kind of work they did in PETRRA as they used the participatory approach in their research. He was able to interact with farmers directly, he observed genuine smile on the farmer's face, not a political one. He, together with other partners, organised promotional activities, arranged playing of songs in all such activities, and they saw genuine participation among the farmers. Farmers made a huge gathering, created lots of noises, and showed great enthusiasm in all these events—great achievements indeed (Dr. M.A. Mazid Mia, SP 21, BRRI, NARS).

Sukanto Sen (BARCIK, SP 22) thought participation was the key to PETRRA's success as it helped his group organise their research approach. Participation was used as a tool in project planning and development that involved farmers, local partners, and principal partners. The subproject he was involved in took a long time to take shape, but it was now in place. He mentioned that they used the same participatory approach in their followup projects; it helped them a lot in organising the activities. BARCIK, after the completion of their subproject with PETRRA (SP 22), has continued their research and experiment in the same area and in other parts of Bangladesh. The concept of PVS has been further expanded by BARCIK; instead of collecting germplasm, they helped the poor farmers preserve seed on-farm and store it in the village. They were involved in adaptive research. They collected seed from many different sources, institutes (gene banks), and farmers in the area, and handed these over to the farmers. They also donated back the seed to the institutes (e.g., BRRI gene bank). They helped farmers get back their lost varieties. In areas where they had no rice for a long time, farmers were able to grow rice with BARCIK's help (Sukanto Sen, SP 22, BARCIK, NGO).

Dr. Saidul Islam (BRRI, SP 33) discovered that their machines became more popular in response to the participatory research approach they used in their subproject. Many poor farmers were buying the machines. In many places where their subproject was implemented, BRRI had to introduce complementary technologies with the machines; farmers learned those just as easily as they could link the two because of the participatory mode of R&D activities they conducted under PETRRA. This approach also helped increase farmers' awareness of the machines in the research area. It made BRRI scientists confident as they succeeded in improving the performance of the machines substantially at

the farmer level compared with what they achieved in the laboratory. Dr. Islam thought that this was a unique experience for them (Dr. Saidul Islam, SP 33, BIRRI, NARS).

AAS (SP 05) organised farmer participatory research and conducted trials where farmers had the chance to compare several varieties together and decide what to select. Through such research, farmers were empowered, their control on seed production decisions increased, and their dependence on the seed market reduced. The project was also successful in reducing the seed rate from 8 kg to only 3 kg per *bigha* (0.33 acre) in the villages (A.K.M. Ferdous, SP 05, AAS, NGO).

4.6. Partnership for pro-poor R&D

The concept of partnership was introduced in PETRRA as a functional necessity as no single agency alone could ensure the impact of R&D — most would lack the complete ability to achieve that. In the course of working together, the importance and effectiveness of partnership unfolded; partners began to find its utility. Partners recognised that farmers want complete support and assurance so that all possible dimensions of development will bring about a change in their livelihoods. They also learned that coordinated efforts in providing support to farmers could achieve impacts through strong partnerships between and among various agencies.

4.6.1. A new experience for many partners

Most partner scientists admitted being good students of science, but they did not know how to talk to the common people and how to disseminate technology that she or he helped develop (C.A. Mannan, SP 28, HEED Bangladesh, NGO). They used to develop technology in their laboratories or on-station, but in PETRRA, they learned to work closely with farmers and with unconventional partners such as NGOs. Many scientists had not worked with any NGO before, but after their PETRRA experience, they frequently expressed the desire to work more with them, given a similar chance in the future. The statement of Dr. M. Mondal below presents the story of a scientist who had no experience working with an NGO partner before his involvement with PETRRA.

We had partnership with HEED Bangladesh and Proshika. In the beginning, I was weary to involve NGOs in my project as I had this idea that they cannot contribute much to my research. But later, I realised that while they may not contribute much to research, they can be useful partners in technology dissemination.

I asked myself: since I will do the research, why should I need the help of other? I had extra confidence being the 'son of that area.' I did not understand the value of partners in the beginning. I thought I can tackle all kinds of problems in the field, including the social aspects. But when we started to work together closely, I noticed that all partners brought in different ideas to address different issues and these were so valuable. We all learned something from each other. We use all such innovative ideas

and we achieved many things very quickly, which could not have been achieved had we not started that partnership. I could easily share my workload with partners and that worked better.

In the process, I also learned that the partners involved in the process quickly learned the technology without distorting it. By being involved in the process, they started to own and gain control of the technology and they could disseminate the technology very quickly. As regards partnering with farmers, I learned that if we involve farmers as partners, we can understand their multidimensional problems, be they social, technical, or physical. We can deal with these and look for solutions together. I learned that approach from the project. Now, I am convinced that such collective approach was very useful for quick technology dissemination (Dr. M. Mondal, SP 20, BIRRI, NARS).

PETRRRA was also a new experience for the private sector partners who had not previously worked with research institutes and NGOs. Their brief experience in PETRRRA opened up opportunities for them to be involved in the fields of training, development, and research. They have institutionalised some of their PETRRRA learnings into their mainstream programme, which they piloted together with NGO partners (Mahbubur Rahman, SP 36, 40, Syngenta, pvt. organization).

Partnership dynamics changed over time with the experience. The partnerships that had proved to be effective for further growth of an agency got stronger over time. But some, who lost an immediate need, tended to become marginalised; especially the project-driven partnerships (M. Nuruzzaman, SP 09, Shushilan, NGO).

4.6.2. Advantages of partnership in R&D as partners learned from the experience

With partnership, work could be focused better, workload could be shared, more work could be done, and each other's capacity could be developed. With a partner, one could easily improve access to farmers. It helped each partner to reach the grassroots through the help of the other, either directly or indirectly. Partners who started alone ended up forming informal partnerships with agencies that they did not earlier consider as partners.

In partnership, all partners discovered their points of interest in the alliance. Partnership arrangements were such that each had to find out its own scope of work during the implementation of the subprojects and beyond, after PETRRRA was terminated. It helped partners, especially NGOs, to innovate business ideas to make their future role in agriculture more effective and relevant. In several instances, NGOs got involved in seed production and marketing, extracting benefits from their involvement with agricultural research institutes and scientists. Gur Pukur, a local NGO partner of BIRRI in a salinity-tolerant variety development project, wanted to get involved in growing the variety that was finally selected by the farmers (Dr. M.A. Salam, SP13, BIRRI, NARS). Shushilan, a BIRRI partner in the Seed Network subproject, developed its seed enterprise sufficiently that it survived beyond the life of the

project (M. Nuruzzaman, SP 09, Shushilan, NGO). A successful BRRRI partner in a number of projects (SP 07, 01, 25), RDRS developed its federation-led seed model enterprise to the extent that it is now firmly established within their organization (MG Neogi, SP 07, RDRS, NGO).

Through partnership with NGOs, it was possible for scientists to reach the women, who otherwise would not have been reached. NGOs, on the other hand, could use their contract with the project to expand their area of activities. This gave the NGO credibility in the community. For many NARS partners, the comparative advantage of NGOs over DAE (the government extension system) was evident as NGOs could target poor farmers far better. Some partners also appreciated the simplicity of the NGOs' decisionmaking process, which helped speed up things (Dr. M.A. Salam, SP13, BRRRI, NARS).

Through their partnerships with research institutes such as BRRRI and BARI,⁹² the NGO partners who did not have any prior research background gained experience and recognition. Such opportunities to become partners of research institutes helped NGOs to be recognised as R & D agencies. This enhanced their acceptability and they became more widely known among, for example, GoB, donors. The PETRRA project partnerships offered opportunities for them to get their staff trained by IRRI and BRRRI (R.B. Shafali, SP27, AID-Comilla, NGO).

Partnerships based on unequal relationships among different categories of partners can be counterproductive and abusive. BRRRI had two partner NGOs, CDP and BARCIK. BARCIK was responsible for conducting ethnographic studies with farmers in collaboration with CDP. CDP was responsible for coordinating a group of 17 local NGOs and CBOs that collected local germplasm at the village level. CDP was also responsible for managing the budgets of these small NGOs, a task that they could not properly handle themselves. The relationship between CDP and these groups was unequal. This caused problems and CDP failed to motivate the local NGOs to do their part. Their performance suffered and they failed to deliver good results (Sukanto Sen, SP22, BARCIK, NGO). Because of its size, this was the only group whose finances PETRRA could not handle directly. This interesting observation illustrates how the success of a partnership could be linked with financial management.

Partners who were not exposed to the advantages of a partnership benefited from the persuasiveness and the proactive role of the project facilitators. They found these very useful. Partners recognised this as an area to which the PETRRA-PMU had given a lot of efforts. On occasions, it mediated between partners and brought in new players as appropriate. They wanted partners, based on the agenda of the

⁹² BARI stands for Bangladesh Agricultural Research Institute

research, to think of impact pathways through to extension of the technology and sustainability. Dr. S.T. Hossain was one of the direct beneficiaries of such efforts by PETRRA. This young scientist did not realise the advantages in the beginning; it was not clear to him at first, but, as he got more involved, he came to understand the rationale

I had a superficial idea about the technology and thought that the technology would work in Bangladesh. But I had no idea as to how I could implement it. I anticipated the problem with duck management as BRRI did not have any experience in that area. Noel⁹³ inspired me to do it and to do it straight with the farmers in the field. He introduced me to FIVDB, an NGO engaged in duck management for the last 30 years. They did not know much about rice and I did not know much about duck. Our partnership started to complement each other. Another aspect was getting access to resource-poor farmers. Again, it was not the area of expertise or the direct mandate of BRRI, so FIVDB, which was already working with resource-poor farmers, was the right partner to work with.

When we would aim for a doption and impact from research, there is no alternative to partnership research. And this must be done with the extension department or with the NGOs. It was not possible for a government extension department to work with a large number of poor farmers as they do not have the mandate and the facilities to do so.

If you are able to choose the right partner who knows the trade well, your work will get momentum soon. Many NGOs are far advanced in their activities; they keep their contacts and knowledge updated, if you can form partnership with these NGOs, we get results faster (Dr. S.T. Hossain, SP.19, BRRI, NARS).

IRRI, as a partner-implementer of research projects under PETRRA, benefited from the partnerships. Dr. Abdelbagi Ismail noticed marked positive changes in the communication among scientists and institutes because of the partnership research with different agencies in the PETRRA project. 'PETRRA showed the way to work with multiple partners (NGOs, BRRI, and others); this has not happened in IRRI before' (Dr Abdelbagi Ismail, SP 13, IRRI, IARC). It also established norms and modalities of working with different partners and recognised the comparative advantage of each of these partner groups (Dr. T. Paris, SP 24, IRRI, IARC). They recognised the impact of the PETRRA-facilitated approach to partnership, and this mode was continuously used and further strengthened within IRRI.

4.6.3. Cost-effective partnership development approach with local NGOs and CBOs - a discovery

In PETRRA, partner-researchers were given the freedom to experiment with different models of cost-effective partnership for impact-oriented research. Partners noticed a sincere willingness on the part of the local NGOs and CBOs to be involved in such collaborative agricultural R&D activities as they saw good opportunities to access a greater number of potential client groups as most of them were directly or indirectly involved in agriculture. Harun Ar-Rashid and A.K.M. Ferdous from PETRRA partner organization AAS (AAS SP05, 17, 44) told the story of how they organised a partnership network that was useful and cost-effective. AAS continued to nurture the relationship after PETRRA was closed and

⁹³ PETRRA Project Manager

adopted this approach as their organizational strategy for partnership. They also highly appreciated the depth of partnership between PETRRA-PMU and the subprojects, treating each other like family.

The PETRRA partnership experience for us was exciting because we got excellent support from our local NGO/CBO partners without any direct financial assistance. We had to explore this option because of resource constraints. In selecting these NGOs/CBOs, we tried to explore their interest in agriculture and told them that there would be no financial gain from those activities. We would mainly work with their farmers and, in exchange, they would get some training support at best. Our main criterion for selection was their interest in agriculture and their future plan to remain active in agriculture. I must thank those partners for their excellent support. The involvement of local NGOs and CBOs in agricultural R&D activities was an opportunity to get them exposed to the community and become known to local administration. They thought that, even though the opportunity would not create any direct benefits, it would help develop the interest of the local farmers for development. A large scope exists in the country to tap the commitment of these CBOs and local NGOs that we had utilised in the project as partners and network members.

We had to work hard on this; we had to convince them that it was all hard work. Still, some partners kept contact, they invited us to visit their place and they communicated their progress over the telephone. Sometimes, we meet them in workshops/conferences. Some of them are still conducting seed-related activities, which were major aspects of our partnership work. We very often are invited to share our PETRRA experience as people are interested to know how we worked with the CBOs and local NGOs. We often use that experience in our present work. We can easily talk about those instances and motivate others to use the same approach (Harun Ar-Rashid, SP 05, AAS, NGO).

This story here is different from the one described in paragraph 4.6.2 on SP 22. AAS did not have any financial obligation to the group they worked with. Whatever the farmers needed, be it training support and seed supply, was directly given to them; the local voluntary partners had no financial gain. They did not receive any support from PETRRA. This was an example of how projects and programmes can use some of the existing social capital available in the system without any major financial cost. Yet, it is a win-win situation for both parties.

4.7. Linkage and network for sustained R&D

In PETRRA, the concept of linkage and network was introduced to the partners to enable them to maximise the impact of their work by expanding relationships with as many actors as possible. These actors could directly and indirectly contribute and complement each other to achieve the objective and help sustain the innovation, continuity, upscaling, and institutionalisation efforts. Partnership has been discussed here as a formal relationship among agencies, while linkage and network has been a relationship that was beyond formal partnership, to which parties had no official, financial, and organizational obligation. They cooperated because they considered that as an opportunity to connect with each other for specific common purposes. Partners considered the synergy that was brought into existence by this additional dimension of linkage and network among agencies beyond the project framework.

4.7.1. Partners developed positive views on linkage and network gradually

In the past, in most projects, scientists conducted research and submitted their reports. And that was all that was required. In PETRRA, partners were advised to establish linkages with different agencies as needed. Researcher partners also enjoyed flexibility; if they felt the need to involve an additional agency, they would make contact and inform them about the innovation. Partners could involve all potential actors—media, local leaders, extension workers—anyone whom they thought would be important to sustain the innovation in the field with farmers. The combined efforts of all such actors automatically contributed to sustaining the use of the technology by the farmers. In the past, many projects worked in Bangladesh, but only a very small number of innovations developed were actually used by farmers as most of these projects did not try to establish linkages and networks that would sustain the innovations (Dr. S.T. Hossain, SP 19, BRRI, NARS).

Another subproject leader, Dr. M. Mondal (SP 20) had similar experiences. He even had a broader view of the importance and mechanics of establishing linkages. He gave importance to the need to mobilise local-level R&D agencies and local leaders to make innovations sustainable.

Besides the formal partners who got financial support, we had some linkage partners whom we involved in the project for different reasons. We wanted DAE to be involved as they are the only and the largest public sector extension agency: we could not avoid them. We wanted them to disseminate what they learn from the project. We involved Khulna University as it is located in the region. We were aware that they do not have any expertise in research, but we wanted them to be involved in the research so they can learn from it and be exposed to the problems of the region. We arranged for their students to be involved in research and to conduct masteral theses and for their teachers to get the necessary experience. We wanted them to get out of their laboratories and go to the fields.

We involved local political leaders of the area. We also brought in the then ministers in the area. The local leaders also joined. It helped us bring things to public attention. The local MP also helped us disseminate the technology. There were risks in involving politicians; we did not want to be too close to them. But we got benefits from it; we could convince all concerned to cooperate. We were successful. The local MP later tried the technology in his area; we helped him by providing technology and advice. He then popularised the technology to a large area, benefiting many people. I still have contacts with the local leaders; they call me for technology concerns, and I respond to their requests. This kind of project cannot be successful without the blessings of the local leaders and the cooperation of the other actors (Dr. M. Mondal, SP 20, BRRI, NARS).

Partners realised their narrow viewpoint about linkages before PETRRA. They were used to keeping information within their own organization, but they changed this after their experience with PETRRA. Now, they are much more outward looking and they value the importance of sharing with other agencies (C.A. Mannan, SP 20, 28, HEED Bangladesh, NGO).

ABC (SP08), a private agency, had realised their limitations in technical skills for agricultural R&D over time and immediately recognised the presence of skills in government agencies such as DAE (at the

local level) and SCA⁹⁴ (at the central level). They needed this pool of skills to achieve good quality control of the seed they produced through contract farmers in the field. They established linkages with them and availed of their training and technical assistance. For ABC, these linkages continued, even after PETRRA was closed (Fashiur Rahman, SP 08, ABC, pvt. organization).

For Proshika, the PETRRA experience (SP 06) helped them to look into their own strengths and potential to establish and expand linkages laterally. With the project, they learned from a few villages and were then able to disseminate the learning and replicate the model in other places using their existing institutional network for technology dissemination. With PETRRA, they developed an approach for technology dissemination, which was based on their federations at the union⁹⁵ level⁹⁶ (Anwar Hossain, SP 06, Proshika, NGO).

Dr. Utam Dev from CPD,⁹⁷ a national think tank in the field of policy dialogue, recognised their PETRRA experience as something very significant: they were able to form a network of research and knowledge dissemination agencies for the successful conduct of policy dialogues under the project. Before PETRRA, they did not have such experience. They very much appreciated their involvement and contribution to the project.

In some cases, the nature of the technology dictated the type of strategy to be undertaken 要 to take extra care, to engage for some time, or to provide assistance until the extension partners attained a momentum to establish a linkage and network among different actors for research to development. The USG technology required a production system and a distribution system, and good results from its adoption research (Dr. M.A. Mazid Mia, SP 21, BRRI, NARS).

Government agencies such as BRRI had limitations in their ability to form networks and linkages. For them, selecting the right network of partners was very important in the conduct of adaptive research. Instead of forming their own networks, they relied on partners with very strong networks of poor farmers' organizations at the regional and local levels. BRRI (SP 01) worked with RDRS, which had a network of about 250 farmer federations at the union level. They also used some of the other PETRRA partner network members for adaptive research and dissemination. BRRI could implement the work for which they did not have to mobilise resources (Dr. M. Musherraf Husain, SP 01, BRRI, NARS). In the case of LCC, the NGO [RDRS] found the LCC technology as having good potential for their poor farmer clients. RDRS showed its interest in the technology while it was being tested in the field. BRRI also saw

⁹⁴ Seed Certification Agency

⁹⁵ The union is the lowest administrative unit of the local government in Bangladesh. Proshika has organised federations of groups at this level, which they decided to use as a forum for technology dissemination to their members.

⁹⁶ Proshika has a few thousand union-level federations in Bangladesh

⁹⁷ Centre for Policy Dialogue

the potential in RDRS and asked them to participate in the field tests. RDRS played a very important role in initially testing the technology with its clients. Later, as a linkage agency, it helped scale up the technology and then disseminated it very rapidly (A.H. Khan, SP 10, BIRRI, NARS).

As BIRRI formed linkages and partnerships with NGOs in some projects in some places, tension was created in the relationship between BIRRI and DAE. This was the case in the SRI project (SP 34) where BIRRI had Uttaran, a local NGO as partner. The DAE questioned the partnership of BIRRI with the NGO as they never thought that such a partnership was possible. Traditionally, DAE would be the contact for BIRRI for any research and extension activity. PETRRA was probably the first project that could bring breakthroughs in the composition of the network. Government agencies for the first time learned to form networks and linkages with nongovernment and private agencies. For the NGOs and private agencies also, this was a first attempt to get access to the government-led R&D system.

As their appreciation of the usefulness of linkage development grew, some PETRRA partners (who had similar kinds of R&D projects) formed informal networks to share experiences and to critique each other's work. The group that worked in the field of aromatic and glutinous rice formed such a forum (SP 33, 28 & 29). This proved to be very effective as the constructive discussions brought in policy and extension people from government, private, and NGOs (M.A. Salam, SP29, Apex, NGO).

4.7.2. Flow on from PETRRA was revealing

NGO partners continued to maintain their relationships with BIRRI, IRRI, and the BIRRI regional stations with whom they worked under PETRRA auspices. Recognising this group's very useful technical contributions, they maintained communication with these organizations without any hesitation, which was not possible before their involvement with PETRRA. The attitudes and approaches of these agencies had changed as well. They had, since then, collaborated far much better. These government agencies also looked for opportunities to reach the ultimate beneficiaries quickly and bring about change with support from the NGOs. C.A. Mannan said that he congratulates PETRRA for facilitating this big change among the agencies. NGO partners could sit together with government agencies and talk to them on the same footing. It helped greatly to bridge the gap (C.A. Mannan, SP 20, 28, HEED Bangladesh, NGO).

BARD, a government development agency partner (SP 23), developed linkages between government extension departments and village institutions. Through DAE, the village institutions expected to gain access to other government agencies and avail of new agricultural innovations. In the project, BARD also showed pathways to all concerned stakeholders – farmers, DAE, BADC, BINAP, BIRRI—and

explored mechanisms of working together and benefiting from each other (T. Bose & A.K. Azad, SP.23, BARD, govt. development organization).

BRRRI and FIVDB (NGO partner in SP 19) were successful in forming networks and linkages during the implementation of the subproject. They developed relationships with government agencies, such as the Department of Livestock (DoL) for duck vaccination and the BADC for seed. These two agencies were not officially involved in the project, yet provided a critical technology support to the subproject (Dr. G.J.U. Ahmed, SP 19, BRRRI, NARS).

RDRS had a multidimensional entry into various agricultural activities based on their experience with PETRRA. They had successfully established their own large-scale seed network development programme, degree programmes with universities, and a regional network of agricultural actors during the life of the project. The statement by M.G. Neogi (RDRS, SP 07) below tells the story. More elaborate discussions on RDRS and its contribution to network and research education linkage development are available in Chapter VI.

Under PETRRA, we could establish a large network of different agricultural universities, which we still maintain. The Focal Area Forum Network (a concept innovated in PETRRA) in the northwest had BADC and other private seed producers as members. We receive vital information from them and act accordingly. All concerned benefited from the sharing of information in the forum. The forum was first started in PETRRA and 12 organizations working in the field of agriculture in the northwest of Bangladesh were invited. We, RDRS, BRRRI, DAE, BARI, BADC, and others worked together to disseminate promising rice technologies in the region. We all took leadership in areas we felt ourselves competent in. The positive learning from this initiative was an eye-opener for us ...we are still continuing the forum for many other important tasks in the region, e.g., dissemination of technologies (M.G. Neogi, SP 07, RDRS, NGO).

4.8. Competitive system to identify competent R&D suppliers

PETRRA introduced a competitive system in research commissioning within the mainstream public R&D system at the national level. Through the system, it invited and encouraged individuals or groups of individuals from organizations to submit concept notes in response to calls that were prepared on the basis of farmers' demand. 'Its resources can be accessed only through competitive bidding, which is an entirely new arrangement for BRRRI (and for many others)' (Bhuiyan 2001). It did not automatically invite an organization to submit a project proposal. Individuals and groups had to submit concept notes and research proposals, most often in partnership with people from different organizations to ensure that impact orientation is meshed into the R&D process. Traditionally, clients would come mostly from national and international public sector research institutes and development agencies, with some exceptions, the principal NGOs in the country. This project broke that tradition; it was open to all national, international, government, nongovernment R&D organizations, including the private firms. But

all organizations had to compete for resources. They were not given projects directly. In the submission process, they had to reflect on the values that PETRRA deemed important and which they must incorporate to attain a pro-poor impact. So potential suppliers of R &D had to show technical competence and compliance with the value system being espoused. There were very few exceptions; some research was commissioned because there were no supplier-competitors available in the market⁹⁸. Even in those cases, proponents had to follow quality procedures in line with PETRRA principles.

PETRRA-PMU facilitated the process and took a proactive role in making the competition meaningful and effective. It helped partners form the right combination of partnerships, which had a better chance of bringing about impact from R&D activities. It also helped potential partners to enhance their ability to participate in a competitive system and comply with values that PETRRA pursued in the R&D process. Despite a few initial barriers, through this strategy, PETRRA was able to achieve a number of successes. As there was open competition, bright young scientists were able to lead projects, a development that cannot occur under a traditional system.

4.8.1. PETRRA's competitive research commissioning system was a learning process

Participation in PETRRA's competitive system was mentioned by many partners as their first such experience and, through this, they had the chance to have access to resources in an agricultural R&D project. The experience helped them to develop their capacity. For Shushilan, the PETRRA experience made them pause and dream about their future. Partners learned the art of preparing projects and reports from PETRRA, which otherwise would not have been taught to them (Dr. M.K. Bashar, SP 02, BIRRI, NARS; M. Nuruzzaman, SP 09, Shushilan, NGO, R.B. Shafali, SP 27, AID-Comilla, NGO).

M.G. Neogi mentioned that the PETRRA project experience helped his organization to develop its ability to compete for resources in projects and programmes in the field of agricultural R&D, even beyond PETRRA. It happened to individuals like him and to partner organizations such as RDRS where he comes from. Many individuals enhanced their own competence through their involvement in the PETRRA subprojects. Their respective organizations also recognised that and utilised their newfound expertise to further harness resources from different sources (M.G. Neogi, SP 07, RDRS, NGO). Partners also thought that the PETRRA experience helped them to learn the art of managing competitive projects. Dr. M.A. Salam recognised that their partner organization, IRRI, successfully

⁹⁸ One such example was the Hybrid Rice project (SP15); IRRI and BIRRI were given the leadership and responsibility to conduct the research as there was no other competent organization available to do it.

internalised the learning from PETRRA and was able to reflect that in the next round of proposals in response to calls from the CGIAR Challenge Programme for Water and Food (CGIAR-CPWF). Evidence showed that they were successful in having a poverty impact and in working with poor farmers closely. He thought that the IRRI-BRRI partnership in this project attracted donors and they committed resources because they believed that this partnership would take the learning forward in successive projects (Dr. M.A. Salam, SP 13, BRRI, NARS).

A.K. Azad and T. Bose (SP 23) were convinced that there was a clear impact on them and on their organization as they found the PETRRA research commissioning system systematic and learning-oriented. Their statements reflect on what elements exactly excited them. From their comments, it was clear that the elements of competitiveness did not end with the signing of the contract of a subproject; it rather persisted in the system as the activities progressed and became part of the research management system—from planning to project completion.

It was a tremendous experience. It opened up a totally new horizon to us. Earlier, we prepared some concept papers and got some projects, but those were not done systematically. Especially for us, preparing a project with a logframe was something new. I realised the importance of using a log frame from PETRRA. It was a good experience for us. ... It helped us build our capacity. I learned a lot from the project. Only those who were qualified got the project under this system. If the proposal was not of the desired quality, it could not be implemented. This was a good learning mechanism.... (T. Bose & A.K. Azad, SP 23, BARD, govt. development organization).

4.8.2. Only competition would not work

Some partners thought that a purely competitive system would not guarantee a good concept and project, and a good partner, and that a good partner organization would automatically be selected. Competition would not be enough to ensure the quality of R&D and its impact. They thought that the potential implementers of competitive R&D commissioning system would need to add some other essential characters to it. The strengths of a potential partner need to be studied to understand whether it would sustain the learning into their mainstream programmes after the project is completed. Partners thought that a project like PETRRA or an authority who wants to adopt a competitive system needs to assess the potential of a partner by analysing their ongoing field activities to judge whether those activities could complement the proposed work and thereby achieve better impact. C.A. Mannan recommended requiring an organizational capacity assessment, which has to be conducted before a project is commissioned. He suggested adopting a prequalification assessment at the time of commissioning. He thought that the competitive system, as was followed in PETRRA, needed to be adjusted and refined and additional elements given as the need arose (SP 20, 28, HEED Bangladesh, NGO).

Partner-researchers learned the system over time. Many of them had not been exposed to such a system before they got involved with PETRRA. Many who submitted concept notes for the first time did not succeed instantly. After the approval of their notes, the partners had to work hard to plan, design, and develop the concept further at the research proposal development stage, in consultation with potential partners. PETRRA-PMU facilitated such processes. Appropriate partnership development was part of the facilitation process to make the group competitive (SP 19, 20, 21, 25, 27). Though it appeared to be a compromise to the competitive process, it had to be like that in the beginning as many of the potential partners were not aware of each other's comparative advantage in the R&D continuum. They were engaged in a challenging learning process and they found the process very satisfying. Partners believed in the effectiveness of the competitive system as they found the process transparent. They also found that competent partners got projects, developed good technologies, and thereby brought good impact. The competitive dimension of the commissioning system brought in an automatic evaluation system that helped anticipate quality research outcomes (Dr. S.T. Hossain, SP 19, BRRI, NARS).

4.8.3. In a competitive system, advantages and disadvantages coexist

Depending on the situation, the advantages and disadvantages of a competitive system coexist. Coming from different perspectives, partners experienced and expressed their opinions. One such observation is reflected in the statement below.

I see both advantage and disadvantage of a competitive system. When there is resource limitation, we should go for a competitive system when there is a need to allocate resources and decide which one will give us more return. But, at the national level, we need to be careful about the quality and objectivity of the concept notes and research proposals. Sometimes, the writeup is good but it is not backed by good science or it does not reflect the need properly; we should not compromise quality at any cost. On the other hand, in general, there should be some form of competition, otherwise, no merit and capacity will be developed. After 30 years of service, some BRRI scientists would only be able to say that they have been in BRRI for such a long time, but many of them would not be able to say exactly what they had done, what exactly they had contributed. They never had to compete and did not contribute anything significant either.

Because of PETRRA, awareness has been developed among the scientists. Now, our scientists compete to get scholarships for MS and PhD degrees in open competitions. We must appreciate the advantage of competitiveness and we must not also forget the issue of national interest. We have to combine the two (Dr. M.A. Salam, SP 13, BRRI, NARS).

Dr. M. Mazid Mia thought that the competitive system could be counterproductive for researchers who are not used to writing good proposals. He thought that a researcher could get a project because she or he was a good writer but not necessarily a good researcher. He stressed the need for careful thought to make the process more inclusive (Dr. M. Mazid Mia, SP 21, BRRI, NARS). His worry was that a good researcher might not get a project because of the poor writeup and another person would have funds

for the study only because of a well-written note though his ability to conduct or manage R&D activities is under question. He wanted to highlight the necessity of having the right strategy to introduce a competitive system in projects and programmes in the future.

Dr. G.J.U. Ahmed recommended that adopting a competitive system would result in a better need orientation in the R&D project. But, some other aspects also need to be considered to ensure that a project would be easy to implement, be demand-led, and provide good income prospects so poor farmers could benefit from it. These criteria should be accommodated as part of the assessment in the competitive system (Dr. G.J.U. Ahmed, SP 19, BRRI, NARS).

A.K.M. Zakaria raised the concern from an organizational culture's point of view for partners who came from unconventional research institutes or individuals who were not used to such a system. He did not seem to appreciate the system as practiced in PETRRA and felt the need to orient proponents beforehand to cope with it and to make the system more culture-inclusive. The statement below captures some of his concerns and suggestions.

I have rather a negative impression about the competitive system used by PETRRA. One may have a very good concept but his/her writeup may not be up to standards. It is judged on the basis of criteria set by the authority. The paper I am submitting may not represent the idea I originally have. I would suggest including the elements of face-to-face discussion about the concept and presentation in addition to writeups. For an average Bangladeshi, writing, especially in English, is difficult. Even in RDA, because of this problem, we have a huge report backlog. Incorporating comments in the report is also a problem. We can think of submitting proposal in Bangla to make it easy for the scientists; if needed, the content can then be translated into English for the benefit of the foreign partners. Many other countries, including India, have such a provision. Sometimes, the opposite thing also happens; the writeup may be very impressive because it has been written by professional writers. (There are professional writers available in the market.) The system must be competitive, but the process of appreciating good concepts also has to be developed. I did not dare submit a concept note to PETRRA alone, Paul⁹⁹ did it for me. I did not really understand what needs to be written. We can also think of introducing training cum orientation in the preparation of concept notes. It is hard to master the logical framework. These concepts are foreign. I never saw a Bangladeshi who is an expert in logical framework training. I did not enjoy the logical framework workshop (A.K.M. Zakaria, SP 37, RDA, govt. development institute).

In contrast, Dr. M.A. Razzaque, chairman of BARC, viewed the competitive system as very effective from the point of view of managing the commissioning process and the whole system. He even expected a better flow-on impact as partners with PETRRA experience would perform better to access funding for research projects in the upcoming BARC-led and World Bank-funded NATP.

I really appreciated the competitive system that was introduced in PETRRA—the submission of concept notes and transforming qualified notes into research proposals, the system was good. Scientists could judge the merit of their concepts very early and did not have to wait long to know the 'verdict.' I liked the set of criteria used for the review; it helped reviewers assess a concept within a particular framework. So the judgement process was established using standard procedures set by the project; the reviewer did not need to apply his/her own standard and thus the decisions made were consistent. There was a good guideline.

⁹⁹ His partner in the subproject (SP37).

PETRRRA's competitive bidding system helped develop the skills of scientists, enabling them to participate in the competition. This might not have ensured the development of the scientist's ability to deliver better research, but it ensured obviously a better performance in case they are submitting projects under a competitive bidding system.

I would expect that, in the upcoming projects (especially those with NATP, BARC), they would attempt to adopt a competitive bidding system just like the one done in PETRRRA. Naturally, scientists who have the skill to submit a project following that system would have a greater chance to perform better. An opportunity has been created for them (Dr. M.A. Razzaque, TEC member, BARC chair, NARS).

While comparing the competitive system introduced by PETRRRA with the traditional resource allocation system for R & D within the government, the partners observed that the latter is beset with mismanagement and unfair means; clear standards and selection criteria were lacking; decisions were manipulated, the system favoured the powerful, and no credit was given to competent scientists (Dr. M.A. Sattar, SP 25, BRRI, NARS).

4.8.4. Some clear outcomes of competitive system

PETRRRA's competitive project commissioning system brought a new dimension in acquiring research grants for publicly available sources. In the past, researchers did not experience such freedom to submit a concept note or a research proposal as principal investigator in the national agricultural research system. Dr. Musherraf Husain thought PETRRRA's approach encouraged all good scientists to submit concept notes and to qualify, regardless of seniority in position. Scientists got the freedom and the encouragement. The merit and quality of the concepts were acknowledged by the system. He observed that, in fact, in some research institutes (such as in BRRI), a group of young scientists succeeded in winning projects (SP 13, 19, 20, 34), while their seniors hesitated to compete. Unlike in the conventional government system, the seniors could not prevent the juniors from participating in the bidding process as access had been open to all. He knew an example of a senior scientist who worked as a deputy to his junior—and this he thought was exemplary in the history of BRRI. He also observed that some seniors were jealous of the success of the juniors (Dr. M. Musherraf Husain, SP 01, BRRI, NARS).

The young researchers (such as Dr. S.T. Hossain, SP 19; Dr. M. Mondal, SP 20; MABS Sarkar SP 34) and the small NGOs (Shushilan SP 09, AAS SP 05, Mukti SP 31) believed that their concepts had clearly shown PETRRRA management the anticipated impact and convinced them of their qualifications. The stories of Dr. S.T. Hossain and Dr. M. Mondal below reveal the impact the competitive system had on them.

Gradually, I developed my confidence, I could confidently say that, yes, I can do the work. I worked in a subproject which had a big budget, worked with two big NGOs, conducted monitoring and implementation, and generated output. I published my work and achieved good publicity. In all of these,

my confidence worked from behind. This confidence continued to help me afterwards when I was in Japan. In my university in Japan, I participated in a call for proposals and competed with all foreign students for a project; and I was successful. I got a project for one year and ran it. I published papers from that project in journals in Australia and New Zealand. I developed this confidence from the PETRRA project. If I have not participated in PETRRA, I would not have submitted this project in Japan. I now know how to prepare a concept note, how to set up objectives, how to relate objectives and outputs--I knew all such aspects from before. I knew how a project needs to be monitored. Now, I have the confidence to write a project, monitor it, supervise it, and bring out outputs. I have it now; I can feel that in me. I think PETRRA gave me that opportunity, and PETRRA did that selection through a neutral committee.

I think, you know better, that in PETRRA, no project failed. I think that was possible because of the way it had commissioned projects. Success rates might have differed, but there was no project that totally failed. The credit goes to the people who had selected the projects. Projects were given on the basis of themes, not to persons; that had brought impact and that were why the project was successful (Dr. S.T. Hossain, SP 19, BIRRI, NARS).

I found PETRRA's competitive system a very good approach. This was an approach to take scientists out of traditional research. In the traditional system, whether a senior contributes or not, you would have to include his/her name as the leader of the project. But, in PETRRA, there was no such provision. The system could produce a group of young scientists who had potential. They could qualify and get their project because of quality. Not all young researchers did well, but those who did got national and international exposure. Later, some of them got opportunities beyond their respective subproject, like me. I did not include IRRI in my PETRRA project, but, looking at my success, IRRI included me in the CPWF10 project, which was developed based on the PETRRA experience; I did not go to them, they came to me. I did not have to pursue. They made me principal investigator for the rice component of the project. Some of the junior scientists who worked in PETRRA now are dominating the agricultural research system in Bangladesh (Dr M. Mondal, SP 20, BIRRI, NARS).

Some of the successful small or local NGOs (SP 05, 09, 31, 22) also had similar experiences. While the renowned ones failed, these smaller ones succeeded as they got the opportunity to participate in the bidding and were qualified to get projects. This development also made many large organizations, which had failed to qualify, jealous. According to M.A. Salam (SP 29), PETRRA's competitive research commissioning system worked very well; through the system, PETRRA could select the right agency to work on the right type of research and the right persons were selected, ultimately contributing to ensure good impact (M.A. Salam, SP 29, APEX, NGO). An NGO partner, Harun Ar-Rashid (AAS), thought that the experience with the PETRRA competitive system was a test of governance; he found that commissioning agricultural R&D projects in Bangladesh was feasible (Harun Ar-Rashid, SP 05, AAS, NGO).

Competition became an effective value within PETRRA as the PMU used it as a tool beyond research commissioning to bring in active participation of the partners in different events such as communication fairs, development of communication materials, preparation of reports, targeting women or the resource-poor, etc. Some partners learned from these practices and used some of those elements systematically in their followup projects. Based on their experience in PETRRA, BARCIK (NGO, SP22) introduced competition as a value to uphold while experimenting with different communication tools

developed by their different partners. They also organised rice bio-diversity fairs with partners and encouraged farmers by awarding them diverse varieties of crops (Sukanto Sen, SP 22, BARCIK, NGO).

4.9. Communication for dissemination, scaling up and sustainability of R&D results

The importance of communication as one of the important values of PETRRA evolved within the project gradually over the years. In year three, communication was included as one of the outputs of the PETRRA log frame. The beginning was a demand from policymakers for a programme brief that would include the description of projects being implemented under PETRRA. Similar demands came from external review teams and donors. The PETRRA PMU responded to the demand by preparing executive briefs on subprojects for policymakers with the help of project partners. At the field level, the subproject leaders also felt the demand from participating farmers for technological information when they reached the technology development phase. The research and extension partners felt the need for different forms of communication materials to disseminate and scale up of innovations for impact. The demand for communication increased as the pressure for impact orientation increased within the project. Gradually, when an initial success of the project was recognised and as wider awareness was created nationally, the project felt the public pressure and tried to respond to such demands by adopting different strategies, preparing appropriate materials, tools, and information. It also started to develop a sustainable platform for information sharing such as the Bangladesh Rice Knowledge Bank¹⁰⁰ that would be continued even after the project ended.

4.9.1. PETRRA helped build awareness and skills about communication

Most partners admitted that, in the past, they did not give much attention to communication while conducting research (Dr. M.A. Mazid Mia, SP 21, RRI, NARS). They lacked awareness about the need for or the power of communication (Anwar Hossain, SP 06, Proshika, NGO) and thought that it was not their responsibility. They were too lazy (Dr. M.A. Mazid Mia, SP 21, BRRI, NARS). But, while engaged with PETRRA, they came to realise that it was an important step in the research management cycle. It was the last step in the cycle, a very important one, as it is able to bring about impact. Without communicating the results, the research would be incomplete. Researchers should have been more careful about producing quality materials (Dr. M.A. Saleque, SP 17, BRRI, NARS). Dr M.A. Salam (SP 13, BRRI, NARS), who later became the director for research of BRRI, noticed a big change among the scientists at BRRI because of their participation in PETRRA.

¹⁰⁰ The web address for the Bangladesh Rice Knowledge Bank is: www.Knowledgebank-brii.org

Now, BIRRI scientists are more responsible about their role in communication; no more do they consider that the role has to be played by the head of the institute alone. Scientists now feel the pressure to disseminate the technology fast to the resource-poor farmers through all possible communication outlets. I see remarkable efforts and initiatives on the part of the scientists to convince and inform the top policymakers about an innovation. We also get good response from the policymakers as well. I also recently noticed a marked change in the coverage of agricultural news in the media (Dr. M.A. Salam, SP 13, BIRRI, NARS).

Dr. M.K. Bashir (SP 02, BIRRI, NARS), who never thought about the importance of good packaging for seed before he was involved with PETRRA, expressed his desire to organise a competition among his seed producers and marketing network members on good packaging. He expected that the event would be effective as the group would get a chance to learn from each other. The NGO partners felt the importance and the change even greater. M.G. Neogi (SP 07, 25, 41, RDRS) expressed his opinion about communication:

We learned about communication in PETRRA. We started with discussing the communication strategy. The challenge for us was to use different communication tools such as folk songs, and the use of electronic and print media and interaction with journalists--that was the beginning. We learned the techniques and value of communication as a support to quick information dissemination. We discovered the value of folk songs as a powerful tool to disseminate messages quickly to hundreds and thousands at minimum cost. This helped save our energy; we realised that we don't need to call the women for long training course, which prevents them from doing their necessary household chores. Folk songs could be the answer not only for agriculture; any developmental activity can have its message disseminated through this tool fast and to millions at minimum cost. We learned the power of communication as a tool. We also learned how to make simple messages in workshops organised by PETRRA. In some cases, we avoided formal training to communicate simple messages (such as the use of two seedlings per hill, use of young seedlings not more than 30 days old, etc.). We could communicate the messages through folk song easily.

We learned to use different communication techniques for different audiences: policymakers, farmers, extension workers. We also learned to make simple messages, to make it very short, simple, and easy for different audience groups (M.G. Neogi, SP 07, 25, 41; RDRS, NGO).

Organising communication fairs¹⁰¹ to disseminate technological innovations at the national level was another element in the PETRRA communication portfolio. Organising agricultural fairs at national, regional and local levels was common, but such an innovation fair was an innovation in itself. This was an opportunity for farmers, extension agents, scientists, and policymakers to come under the same roof to discuss issues. This was a source of moral inspiration for the participant farmers. The partners did not find any similar project with such an initiative. Farmers participated in the fairs and had the rare opportunity to interact with a unique group of participants (A.H. Khan SP 13, 43, BIRRI, NARS; Momtaz Roomy, SP 31, Mukti, NGO). In the fairs, the partners learned the art of putting messages across to potential users (Dr. Rafiqul Islam, SP 26, BIRRI, NARS).

¹⁰¹ PETRRA organised three national-level communication fairs starting in the third year of the project where partners presented their innovations; it was open for all kinds of stakeholders, including some of the participating farmers from the subprojects.

The PETRRA subprojects that were working around policy issues depended heavily on their strategic use of communication tools to influence stakeholders. It involved dialogue, advocacy, and influencing policymakers through print and electronic media. That was a new and effective experience for most of them (Dr. Uttam Dev, SP24, CPD, NGO).

Partners recognised development of communication profile within PETRRA as an ongoing process that progressed as partners gained more experience. The statement below captures the gradual change and development of awareness among the partners individually and organizationally. It also reflects the continuation of the concept beyond PETRRA's life.

We participate in fairs now, it is a continuous process. Recently, we participated in a fair organised by the army for the celebration of Independence Day. We joined and received very good response. We showed video clips of different technologies such as the LCC and the drum seeder; these clips were telecast on different TV channels: BTV, Channel i. The PETRRA project stimulated us to do all these, which is still continuing. We developed an institutional relationship with the media. Because of the PETRRA and IFAD projects, I had the chance to appear before a TV camera. I had not done something like that before. That opportunity helped me enhance my personal exposure.

Communication needs continuous followup; it is not a one-and-off event. Farmers do not grasp it immediately; you need to combine training, demos, and TV and print media, individual or group contests, field visits. These together can be called communication. That is what we are doing (Dr. M. Musherraf Husian, SP 01, BRRI, NARS).

Partners also found capacity-building efforts with respect to communication materials development of PETRRA useful. They thought all activities that were targeted to enhance partners' skills on communication by PETRRA were very effective. There was no alternative to these activities (T. Bose & A.K. Azad, SP 23, BARD, govt. development organization).

4.9.2. Ideas generated shared, replicated, and materials being further utilised

Through different sharing activities, PETRRA ensured a cross-learning environment for its partners. Partners picked up the appropriate tools developed by the other partners. Such was the case of Shushilan's (SP09) cultural approach in technology dissemination; they used picture songs (*Pot Gaan*) for their dissemination of technologies and innovations (Bentley et al. 2005). That approach was later copied by some other partners (such as HEED Bangladesh, SP 28) and they found it to be really effective.

PETRRA facilitated communication activities so that partners got to know each other's work from different events. This enabled the partners to learn the tools and benefit from each other's good work, replicating the same in the field. Partners shared ideas and collectively produced a huge range of materials. At the national level, communication fair partners had the opportunity to know each other and

collect all the materials produced by different partners. Organising communication fairs in the regions was an important innovation too. It became possible for regional actors to be exposed to different communication tools. Such events helped partners establish a good understanding among themselves.

A.K.M. Zakaria (SP 00, 37) continued to use some of those materials to develop improved next-generation materials after the closing of the PETRRA project. Tapash Bose (SP23) appreciated these materials developed by Zakaria and expected that more of such materials would be developed.

A.K.M. Zakaria and his team at RDA (SP 00, 37) had developed a series of videos that captured the different aspects of seed production and postharvest technologies. There should have been a followup project of PETRRA, only to take these videos to the village for large-scale demonstration (T. Bose, SP 23, BARD, govt. development organization).

Partners had developed, used, and replicated different communication tools and materials. Many partners continued to use some of those materials, even after the PETRRA project was closed (Dr. Saidul Islam, SP 33, BRRI, NARS). They distributed the materials to the farmers and advised them to keep a set to use those as long as they found it useful and to preserve them properly at the community level. Partners thought that the printed materials would continue to be effective as there would be no shortage of literate people in the village in the future (T. Bose & A. K. Azad, SP 23, BARD, govt, development organization).

Anwar Hossain, Proshika (SP 06) describes how they continued to develop their own communication strategy by using materials and learnings from PETRRA. They copied some of the tools that the other PETRRA partners used for innovation dissemination.

We used different communication materials that were developed in PETRRA innovatively such as posters and leaflets. After PETRRA, in one of our machinery-popularisation projects, the machinery owner-farmers put their mobile phone number on the posters and leaflets. That was how the other user-farmers contacted the owners for land tilling arrangements. We supplied CDs on different technologies for showing in tea shops in our project areas villages; such techniques were useful to communicate information to a large group of farmers. We did not organise fairs but we had a large number of field days and distributed a large number of handouts. Playing CDs in village tea shops was one of our innovations. We also developed a popular drama to train farmers on the use of the machine and to show its usefulness. This drama was 1 hour long. We used to show this at the union level on a particular day. We used this popular drama especially to disseminate maize technology in areas where we promoted the crop (Anwar Hossain, SP 06, Proshika, NGO).

Partner NGOs engaged in a particular technology innovation and ensured the necessary communication materials to disseminate it; they became well-known as specialists on that specific technology nationally. AID-Comilla was one such example; people would know them because of their association with IPM (SP 27) and rodent management (SP 30). Shafali expected, when people talk about the technology and communication materials on those technologies that they would refer to AID-Comilla (R.B. Shafali, SP 27, 30, AID-Comilla, NGO).

4.9.3. Making a balance to target tools and audience was a challenge

Applying the right combination of tools to ensure impact on the ground was a continuous challenge for the partners as they gradually learned the art and importance of communication. The statement by Dr. S.T. Hossain below captures the gradual changes and achievements in communication during the life of the project.

When we found success and good response from the farmers on the technology in the field, we then thought about sustaining it and how to disseminate the technology widely. We organised a number of workshops in Syhet, Moulvibazar and Shunamganj. News of these workshops was published in different national dailies and electronic media. The technology was presented in local fairs as a model that could be implemented. We got good response from district-level public representatives. What I learned from such activities--that PETRRA did not want to keep the research outputs among farmers only--rather encouraged us to disseminate it to others as appropriate. This push opened up opportunities for us to be engaged with such actors as public representatives, media, district administration, research managers, and many others who got involved in the system. We organised a national symposium where the state minister for agriculture, the members of parliament, and about 300 extension workers and farmers attended. Besides extension officials, NGO workers and research personnel were also present. I presented the results from two regions and the outcome of the seminar was hugely covered in the newspaper and electronic media. I got all-out support from PETRRA to be able to disseminate project outcomes to greater audiences (Dr. S.T. Hossain, SP 19, BRRRI, NARS).

There were efforts made to satisfy the needs of stakeholders at different levels. At the national level, with PETRRA's initiative, partners participated in communication fairs and workshops where ministers, secretaries, policymakers, and donors attended. Communication materials of different formats were distributed on those occasions. At the village and upazila levels, workshops and seminars were organised involving farmers, local agricultural actors such as extension workers, village leaders, and government officials. Some partners organised tours for local journalists to show the experiments. As a result, there was good coverage in both local and national media. The communication materials produced by the subprojects were distributed at local and national levels to government and NGO extension agents, farmers, and other audiences (Dr. M. Mondal, SP 20, BRRRI, NARS).

Partners were not sure where to put relatively more emphasis for communicating results. Some thought that the project in general put much more emphasis on the secondary stakeholders such as the policymakers, research managers, and the media, but not much on the farmers. They felt that there should have been many more communications materials developed for the semi-literate farmers. For others, producing, distributing, and keeping track of movement and impact of the materials was a challenge. Distributing materials on a large scale to farmers would itself be a huge task in a country such as Bangladesh; there are many technologies and materials already on hand (Dr. M.A. Sattar, SP 25, BRRRI, NARS; Dr. M.A. Mazid Mia, SP 18, BRRRI, NARS).

In agricultural R&D activities, striking a balance between communicating through materials and media and demonstrating innovations in the field seemed very important. Most partners demonstrated this balance in their work and appreciated the PETRRA effort to make it a balance. They, in all cases, tried to give farmers a hands-on experience of the innovations tried or disseminated in the field as field-based work was found more effective in the case of the poorer farmers.

4.9.4. PETRRA helped partners develop confidence

Most partners stated that PETRRA helped them understand the art of communication and initially helped develop linkages and communication profiles. They became known to the media as sources of knowledge and information. M. Nuruzzaman of Shushilan (SP 09) describes his experience in his statement below.

Now, we are champions in communication. Our farm activities were broadcast on television for about 7 minutes. Our agriculture service centre was the focus in that broadcast. The TV journalist interviewed me for about 2 hours. It was a good publicity for us. PETRRA helped us to be exposed to many others by way of presenting our innovations in different communication events organised by PETRRA at different times. We were invited to all those events and had the opportunity to develop different linkages.

PETRRA documentations¹⁰² made Shushilan famous among the different stakeholders. Shushilan could not do it. We must have done good work and perhaps that was why our work was presented systematically by PETRRA; such efforts made us so famous (M. Nuruzzaman, SP 09, Shushilan, NGO).

4.10. Conclusion

In all the discussions with PETRRA partners, it was evident that most of what partners experienced in PETRRA was rather new for them. Despite the novelty, they found the experience to be very useful and relevant. There was enthusiasm and excitement among the partners in understanding, practicing, and internalising the values. The partners, who were not totally convinced about the implications of a particular value, were able to understand the rationale during the course of the implementation process as they discovered the usefulness through experience. As they individually became convinced about the utility of the values, they then strongly recommended incorporating these within the system. There were clear individual and organizational commitments to sustain them.

There were no major differences among the partners from government and nongovernment agencies in terms of accepting, engaging, and internalising the approach. A minor difference that was noticed in the

¹⁰² Nuruzzaman especially mentioned the article published in the book, *Innovation in Rural Extension*. Bentley, J. W., M. Nuruzzaman and M. A. Wadud (2005). Picture Song. [Innovations in rural extension - case studies from Bangladesh](#). P. Van Mele, A. Salahuddin and N. P. Magor. Wallingford, CABI Publishing.

opinions of partners from government and NGOs seemed to arise because of their strategic starting points. Most government partners felt themselves responsible for all types of farmers and for farmers in the whole country, whereas most NGOs felt themselves responsible for the poor and in the particular location where they work. But this difference did not appear to be a big issue as most of them were engaged in small subprojects under PETRRA. As partners talked about their post-PETRRA progress, they all seemed to have been engaged in exploring opportunities to apply the values they learned from their experience in PETRRA.

In most cases, the partners found this involvement with PETRRA to be different from the experience they had with traditional forms of R&D activities in the past. The experience opened up new dimensions to the way research was conducted under PETRRA; provided a rationale for awareness about certain concepts such as poverty focus, demand, and gender; and provided strong evidence to support partnership-linkage-networks and communication of innovation activities.

Most partners became self-confident and were motivated about the approach and use of values in their respective R&D work. They recognised the importance of each other and the continuation of work relationships. Engagement was a key word they recognised, enabling them to learn and to deliver. PETRRA values became the individual values of partners and, in some cases, became organizational values. Many of them seemed to be ready to further commit to them in their future endeavours, projects, and programmes. Many of them discovered a new definition of development and engaged in interpreting that meaning into their respective activities. They seemed to be engaged in a journey of discovery, wanted to be serious about utilising the learning, and warned against any artificial or superficial use of values for short-term gain. The change was evident.

Partners also recognised that capacity development is more than just a training tool. In its broader extent, it can create an enabling environment for learning and progress through facilitation and engagement. The next chapter aims to explore on the learning on capacity development – the way the project and its partners had learned and developed together and to judge whether it helped ensure relevant values and to achieve essential elements for a pro-poor impact in agricultural R&D.

Chapter V

5. Facilitating learning for capacity development

5.1. Introduction

In chapter IV, the mechanics of how values worked at the subproject level in PETRRA have been discussed. This is an account of how much individual partners and organizations have achieved while they interacted with PETRRA values. Stories were told by partners around a context in which such experiences were constructed and made possible. It would be interesting to know how values were introduced, nurtured, and operationalised within the system and by whom. This chapter introduces the capacity development efforts of PETRRA as a facilitating agency and a management unit. It captures organizational capacity within the individual experiences of partners, explaining their gradual learning and development of the ability to operationalise values promoted and facilitated by PETRRA at the personal and organizational levels. The emphasis here is on the way the partners have been able to achieve capacity individually and the way they contributed to develop the capacity of their organizations.

The PETRRA PMU used facilitation to assist different stakeholders in implementing their projects. The capacity development effort was organised for partners around values subscribed to by the PMU and for farmers mostly around innovations being offered. The PETRRA-PMU used a facilitating approach to ask questions at all stages¹⁰³. Through this approach, the partners themselves had the chance to determine their own destiny, according to their own context, comparative advantage, and strengths and limitations in terms of resources and ability to sustain, mainstream, and institutionalise (Magor and Salahuddin 2009). There was an effort on the part of the PMU to provide effective facilitation in the process of learning with partners as a strategy in project management, which was based on genuine mutual respect, partnership in learning, a dynamic, goal-oriented process, and critical reflection (Burrows 1997).

In this chapter, capacity issues are discussed from three different perspectives under three major sections. The first section looks at different important PETRRA capacity development strategies; the second section briefly indicates major impacts at the individual level as partners experienced these personally. Here, partners have shared their individual experiences as they dealt with the processes of

¹⁰³ Some of the questions are documented in a recent paper by Magor and Salahuddin (2009). Among these were: 'i) How do we know what we need to do research on? ii) How did we develop good concept notes and research proposals that are values-compliant? iii) What is an effective strategy to learn from similar experiences for research development? iv) How do you know that your innovation has impact potential? v) Can you assess your own performance?' Magor, N. P. and A. Salahuddin (2009). Asking the Right Question at the Right Time for Facilitating the Capacity for Pro-Poor Agricultural R&D in Bangladesh. *Innovation Asia-Pacific Symposium*. Kathmandu: 10.

capacity development that the PETRRA project facilitated. The third section discusses capacity issues from an organizational perspective. This section highlights how partners interacted with PETRRA as organizations that aim to develop their capacity and describes the change that the partners observed in their organizations.

5.2. *PETRRA facilitating capacity development*

5.2.1. PETRRA facilitated a conducive learning environment

It was a challenge for PETRRA to establish an effective project management unit (PMU) that could facilitate a learning-oriented environment for the partners. This was important to enable partners to embrace values in their respective subprojects' R&D activities that would ultimately have an impact on resource-poor farmers. Partners observed PETRRA's efforts and made comments.

What PETRRA did was that they helped me expand my ideas and implement and materialise my own thoughts (Dr MK Bashar, SP02, 22, BRRI, NARS).

PETRRA helped partners to translate their own ideas into reality. Performance varied from one partner to another and from one subproject to another. But most partners claimed to gain new experiences; they thought that they were given opportunities to work with a diverse group of partners and actors in the regions. They also claimed that they learned a lot from PETRRA and from the farmers they worked with in their respective subproject (Dr GJU Ahmed, SP19, BRRI, NARS).

Partners thought that the PETRRA-PMU facilitated an effective learning process efficiently and created a lively learning environment in which all parties, including the PMU, were in a learning mode. At times, many partners took a far longer time to come up with their extension method than what was promised in their respective subprojects. The PETRRA PMU did not lose its patience. Rather, it facilitated things so that ultimately the respective partner came up with their own unique extension method based on their organization's comparative advantage. PETRRA helped partners develop their capacity through sharing and revisiting the strengths of their own organizations. Partners considered the PETRRA office as their home; any help needed for their work would be obtained there. Such encouragement helped organizations to take up the new challenge. Partners thought that they could not have done it alone (CA Mannan, SP28, HEED Bangladesh, NGO; AKM Zakaria, SP00, 37, RDA, govt development institute; M Nuruzzaman, SP09, Shushilan, NGO; Fashiur Rahman, SP08, ABC, pvt. sector organization; M Roomy, SP31, Mukti, NGO; Sufia Khanam, SP42, EPRC, NGO).

We were hopeless, we could not understand our role in the PETRRA extension research project, but it was the PETRRA-PMU members who, through several orientation sessions, developed our capacity. That was a big support from PETRRA and it helped us to develop our capacity. It took long a time to realise but ultimately it worked, Shushilan has a model now (M Nuruzzaman, SP09, Shushilan, NGO).

The learning environment facilitated by PETRRA created opportunities for personal development of the partners. Because of these, some partners experienced a big change within themselves. They had the chance to come in contact with many good people while working in the project; these individuals have influenced their colleagues while they worked together. For example, AKM Zakaria (SP 00, 37) especially mentioned his colleague, Dr Paul Van Mele from CABI, a partner in the PETRRA subproject (SP37), as his mentor who helped him learn and appreciate the link between agriculture and social science. He thought that the contribution was Paul's and, as a whole, PETRRA's (AKM Zakaria, SP37, RDA, govt. development organization).

In PETRRA, monitoring was used as a tool of learning which partners found very interesting. The partners thought that they had been learning all the time. They enjoyed enough freedom as well. There was a built-in incentive system in place for all. The project approach was bottom-up. The aspects that PETRRA used to ask its partners, the partners also used to do the same with the resource-poor farmers and other stakeholders, collecting ideas from the bottom. The partners found the project unique (T. Bose & AK Azad SP23, BARD, govt development institute).

For many research leaders such as T Bose and AKM Azad of BARD (SP23, govt dev organization), working in a subproject of PETRRA was only one of their other responsibilities. They could not give their full attention to it. For them, full engagement in a learning process was not easy, but they appreciated the value of the experience and ultimately enjoyed it. The statement below reflects their experience.

This was a good learning mechanism. All the time, we learned something from it. We felt like we are undergoing an examination. I enjoyed but sometimes felt bad because I was not clear about the ultimate objective. But I realised that it was an action-oriented project. I had a goal but it is not fixed, it is dynamic. There were problems but we had to have alternative strategies to solve it. There was always room for innovation. I enjoyed the flexibility in project management. PETRRA did not want to impose anything on us and waited to see our response on issues. We were not used to that environment; it was hard for us to cope with it.

Monitoring was a tool of learning (as well); to me, this was very interesting. We had been learning all through the process. We had enough freedom as well. There was an built-in incentive system in place for all as the process was based on bottom-up planning. PETRRA used to ask us questions on different issues, we used to do the same with resource-poor farmers and other stakeholders. We collected ideas from the bottom. We used to engage ourselves discussing with them.... The project not only made us feel it that close; it also made the village people feel it the same way. We could not provide farmers much resource but still they enjoyed it (T Bose and AK Azad, SP23, BARD, govt development organization).

Akhter H. Khan (SP10, 43) found strengths in the background of the project manager who had a long experience in Bangladesh in the field of rice-based farming systems. He thought he could successfully use his past experience to implement PETRRA projects (Akhter H. Khan SP10, 43, BRRI, NARS). Another partner appreciated very much the ability of the project manager and the whole PETRRA PMU

team who gave attention to each and every partner and gave them quality time in addressing any issue that arose (AKM Zakaria SP 00, 37).

Partners were positive in their assessment of the PETRRA-PMU's performance in facilitating the capacity development process. For CA Mannan, it was hard to understand the hidden strength that the small group of professionals in the PETRRA PMU had, as they performed such a huge and diverse amount of work. He would not be able to assess the extent of activities that was carried out by the team.

I think it was possible for them as they were clear about their objectives and they had the required experience. PETRRA has successfully facilitated the learning environment in which all concerned could learn a lot, including the PETRRA PMU team. It was a very conducive learning environment; a very small team did the facilitation. The ability of the team to facilitate the process made it possible. I have a big admiration for the team (CA Chashi, SP28, 20, HEED Bangladesh, NGO).

5.2.2. Researchers, extension agents, and farmers worked and learned together

Partners believed that PETRRA successfully brought together three important players: researchers, NGOs along with other agencies responsible for technology dissemination, and farmers. Another strength they found in PETRRA was that the beneficiaries had direct access to the technologies in the field at the same time that they were working with researchers in testing the technology. Normally, access would have been from 5 or 7 to 10 years after technology development; by this time, it would have been redundant. In the process, government research bodies learned the importance of NGOs as extension agents and recognised their contribution. As they each had the chance to work together closely in the field with poor farmers, extension agencies also learned the importance of researchers (CA Mannan, SP 28, 20, HEED Bangladesh, NGO).

Nuruzzaman thought that compared with many other projects, PETRRA was able to reach different kinds of actors who were concerned with the importance of focusing on poor farmers. That was important and helped PETRRA to understand the issue as these were discussed together on different occasions. He also thought that the combination of four focused actors was unique: researcher, farmer, NGO, and government. Partners had never experienced such a forum in any other project in which they had previously worked. He believed that PETRRA was very small in terms of project expenditure compared with many other government projects in BARC or any other agencies in the field of agricultural R&D. Yet, it was more systematic and yielded better outputs in terms of building capacity of small organizations such as Shushilan. He thought that the project helped reduce the gap between the different actors and enabled them to work together. He also thought that organizations like Shushilan were able to sustain their subproject innovations as they developed the capacity to establish a permanent linkage and gained an understanding of the other partners' roles e.g., BIRRI and BADC as

sources of breeder and foundation seed, respectively (MN uruzzaman, SP09, Sushilan, NGO).

Partners from BARD (SP23) had a similar view on the issue.

PETRRRA helped develop linkages among many agencies: government, NGO, autonomous bodies – a unique network and a linkage of 40-50 agencies - this was not an ordinary achievement. It was not easy to do, putting all of them under one umbrella. Partners maintained records and contact addresses; if they want, they can talk to all of them at any time. They have an orientation to all of them. It was a tremendous strength of the project (T Bose & AK Azad, SP23, BARD, govt. development institute).

For some researchers, PETRRRA was a complete project. It inspired agencies to develop linkage and network and also to comply with a set of values. Comments by Dr MA Sattar (SP25) reflect this aspect of PETRRRA:

PETRRRA built a bridge between GO, NGO, researchers, and farmers, which was very good. No one had done this before. I have been in research for 26 years. No one had ever asked me to link with others; we do according to what we understand - conduct research, collect data, conduct field work. But in PETRRRA, there were some preconditions: how to select farmers, who to link with, how to develop a communication system, how to link, how to disseminate technology - such terms and conditions were healthy, Those were new thinking, those were like a package. This package was not there before; it was new thinking (Dr MA Sattar, SP25, BRRI, NARS).

Gopal Chowhan (SP 36, 40) thought that PETRRRA was able to successfully bring the research system, NGOs, and farmers under a big platform; BRRI had to work closely with farmers in their field and not on-station. They had to work in partnership with NGOs. In the past, NGOs had no access to the research system; there was no scope to sit together with researchers. This was a reality. The New Agricultural Extension Policy (NAEP) was there as a document that suggests to include all actors, but the suggestions were never implemented (GoB 1996). He also thought that PETRRRA had successfully introduced NGOs to the DAE and vice versa (Gopal Chowhan SP 36, 40).

5.2.3. PETRRRA engaged with partners to achieve a value orientation

PETRRRA had an engagement process with partners to enable them to work with a value concept. For the poverty focus, it provided a definition with which to work. PETRRRA did not just stop there; it helped partners to make progress. The process included periodic meetings and workshops to discuss problems and progress in an experiential learning environment. The process allowed partners to articulate and adjust the definition, according to their own organizational and subproject context. It also helped partners to find out their weaknesses and the necessary support to rectify them

The project had a continuous emphasis on the achievement of the poverty focus through different meetings, workshops, seminars – it pushed the agenda through continuous suggestions (Harun Ar-Rashid, SP05, 17, 44, AAS, NGO).

The importance of engagement of the PETRRA-PMU to develop partners' capacity in order to operationalise values was recognised by the partners. Dr Thelma Paris (SP24) observed that PETRRA included values from the beginning of the project. PETRRA was brave enough to say that it would start with the poor farmers and then with the technology. She also thought PETRRA was sincere in what it said and in what it did. PETRRA did encourage partners to follow it strongly; they did not only say it, they meant it. She cited the example of PETRRA's commitment about gender as a value. She noticed that the gender chapter has been placed in the front of the book that PETRRA had published, 'Innovations in Rural Extension: Case Studies from Rural Bangladesh' (Van Mele et al. 2005). This also reflected how serious PETRRA was about women (Dr T Paris, SP24, IRRI, IARC). Another IRRI scientist, Dr Glenn Gregorio (SP13) commented, 'it (PETRRA) made us scientists, who participated in the project, conscious that our main goal was not just science but to produce concrete results for resource-poor farmers' (Dr Glenn Gregorio, SP13, IRRI, IARC). The PETRRA engagement, commitment, and seriousness to accomplish a value orientation made partners also serious and they were encouraged to develop their capacity and to comply with those commitments.

A number of young scientists were developed as they led a number of subprojects under PETRRA. One such example was the integrated rice-duck subproject (SP19). The PETRRA PMU was engaged with the team since the research proposal development stage. Partnership development and project design, planning, implementation, and some of the participatory monitoring and evaluation activities were facilitated by the PETRRA PMU. Dr ST Hossain, the young scientist who led the subproject, admitted that this opportunity in PETRRA helped him develop his scientific and research management ability. Later, Dr Hossain inspired other young scientists in his research institute BRRI to compete for funding sources in PETRRA and beyond. He thought PETRRA was an inspiration for young scientists to take the initiative, an element that did not previously exist in the government research institute such as BRRI.

We were in a learning mode while conducting research under PETRRA. The approach was new to us, we were learning all the time. We were very worried in the beginning with the ducks¹⁰⁴; we were not sure how they would behave, whether they would do as much as we expected them to do in the field. Noel (PETRRA project manager) gave us courage and assured us that if Bangladeshi ducks do not work, he will help us import ducks from Vietnam or Japan. He advised us not to worry too much. Such mental support was fantastic, I would think that this encouragement was unique; you would not get such support from a project manager normally.

It was essential that we build up the capacity of all concerned: farmers, research team members, and NGO partners through training, interaction, field visits, seasonal workshops, etc. We had to orient them on project objectives and all the steps and responsibilities properly in order to ensure impact. We had to know the problem faced in one season to avoid the same problem in the next season. That was how we ran the project. We learned the problem of duckling mortality and discussed measures to be taken in order to reduce mortality rate to zero. Through interaction, we could solve such a problem by building the capacity of all concerned.

The PETRRA project helped me to develop the capacity to interact in my academic and professional life. I had to interact and discuss with the farmers a lot, conducted workshops and training. It was a new

¹⁰⁴ This is a story about the integrated rice-duck subproject

technology; in Bangladesh, no one had heard about it before. Even the farming systems specialists had said to me that 'duck' does not work. I had to pull the project to a certain level from such a position, you can imagine the situation. I had to speak a lot. Now, I have developed a bad habit, I talk a lot. This has helped me a lot to convince people (Dr ST Hossain, SP19, BRRI, NARS).

PETRRRA also challenged its partners by bringing a new dimension to measure success in R&D innovation. Success depended on impact. This was new to many partners. MG Neogi thought PETRRRA was successful in establishing the norm that success and failure of an R&D project would be measured on the basis of the potential and actual impact that a particular innovation could make, and not on the basis of the quality of publication of the research result in a scientific journal. It primarily considered the number of poor farmers directly benefited from a particular innovation as the criterion of success. This was a vital orientation for partners towards achieving impact through R&D (MG Neogi SP 07, 41).

5.2.4. PETRRRA's capacity-building approach attracted partners

MG Neogi (SP 07, 41, RDRS, NGO) commented that when other projects kept a reasonable distance from their partners, PETRRRA never stopped providing capacity support after commissioning the research to them; it used many different ways to do it, organised an array of different capacity-building activities along R&D activities to ensure better research outcomes. This strategy attracted partners to be engaged and developed their capacity.

PETRRRA could attract me very much; I gave a lot of my time to PETRRRA by squeezing my time in other projects. Once I was blamed by my office because I gave much time to the PETRRRA subproject and I had told management that I enjoy working in PETRRRA because I feel like contributing something there, which I do not get in any other project. Later, in a letter to me by management, it recognised the value of the network that was established through PETRRRA. PETRRRA was my learning ground to develop myself (MG Neogi, SP07, 41, RDRS, NGO).

BRRI partner Dr Rafiqul Islam (SP26) stated that he has been using the PETRRRA experience in his present research work. Another BRRI partner, Dr MA Taher Mia, commented:

PETRRRA had a positive contribution; it trained scientists on many aspects of project cycle management. That was a big learning. In case these partners again submit new project proposals, they would develop it better than before. They would manage the project better. There is no guarantee that other projects would have such a learning opportunity in the future. Most projects would be research-oriented. It is most likely that those projects would have no scope for researchers to learn. Here, in PETRRRA, there was special attention to train the researchers. That was unique in PETRRRA. Whoever was involved in PETRRRA had a chance to develop him/her. Any good project should have some component like this (Dr MA Taher Mia, SP00, BRRI, NARS).

Researchers enjoyed PETRRRA's capacity-building approach. They greatly appreciated brainstorming as this helped partners to grow ideas. Dr Rafiqul Islam (SP26) commented:

I enjoyed the PETRRRA approach of capacity building. We were involved in a lot of brainstorming work. In everything (such as workshops, meetings, etc.) that PETRRRA did, there was something to learn about. The project was very helpful for training. It was like a training of trainers (ToT) for us, more projects such

as this could be useful to develop our skills and knowledge further (Dr M Rafiqul Islam, SP26, BRR, NARS).

Besides routine programme facilitation, PETRRA also supported the physical and human development aspects of capacity building for partners. One such example was the overall development of the BRR Training Division.

Through the project fund, training facilities were modernised by providing computers and linking training to NGOs and mostly to women. BRR used to provide training mostly to government extension agents and to men. PETRRA helped BRR, a national institute, to open up such facilities to multistakeholders for the first time. PETRRA also helped develop the knowledge bank-based digital training materials for such training, which was accepted as the future training strategy for BRR (Dr M Jahirul Islam, SP 01, BRR, NARS).

PETRRA used many different strategies for the capacity development of its stakeholders, including the research managers and the TEC members. There were in-country and regional field visits. One such example was a regional visit to the DFID-sponsored Hill Agricultural Research Project (HARP) in Nepal to share their experience in managing a competitive research-commissioning system. Dr Razzaque¹⁰⁵ found such PETRRA-organised visits in similar projects, both in-country¹⁰⁶ and in the region as very useful. He and his other colleagues, mostly research managers from different NARS institutes who were involved in PETRRA, thought that they learned a lot from those visits (Dr MA Razzaque, SP32 & chairman, BARC, NARS).

5.2.5. Flexibility was an important learning and management tool in PETRRA

Flexibility was one of the key elements that partners found in PETRRA's capacity-building approach. The flexibility and facilitation allowed partners to develop their own innovative approach without contradicting the principles set by the project. It helped boost their confidence and made their work easy. The freedom made researchers more innovative. Partners found their experience as effective as they managed new projects after PETRRA (ABS Sarkar, SP34, BRR, NARS; AKM Zakaria, SP37, RDA, govt development institute). Partners believed that the flexible approach of sharing knowledge that they learned in PETRRA was valuable and made project implementation easy (Anwar Hossain, SP06, Proshika, NGO).

PETRRA provided each of its partners the freedom to work independently, which was very important. Each dealt with their research as they thought appropriate using their best judgement. This freedom of work was very significant for researchers to become innovative (ABS Sarkar, SP34, BRR, NARS).

¹⁰⁵ Dr MA Razzaque was involved in PETRRA in several capacities; while he was Member-Director in BARC; he was involved in SP32 as an adviser; he was a member of the PETRRA Technical Committee and later as chairman (he was not chair of BARC until after PETRRA) of the BARC; he was a member of the PETRRA Steering Committee; he also reviewed CNs and RPs; he participated in a number of annual reviews for PETRRA and was a member of the final evaluation team.

¹⁰⁶ In-country visits were mostly organised for joint subproject visits as part of monitoring and joint learning

I did enjoy the many discussions and meetings that PETRRA organised. I can mention the financial management workshop that helped me to manage finances easily. When we interacted (subproject leaders and team members) the discussions with PIs were interesting; we could ask and shout at each other. I liked PETRRA's flexible and accommodative approach very much. This experience helped me, even in other post-PETRRA projects (AKM Zakaria, SP00, 37, RDA, govt development institute).

PETRRA introduced an uptake forum very early in the process for the technology uptake subproject partners. The forum served as a platform for open interaction and learning from each other. BARD (SP23) acknowledged that they got different information and different ways of linkage development ideas from the PETRRA uptake forum¹⁰⁷ members. From that forum, they could learn about seed sources and different policies that made the seed sector more open. They thought that, because of that network, they gained access to breeder seed from BRRI. BARD thought that the forum and, as facilitator of the forum, PETRRA, had contributed to opening up the seed sector in Bangladesh. After several years of PETRRA, BARD was hoping to get breeder seed supply from BRRI as they established the relationship and the linkage with BRRI during PETRRA days (T Bose & AK Azad, SP23, BARD, govt. development organization).

Dr MA Salam thought the flexibility in the approach of PETRRA project management inspired partners to be responsible for their work and innovations. He commented:

PETRRA had flexibility in its financial system, which was very conducive for the work. This was not possible in the existing government bureaucratic system under which scientists of the NARS need to operate. In the government system, the researchers are accountable for money, but in PETRRA, researchers were responsible for their work. PETRRA was a marvellous opportunity for BRRI scientists to show performance (Dr MA Salam, SP 13, BRRI, NARS).

The flexibility in management was mentioned by many partners as one of the major strengths of PETRRA. It inspired researchers to take any challenge for the successful operation of the project. PETRRA created a work environment where each of the researchers was in a competitive mood; they thought about work more than any other aspects. AKM Zakaria (SP 00, 37) explained his observation about the PETRRA management's flexibility and its benefits:

I must say that the PETRRA project was very flexible. We could accommodate things in our own way; the project helped us to do it. I did not need to tell a lie, which you need to do for other projects to obey the rules. This was very important, PETRRA had this. The whole focus was on the work, not on the rules. So, our full concentration was on the work. PETRRA rules did not clash with my organization's rules, I could easily manipulate and accommodate both. We could concentrate more on creative ideas and we got addicted to our work. We were in a competitive mood with other fellow PETRRA project researchers, tried to develop better presentations, better reports, bring new things to the annual meetings, etc. (AKM Zakaria, SP00, 37, RDA, govt. development institute).

Dr Uttam Dev (SP24) found the overall PETRRA approach to be very good. They thought that the management was, in principle, very strict but in terms of work, they were very flexible. The people they

¹⁰⁷ PETRRA organised and facilitated an uptake forum with all of its partners; those were engaged in extension method research projects immediately after the first group of technology uptake projects were commissioned in 2000. DAE was co-opted in the forum as a member and as a resource organization as it had nationwide network and had a pool of skilled human resource throughout the country.

dealt with in PETRRA were very committed and self-motivated. That was why they (partners and PETRRA) were able to succeed (SP24, CPD, NGO).

Dr ST Hossain (BRR I SP19) appreciated the freedom that he enjoyed in the project. He thought it was great. He never felt any pressure or control from the side of the project management; rather he enjoyed all kinds of support. He noticed a great deal of value orientation among the BRR I scientists because of PETRRA.

Harun Ar-Rashid (SP05, 28, 17) noted a number of qualities of the PETRRA management team. He thought PETRRA leadership was very dynamic; it was flexible and did accommodate positive elements suggested by partners, even during implementation of the project. He referred to the project he worked with in PETRRA, which needed to be changed from a technology identification mode to a farmer-to-farmer seed exchange model. He observed the mutual trust between the project management team and the partners, just like a family, which he thought was not common. Project monitoring was based on trust and was aimed towards joint learning events instead of policing. Harun also noticed that PETRRA successfully mixed partners from NGOs, private and public sector for a particular output, which was effective in bring out a good outcome (Harun Ar-Rashid, SP05, 17, 28, AAS, NGO).

Some partners thought PETRRA's management system was flexible but goal-oriented. Dr M Musherraf Husain (SP01) mentioned that the PETRRA management system had helped make the project a success. He thought that, in PETRRA, there was no scope of submitting an underplanned and underdesigned project and get easy money. Because it was a competitive project, one had to do his homework with a systematically prepared logframe. There was proper progress monitoring linked with the release of the fund, which effectively kept the pressure to make progress (Dr M Musherraf Husain, SP01, BRR I, NARS).

Some of the partners who claimed to have been transformed because of their association with PETRRA, such as Mahbubur Rahman (SP36, 40) from Syngenta, described PETRRA management support as unique and complete. For him, the PETRRA experience was a new eye opener for an organization such as Syngenta. Mahbubur Rahman from Syngenta thought that a project like PETRRA needed to be continued in Bangladesh. Syngenta needed a project like PETRRA for the type of support they received from it. He believed that no other organization in Bangladesh could provide a similar support (M Rahman SP36, 40, Syngenta, pvt sector organization).

Handling flexibility could be a problem for some partners as many of them never experienced such flexibility in their work. Sometimes, flexibility provided by PETRRA put the BARD partners in an

awkward position; they were unsure about what exactly to report (and what not to) as there was no strict structure for reporting (T Bose & AK Azad, SP23, BARD, govt development organization).

5.2.6. PETRRA core values worked as sources of capacity

This section of the chapter reflects partner learning through the value orientation that they experienced through the capacity development process in PETRRA. It also presents their own analysis and reflection on their learning as they interacted with the values-based approach that was promoted. The analyses presented here are tested through their experience in implementing their subprojects and by attending capacity development events such as workshops, training, meetings, communication events, etc. While engaging in the process of value-oriented learning, the partners developed their own awareness and arguments and learned to appreciate the importance of values.

As partners interacted with poor farmers in their respective subprojects and as they committed to adopt a pro-poor approach, they started to realise that the pro-poor element was missing in the past in most research projects in Bangladesh NARES. Dr MA Razzaque (SP32, BARC, NARES) particularly commented on this omission in their past farming system. PETRRA helped partners develop their capacity to appreciate the importance of the issue and its different dimensions.

PETRRA was a better project from that aspect compared with what we had in the past. This was focused on what we can do to enhance the livelihoods of the poor. The project tried to look at issues from a holistic perspective. Technology was considered in a context where upscaling of the same was considered equally important, and so was the issue of governance with upscaling. These were important aspects of the PETRRA subproject selection process (Dr MA Razzaque, SP32, BARC, NARS).

Partners developed an appreciation in favour of poor farmer-led R&D as they thought that this group wanted productivity growth the most. Partners learned the importance of farmer demand analysis from PETRRA and, to respond to that demand, they felt the need to work across disciplines and learned to avoid narrowly visioning and independent work (Dr MA Sattar, SP25, BRRI, NARS; Dr MA Latif, SP35, BRRI, NARS).

Dr Mondal (SP20) indicated that PETRRA's competitive research commissioning system was innovative and flexible. Individual researchers, because they could incorporate their personal interests and emotions into the concept notes, enjoyed full freedom to choose a topic that they thought important under a certain theme on which calls for concept notes were based. They also had the chance to choose a site and the farmers' groups for whom they were committed. This flexibility encouraged partners and helped them achieve good results (Dr M Mondal, SP20, BRRI, NARS).

The PETRRA project asked partners to think about the organizational aspects of farming in a socio-ecological context. Partners learned that the farmers and actors needed to develop a strong partnership to address issues. None of the parties could do it alone (Dr M Mondal SP20). Because of such emphasis, most partners developed wide-ranging partnerships and linkages that enabled them to access different kinds of complementary services and they did not need to have any written contract with those agencies (T Bose & AK Azad, SP23, BARD, govt development organization).

Partners, through their PETRRA experience, learned the importance and rationale for the use of participatory approaches in agricultural R&D. Dr Musherraf learned that testing a technology using a participatory approach can help farmers adopt it, help farmers orient and experience it, and then they can make their decision easily. He also learned to link sustainability with participation and realised that sustainability of technology depends on the extent of participation of the farmers. Based on his new learning, he cautioned that if concerned parties get the impression that it is the task of scientists and extension agents (as they are paid for doing it) and the farmers have nothing to do with it, then the efforts will not be sustained.

... whenever I am in the field, I try to get feedback from farmers in every possible way and as much as possible. I request them to take the lead in conducting, observing, evaluating and making decisions on the basis of their best judgement (Dr M Musherraf Husain, SP01, BRRI, NARS).

Some partners were charged with new energy as they discovered the scope, strengths, and the potential of agricultural R&D for the poor farmers, especially for the women. They have increased their interest in agricultural R&D such that they became committed to agricultural R&D in the longer term (Sufia Khanam, SP42, EPRC, NGO).

The focus on the poor farmers and the partnership with relevant agencies made the policy dialogue work in which CPD was engaged significant (SP24). Dr Uttam Dev indicated that whatever they did in PETRRA had a link with the field-level information generated from poor farmers. They also had the opportunity to work with multiple partners of different nature under the same umbrella: universities, NARES, GO-NGO agricultural development research institutes, and private consulting firms. In PETRRA, they learned the use of policy dialogues in the broad field of agriculture as a strategy to mobilise policymakers, ministers, and many other stakeholders towards pro-poor policy formulation and implementation (Dr Uttam Dev, SP24, CPD¹⁰⁸, NGO).

¹⁰⁸ Centre for Policy Dialogue (CPD) is an NGO specialising in policy dialogues.

5.3. The impact of capacity development on individuals

The impact of PETRRA's capacity development efforts on individuals in the team showed a long term potential as these individuals continued to work in those organizations and influence the outcome generated from different projects and programmes in agriculture. The impact on the individuals is reflected in many different ways. One such evidence is the appreciation that an individual receives from his/her organization or when she or he gets a positive response to his/her action from other people. Individual partners received recognition and appreciation during the life of the project and some of them continued to receive the same, even after the project. The statement below by Dr Bashar reflects how he was appreciated by different forums for his success in the PETRRA SeedNet subproject (SP02, BARRI, NARS).

I get a lot of appreciation from the Seed Wing of the Ministry of Agriculture, especially the Director General for Seed gives me a lot of importance, calls me for meetings, takes suggestions, and uses our information for different purposes (Dr MK Bashar, SP00, BARRI, NARS).

There was a similar comment from MG Neogi (SP07, 41, RDRS, NGO) who also experienced being appreciated very much; the PETRRA project contributed to his personal capacity development. He thought that this would ultimately benefit his organization, RDRS, as it would continue to get good services from him. The statement below presents the depth of capacity support provided by PETRRA.

I have learned to develop a project from PETRRA. I did not know anything about the logical framework before. Now, when I prepare a concept note, it gets donor approval; to me it is an output of the PETRRA project. Now, my organization considers myself as a good concept note writer. I can now represent my organization to discuss on a concept note or a proposal with the donors; I got the trust of my organization. I can now easily set indicators, which would help in mid-term review, impact study, or evaluation. Actually, that (PETRRA) was a time when I needed a development of my own and I got it from PETRRA. Apart from me, whoever was engaged with PETRRA project was contributing to their respective organization differently and benefiting the organization. We could train a number of our staff on different issues; they all are now assets of the organization... I enjoy the advantage of the experience I got from PETRRA now, the campus is full of my experiments, many of them are followup research from PETRRA and I don't run out of funds for any research. The organization shoulders them without question. The present agriculture programme of my organization is the result of that collective effort that both my organization and I shared with and learned from PETRRA (MG Neogi, SP07, 41, RDRS, NGO).

Partners (such as Dr MA Mazid Mia, SP21) thought that PETRRA had contributed a lot in training them on many topics that they did not know before. The role of PETRRA in educating researchers on project development, evaluation, and planning was very important. He indicated how he personally benefited from the PETRRA capacity support effort.

I personally have gained a lot. Logical framework was a new and an effective tool that I learned while I worked for PETRRA; I did not know anything about it before. I learned and used that experience; now when I submit project proposals to the ministry, I get them easily. All of my projects were accepted. Now I know how to develop a project proposal, I learned it from PETRRA.

Partners from BARD (SP23) commented:

From the point of view of its contribution to knowledge, PETRRA was unique. It helped broaden the horizon of knowledge of the concerned researchers to a great extent (T Bose & AK Azad SP 23, BARD, govt. development institute).

Most partner-researchers received training on project cycle management, which was very effective for their capacity development and which created a huge impact potential for the future.

PETRRRA had the positive contribution of training scientists on many aspects of project cycle management. In case these partners again submit a new project proposal, they will develop it better than before. They will manage the project better. This was a big learning for them. There is no guarantee that the other projects will have such learning opportunity in future. Most projects will be research-oriented. It is most likely that, in most of those projects, there will be no scope to learn for researchers. Here, in PETRRRA, there was special attention to train the researchers. This was unique in PETRRRA. Whoever was involved in PETRRRA had a chance to develop him/herself. Every good project should have some component like this (Dr MA Taher Mia, SP00, BRRI, NARS).

Partners appreciated the fact that PETRRRA researchers had the opportunity to improve their skill as they had to go through a competitive system. They thought such skill will have a long-term impact potential for the individuals and for their organizations.

The scientists who had the experience of PETRRRA will perform better in future projects that follow a similar competitive bidding system such as the NATP or the science and technology projects offered by the concerned ministry. Even if someone would like to work for the private sector she or he needs that skill. This would also help them to access fund from national, international, and regional sources. The persons who had once been exposed to the competitive system continued to search for opportunities. Those who had gained experience continued to search for resources to conduct research; they come to us (BARC) with new concepts. Among them, BRRI scientists as they were close collaborators of PETRRRA, continued to get projects from BARC since the closing of PETRRRA, comparatively more than what scientists from other institutes got (Dr MA Razzaque SP 32).

In PETRRRA, partners had the scope to familiarise the public on innovations that had emerged from research they were involved in. Partners reported being invited by different agencies to provide expert opinions on issues that were the subject of their research under PETRRRA. Partners thought that such opportunity and honour was possible because of the way PETRRRA conducted communication activities. Comparatively senior partners regretted that PETRRRA as a project came late in their professional life. Dr MA Mazid Mia sincerely expressed his personal opinion on such a contribution of PETRRRA.

Whether anybody agrees or not, I should say that, without getting involved with PETRRRA, we would not have known these aspects. We would not have gotten this much exposure. If PETRRRA had come 10 years ago, we could have done many more things. If it had come at my early age, I could do many things; unfortunately, it came too late for me, I am about to retire already (Dr MA Mazid Mia, SP18, BRRI, NARS).

Some of the researchers who worked under PETRRRA continued to use and further enhance the skills they learned. AKM Ferdous worked in subprojects (SP 5, 17, 28, 35, 44) in PETRRRA and then worked for a PETRRRA followup project, FoSHoL. He was able to use his experience in FoSHoL. The statement below captures the continuity of learning from PETRRRA to FoSHoL.

I did hard work in PETRRRA. The participatory approaches of organising activities with farmers and the approach of learning by doing helped me a lot in FoSHoL. I could use that experience in FoSHoL. In FoSHoL, we have established seed schools in some of our working villages; trained farmers and linked them with the GO-NGO seed networks so that they can access foundation seed and sell their produce in the market. I used my PETRRRA experience of working with seed in seed school activities in FoSHoL. We learned the community approach in PETRRRA. There are technologies that we are promoting under FoSHoL, which demand a community approach too; I am using my experience with PETRRRA.

I would like to give thanks to the Almighty and then to Mr Harun of AAS (leader of AAS projects under PETRRA). He gave me the opportunity to be exposed to the outside world. He encouraged me a lot. He loved to work hard and he also made me work hard. If Harun was busy, I had to attend big meetings organised by PETRRA to represent AAS. These opportunities helped me a lot to become familiar with many people, those contacts still help me. I was engaged in technology identification research work done under FoSHoL-IRRI. That also helped me; now, I know what information I can get from where. I know the linkages and the partnerships. Those experiences are helping me in my present work and will continue to help me in the future (AKM Ferdous, AAS and FoSHoL-Practical Action, NGO).

PETRRA was successful in creating a facilitated environment that allowed partners to learn from each other and contributed to personal development. Because of such opportunities, some partners experienced a big change within themselves. Some of them claimed that their whole outlook was changed because of PETRRA. They had the opportunity to come in contact with many good people while working in the project; these individuals had influenced their colleagues while they worked together. AKM Zakaria (SP00, 37) especially mentioned his colleague, Dr Paul Van Mele from CABI, a partner in the PETRRA subproject (SP37), as his mentor who helped change his whole approach about research; he made Zakaria a social scientist who can now see a direct link between agriculture and social science (AKM Zakaria, SP37, RDA, govt. development organization).

Many partners of PETRRA learned to think beyond PETRRA as they developed their capacity. M Nuruzzaman (Shushilan, SP09) now thinks about agriculture and greater livelihood options, including agriculture, as the region in which they work is being threatened by sea level rise as a result of global warming. The partner indicated that the PETRRA support for his overseas trip to Korea to attend a workshop on agriculture extension helped him open up his worldview about development and understand the strength of his organization to take on such a challenge (Shushilan, SP 09, NGO).

Farmers were developed as extension agents and trainers by a number of partners to disseminate innovations and develop the capacity of a larger number of farmers within the respective organization. As partners developed their capacity, they helped farmers with whom they worked to develop their capacity and trained them as extension agents. Many different practices of developing farmer-extension agents were reported. Partners tried to explore different mechanisms to disseminate innovations to a large number of farmers. RDA (SP00, 37) tried this approach and was successful in developing farmer experts for training and extension. After the PETRRA project was closed, the approach and the farmer resources continued to be used by the same partner in followup projects of RDA. These were financed by different donors such as CABI and IFC/WB (AKM Zakaria, SP00, 37, RDA, govt development institute).

RDRS (SP41) used women-led FFS for technology dissemination under the project. FFS leaders were trained to disseminate innovations to fellow women farmers. It was expected that they would believe

their fellow colleagues more than other persons. Farmer members were trained on seed production techniques; they learned to produce their own seed. Many of those farmers became seed farmers and sold excess seed to the federation seed committee or to their neighbours. RDRS continued to provide the necessary technical and credit support to these farmer trainers (MG Neogi, SP41, RDRS, NGO). The trained farmers in LITE (SP27) were reportedly hired by neighbouring villages to teach about IPM techniques or the use of LCC (RB Shafali, SP27, AID-Comilla, NGO).

5.4. The evidence of organizational capacity impact

This section aims to explore evidences of organizational capacity from the statements of the individuals. It was difficult to draw a line to separate individuals from organizations when they spoke about value-based capacity and the impact of capacity on them individually and on their organizations. Although partners were selected individually through a competitive process, they brought in an organization within which they operated¹⁰⁹. It could be assumed that learning about capacity and the corresponding impact of that capacity would affect both individuals and the organizations in their future endeavours.

The section also reflects how individual experience and personal capacity achievement helped develop the capacity of their organizations. It captures how the partner organizations responded to these learning experiences, how they tried to sustain them, and how they committed for the long term to internalise the experiences they acquired from PETRRA. This section did not include all those who were interviewed (Appendix 1) as not all respondents had observed the capacity influence in their respective organization.

The section starts with BRRRI as an organization as it falls in the broad category of national agricultural research system (NARS). BARC follows BRRRI as it falls under the same category. IRRRI follows NARS as it falls under the category of international agricultural research centre (IARC) and has close links with NARS. RDA comes next as a government development organization. NGOs follow RDA as an other large category of local, regional, and international NGOs. Private organizations follow the NGOs. Observations made by BRRRI and IRRRI partners are presented on issues as they emphasised these during the interviews. Other than BRRRI and IRRRI, one person speaks about his/her respective organization as she or he experienced and observed it personally.

¹⁰⁹ It may be worthwhile to mention that even though subprojects could be considered subcontractors in the context of PETRRA, each organization that led a subproject was a partner with the PMU. The contract would be jointly signed by the subproject leader and the concerned head of the organization. This provision of involving organization heads created an opportunity to form partnership with an organization instead of with an individual. This opportunity facilitated the scope to influence an organization towards values.

5.4.1. Bangladesh Rice Research Institute (BRI)

BRI was involved in 20 out of 45 subprojects of PETRA. Among these subprojects, BRI scientists led in 14. This research involved 15 BRI scientists as interviewees who represented 15 subprojects. They held different positions and therefore had different capacities within the organization. Some were division heads of different disciplines of research and some were senior or junior scientists within those divisions. In PETRA, they all had to qualify separately as individual researchers through the submission of concept notes and research proposals under the competitive bidding system. Comments described below were made on an individual basis, but their respective positions within the BRI administrative hierarchy influenced their opinions.

5.4.1.1. PETRA helped change BRI

BRI was the host and main collaborator of PETRA. Being the most important institute in the field of rice research in Bangladesh, it was important for PETRA to influence it the most towards a value-based research. Many partners from within and outside BRI observed the change in BRI.

PETRA was an exceptional project from the point of view that it helped BRI conduct research based on farmers' demand. BRI had limited direct contact with farmers before (CA Mannan, SP28, 20, HEED Bangladesh, NGO).

PETRA made BRI popular in Bangladesh (M Nuruzzaman, SP09, Shushilan, NGO).

Government recently has introduced a project commissioning system from revenue budget; they invited projects from all NARS institutes. Last year, 54 projects were submitted; only 20 were short-listed. Of these, only six were asked to submit detailed proposals. Two of the six were from BRI. This achievement of BRI can be attributed to PETRA as BRI scientists had the PETRA experience (Dr MA Salam, SP13, BRI, NARS).

According to Dr GJU Ahmed (SP19), most BRI partners admitted that they learned a lot from PETRA. They claimed that they understood the concept of pro-poor research and its potential contribution to increase production and eliminate poverty. He believed that the project was successful in developing the capacity of the pro-poor research system and thus contributed to poverty elimination. He thought that the project provided practical experience, proving that the approach works. This convinced researchers to understand the need to work with the poor to deal with their problems. He commented:

There was a big impact at BRI in the way scientists are conducting their research after PETRA. About 95 percent of our research work used to be in the lab before PETRA. Through PETRA work, the scientists realised the importance and advantage of farmer participatory research to address their field problems. They also realised that field problems cannot be addressed in the lab, unless they work with the farmers. That is why many scientists are taking their research to the field. The PETRA project experience has contributed to this. BRI scientists also understood the importance of women participation in research as they learned and experienced women contribution to farming in their PETRA work (Dr GJU Ahmed, SP19, BRI, NARS).

Another BIRRI scientist, Dr Saidul Islam, had a similar observation. He also observed that BIRRI had learned to change its research approach under PETRRA:

The difference in the traditional approach that BIRRI used to follow and what BIRRI scientists did in PETRRA was that they used to conduct research on-station at BIRRI. In PETRRA, they had to do it interacting with farmers directly in the field (Dr Saidul Islam, SP33, BIRRI, NARS).

BIRRI claims that the Bangladesh Rice Knowledge Bank (BRKB) was an innovation that they developed with the help of PETRRA. BIRRI was successful in developing and introducing RKB-based training. The training had provided BRKB a new importance as it is now used as a hub for rice knowledge and training modules definitely an additional reason for BRKB to be sustained in the system. The BIRRI Training Division has mainstreamed the training programme. This was something that BIRRI thought 'opened up a new window for them,' which would not have been achieved without PETRRA assistance (Dr M Jahirul Islam, SP01, BIRRI, NARS).

Dr M Musherraf Husain, a BIRRI partner, has observed change among his fellow scientists and had indicated his own rationale for some of the values that PETRRA has promoted. The statement below indicated a good reflection on the sustainability potential of PETRRA values on BIRRI scientists.

I am not sure whether our scientists are developing technology increasingly more with the poor, but what I can say is that the consciousness has risen for sure. We, the partners of PETRRA from GO and NGOs, have worked with PETRRA for 4-5 years; the consciousness about the importance of the poverty focus should still be there. It should not be washed out that quickly. Whatever research and extension we were involved in, these values were always with us. We cannot forget those totally. ... We did not have any previous formal approach of conducting participatory research as we did in the PETRRA project. ... But the issue is in our head. We know how to do it, the importance of it, the likely benefit. The concept of participation is very much active in our work, if not we say or implement that formally. Now, we can sit together, extension workers, development workers, and farmers, or plan to implement it based on discussions; we don't do it exactly the way we did it in PETRRA, but it is clearly in our head. .. We do not have formal partnership that we used to have in PETRRA but, with some, we still have joint activities. One such organization is RDRS. We still maintain a sustainable partnership; organise a number of demonstrations in RDRS farmers' fields. We exchange visits as well. RDRS also asks for assistance from us (Dr Musherraf Husain, SP01, BIRRI, NARS).

BIRRI partner Dr MA Sattar (SP25) found PETRRA as a unique experience compared with any other project in the field of agricultural research that was in operation in Bangladesh. It was target-oriented and very effective. "The PETRRA project could make a big change among the BIRRI scientists," Dr Sattar commented (Dr MA Sattar, SP25, BIRRI, NARS).

5.4.1.2. BIRRI scientists were exposed to multiple partners

Dr Saleque (SP17) observed an impact of PETRRA on BIRRI scientists: it was able to create an environment for BIRRI scientists and others to work with multiple partners. This was especially new for BIRRI. BIRRI scientists did not have enough exposure, scope, and resources to work and share

experiences with NGOs before. PETRRA had contributed to change the situation and BRRRI scientists had the chance to be familiar with such partnerships (Dr MA Saleque, SP17, BRRRI, NARS).

Under the breeder seed network subproject (SP02), BRRRI established a national network. Starting with only 10 PETRRA partners in 2000¹¹⁰ the network grew to involve 406 members by 2008; there were NGOs, CBOs, seed dealers, and the fast-growing national and multinational seed companies. By 2008, BRRRI's seed programme, as initiated under PETRRA, had increased supply by 100 times compared with the 1995 level (Dr MK Bashar, SP02, BRRRI, NARS).

Dr Mondal (SP20) thought that, due to the PETRRA experience, BRRRI scientists learned that adoption of technologies requires a collective effort by farmers and partnerships with agencies (such as NGOs) that work with farmers for credit and other organizational support. It is not possible for one agency or a few farmers to organise it. Skills are needed to organise and implement R&D activities for collective interest. Such activity demands skills that do not always lie with scientists and such specific tasks call for specialist expertise from other non-technical professionals such as development workers. The NGOs could provide such skills (Dr M Mondal, SP20, BRRRI, NARS).

5.4.1.3. PETRRA helped BRRRI to achieve scale

Akhter H. Khan (SP10, 43) found the discussions organised by PETRRA as healthy. Be it small or large, there were many elements for learning for the scientists. There were big opportunities in the discussions, field programmes, evaluations, and reviews. Khan thought that PETRRA BRRRI partners appreciated those discussions as these were opportunities for them to acquire new knowledge and new understanding and to eliminate personal ignorance. Those activities had impact and helped BRRRI partners to feel the pressure to make their technologies popular among a large number of farmers. With PETRRA resources, BRRRI researchers could disseminate the knowledge to many different institutes such as DAE, BARI, and NGOs in different districts. He thought PETRRA had played a unique role; it also had resources to do it. BRRRI would not be able to do it at such a scale (AH Khan SP10, 43, BRRRI, NARS). Khan went on to talk about the impact of PETRRA on BRRRI and its capacity development:

There used to be only one government organization (BADC) that used to take breeder seed from BRRRI. But, in PETRRA-supported programs, all types of agencies used to take breeder seed from BRRRI: NGOs, government agencies, private agencies. PETRRA had an important role in this. Many NGOs now ask for LCCs, BRRRI receives many telephone calls everyday. They can now contact BRRRI directly, which did not happen before on such a large scale. Now many farmers exactly know whom to be contacted. BRRRI was always a unique organization in Bangladesh, it had its own mechanism of adaptive research and technology dissemination, but with PETRRA resources, it was expanded at a larger scale. It opened up people's (scientists') mental blocks; many different kinds of materials were developed to help the process (Akhter H. Khan, SP10, BRRRI, NARS).

¹¹⁰ Until 2000, BRRRI had only BADC as the major client for breeder seed; they were in a process to sign a MoU with three other agencies: Grameen Krishi Foundation (GKF) an NGO; BRAC, another NGO; and Syngenta, a multinational firm.

Dr Saidul Islam thought that what BRRI did in PETRRA was not normal. He indicated that what they would usually do in BRRI labs, they did with farmers in the village under PETRRA. Usually, they would not have the resources to bring the machines or evaluate their performance and disseminate them. Carrying a machine was not as easy as bringing a biological technology to the field. They did it in PETRRA, through the resources which it provided. They could immediately build awareness among poor farmers about the machines in the field. It was easy to disseminate the technology not only to the mills involved in their subproject; they did the same to the adjacent mills, extending the benefits to a wider number of the poor who received service from these mills. They got the inspiration from this exposure to follow up the progress with machine use in the same project area (Dr Saidul Islam, SP33, BRRI, NARS).

5.4.1.4. What BRRI did in PETRRA was unique

The participatory breeding process that BRRI with partners had experimented with under the PETRRA project was new in Bangladesh. No other agency had any experience with this before. Through PETRRA, the team first learned about similar experiences in Nepal. There, scientists used PVS¹¹¹ in hill rice variety development in locations where drought was a problem. Through PVS, BRRI was able to release a salinity-tolerant variety, BRRI dhan47, which was a direct contribution of PETRRA (Dr MA Salam, SP13, BRRI, NARS).

5.4.1.5. PETRRA experience exposed BRRI to many opportunities

Based on their PETRRA experience, the BRRI-IRRI partnership research reached a new level and achieved momentum. Since PETRRA's closing, BRRI got involved in partnering with IRRI in many ongoing research projects that target the transfer of genes from the labs into the farmers' fields. The BMZ, the Generation Challenge Programme, the Bill and Melinda Gates Foundation, and the ADB funded research to transfer the salinity tolerance gene into different varieties. BRRI was involved in that research and there would be several MS and PhD scientists who would gain knowledge and techniques of gene transfer, which would then be immediately learned by BRRI scientists. One BRRI scientist has already successfully transferred the *SUB1* gene into BR11 within less than 2 years. BRRI was also involved in two stress tolerance research projects, in salinity and submergence projects, and in cold and drought projects. These would help in rainfed rice research in the case of Bangladesh. All such involvement in the area of germplasm development continued for 5 years. Dr MA Salam thought that all these were successful because of BRRI's involvement in the PETRRA project and in its own salinity research (SP13). BRRI was already involved in CPF10 and CPF7 projects, which were follow-ups of the PETRRA salinity (SP 13) and coastal water projects (SP20). The Challenge Programme again helped to develop other new projects and harnessed sources such as the Bill & Melinda Gates

¹¹¹ PVS stands for Participatory Varietal Selection

Foundation, BMZ and ADB. So the innovation in approach, which started in PETRRA, continued to grow over time in different forms (Dr MA Salam, SP13, BRRI¹¹², NARS).

BRRI was also trying to link with other ongoing projects where the government was involved, working closely with NGOs based on their PETRRA experience. One example was BRRI's collaboration with the Swiss Development Cooperation (SDC)-assisted project Inter-Cooperation in *haor* areas (flood plain in northeast Bangladesh) where they were assisting the project with seed and training that enabled 20 small NGOs to produce seed. BRRI was involved in the project as a research partner in an area that had been much neglected (Dr M.K. Bashar, SP02, BRRI, NARS).

5.4.1.6. BRRI contributed to develop system capacity

BRRI scientists were inspired to submit CNs and RPs, which was not done before PETRRA. Most scientists were then not aware of how it is done. Dr Bashar thought that the PETRRA experience encouraged scientists to participate in a competitive system; BRRI scientists considered the experience as a valuable lesson for the future. Dr Bashar also thought that BRRI would be able to make use of the networks and partnerships they had developed through PETRRA to participate in future competitions to access resources for new projects (Dr MK Bashar, SP02, 22, BRRI, NARS). Many of them already had obtained access to such resources and conducted projects that were of a similar nature to PETRRA projects (Dr MA Sattar, SP25, BRRI, NARS).

As they learned the advantage of the competitive system from PETRRA, BRRI senior scientists started to encourage young scientists to come up with ideas for their own independent research as part of the ongoing BRRI research. The seniors felt the need to develop confidence among the junior staff. They also encouraged them to publish papers. BRRI PETRRA partners such as Dr Musherraf felt the importance of being competitive for future survival, as he was expecting that most future funding might follow a competitive system. In BRRI, a new tradition was coming up; the juniors were becoming principal investigators of research projects (Dr M Musherraf Husain, SP01, BRRI, NARS).

5.4.1.7. Rice Knowledge Bank and BRRI

BRRI's training approach has been revitalised with the development of the RKB. The materials, in the form of technologies and extension approaches that were developed under PETRRA, were made available in the knowledge hub. BRRI was using those materials for its training programmes (MA Mazid SP 18). BRRI has been thinking about the long-term sustainability of the Bangladesh RKB. Dr Jahirul Islam said that BRRI is determined to continue to develop the knowledge bank with its own resources or

¹¹² The time Dr Salam was interviewed he was promoted as director for research from his previous position as head of the Breeding Division of BRRI. He was involved in the salinity breeding project in PETRRA as the research leader.

from government sources. In the past, BRRRI considered BRKB as a project and thought about attracting resources from the outside. But gradually, the leadership in BRRRI emphasised the need for its sustained continuity. BRRRI was determined to keep it in operation, regularly updating it with the latest information at any cost. BRRRI was also thinking about decentralising the responsibility to each major scientific working group to ensure a regular flow of updated materials for the knowledge bank (Dr MJ Islam SP01, BRRRI, NARS).

5.4.1.8. Some BRRRI partners found opportunities elsewhere

The PETRRA experience helped some BRRRI scientists to get opportunities elsewhere as they developed their skills. Their skills were enhanced through their exposure to a competitive system. BRRRI as a government institute could not accommodate these skilled individuals under its bureaucratic system. BRRRI scientists with PETRRA experience were exploring opportunities outside and many of them started to move to projects and to NGOs. Some found it difficult to continue in BRRRI as there was little room for vertical mobility in terms of getting senior positions and good remuneration (Dr M Mondal, SP20, BRRRI; Dr M Alam, SP10, BRRRI). Some also saw their role as researchers at BRRRI as being too narrow and wanted a role in development instead of only in research. They thought there were enough research outputs available that could be utilised in farmers' field for better impact, so they wanted to join in the development efforts (Dr S.T. Hossain, SP19, BRRRI, NARS).

5.4.2. Dr M.A. Razzaque, Bangladesh Agricultural Research Council (TEC member and chair BARC¹¹³)

Dr Razzaque was not sure how much PETRRA was able to influence the formal research system of Bangladesh. He was not also sure how much the other national projects such as the NATP of the World Bank had learned from PETRRA. They incorporated elements of the competition in their system, but he was unsure about whether they learned it from PETRRA.

Dr Razzaque referred to the example of a project of Japanese donor agency, JBIC¹¹⁴, who also had introduced a project for technology dissemination under BARC. They incorporated some degree of competitiveness. The apex NGO selection was done on a competitive basis and, when they issued calls for implementor NGOs, again did it on a competitive basis.

Dr Razzaque believed that, at the individual level, a lot had been achieved by the project:

For sure, the individual partner's ability to get projects through a competitive bidding system was hugely enhanced.... The scientists who had experience with PETRRA would perform better in future projects that would follow a competitive bidding system, such as the NATP and the science and technology

¹¹³ BARC stands for Bangladesh Agricultural Research Council; it is an apex organization of all government research and extension institutes that oversees policy and management issues.

¹¹⁴ Japan Bank of International Cooperation, presently merged with Japan International Cooperation Agency (JICA)

division projects of the ministry... This would also help to gain access to funds from international, national and regional sources. The persons, once exposed to the system, will continue to search for opportunities. ... B RRI is attracting more projects from us (BARC). The individuals who had that PETRRA experience before are managing the projects (Dr MA Razzaque, BARC, NARS).

Dr M A R azzaque (SP32, BARC) thought that, in the past, the pro-poor element was missing in agricultural R&D projects implemented by most NARS institutes. He indicated that PETRRA was able to create a big impact on NARS as it influenced the way it conducted its research. He was convinced that this was a much focused project, showing what could be done to enhance the livelihoods of the poor through different interventions. He claimed that poverty remained the focus of the BARC farming system mandate, which did not exist before its involvement with PETRRA (Dr MA R azzaque, SP32). He commented:

BARC livelihoods projects (SP32) could create a big impact that I can say. The programme is continuing in different sites with funding from the revenue budget now. The area has been extrapolated. It has not happened within one year of PETRRA. Poverty remains the focus as part of our farming system mandate (Dr MA Razzaque, SP32, BARC, NARS).

5.4.3. International Rice Research Institute (IRRI)

For IRRI, PETRRA was a new experience of its kind. IRRI scientists had to compete for resources for research in their own managed project. For many IRRI scientists, this was a challenge and they had to learn to interact in a new way, conducting research that had to consider many other aspects beyond technology. They had to learn about the values that PETRRA had pushed forward as a condition for research engagement. But, as in B RRI, IRRI scientists also enjoyed their experience with PETRRA.

5.4.3.1. *PETRRA laid the foundation of many IRRI projects*

Dr I smail A bdelbagi (SP13, CPWF7 & 10, IRRI, IARC) provided insights into the blossoming of the PETRRA experience within IRRI, B RRI, and elsewhere. This experience brought a new energy at B RRI and IRRI and later became the basis for followup R&D initiatives with IRRI's leadership. These were the Challenge Programme for Water and Food (CPWF) Project 10, Generation Challenge Programme for germplasm development and dissemination, German-fund (BMZ) project to continue the same work under CPWF10, and the Bill and Melinda Gates Foundation project entitled 'Stress-tolerant rice for poor farmers of Africa and Asia' led by IRRI. These projects included many other partners across South and Southeast Asia, Africa, and other parts of the world. The same network of partners and relationships would be in place for any initiatives in the future. Dr I smail also mentioned the new generation of scientists who were being trained on new technologies. He thought PETRRA successfully overcame one bottleneck in the past, which was the continuity of good projects or outcomes. PETRRA's outcome was continuing. New people were being trained from different parts of the world and options were in the forms of technologies being offered as outcomes of continuous research (Dr I Abdelbagi, CPWF7, IRRI, IARC; Dr Glenn Gregorio, SP13, IRRI, IARC).

5.4.3.2. *PETRRRA had a big impact*

Dr Thelma Paris (IRRI, SP24) observed that the PETRRRA approach of partnerships still exists within IRRI; IRRI continued to work with some of the PETRRRA farmers. Many IRRI scientists who worked with different partners of PETRRRA continued to maintain their relationship. Dr Paris also observed that the protocols of participation and partnership developed under PETRRRA continued to be followed by IRRI scientists in the institute's upstream and downstream research (T Paris, SP24, IRRI, IARC).

5.4.3.3. *IRRI Deputy Director General (DDG) regrets his late and weak contact with PETRRRA*

Dr TP Tuong, deputy director general¹¹⁵ (2008) and a senior scientist of IRRI, came in contact with PETRRRA activities late and he regrets that because of this, he was not able to enjoy the full benefit of the project.

As a scientist, I should have known more about PETRRRA than I know now. I was only involved with the project in its last 3 years. I had contact through Noel (the project manager). I wished to have been involved with it 100 percent but I could not do that. I learned from PETRRRA how to interact with NGOs. I also learned how to work with private firms... It was a training ground. The whole concept was very useful. It was competitive and impact-oriented and multipartner-based – everything was great. I regret that I could not get involved in PETRRRA. The most important thing for me was the design phase (Dr TP Tuong, DDGR & CPWF10, IRRI, IARC).

Dr Tuong thought PETRRRA had influenced how researchers in Bangladesh conducted their work. He came to know about Dr Mondal and CA Mannan from PETRRRA (SP20). The researchers learned how to interact with the people and conduct participatory research. Partners also learned to run a project, to deal with extension people, and to be familiar with the methodology to conduct the research. The book on extension (Van Mele et al. 2005), he considered as great. PETRRRA also helped IRRI to build a good network of good scientists whom others knew later. Farmer participatory research was another aspect that PETRRRA was interested in. Dr Tuong believed that, since PETRRRA, farmers and scientists work together (Dr TP Tuong, DDGR & CPWF10, IRRI, IARC).

5.4.4. *AKM Zakaria, Rural Development Academy (SP00, 37, govt development institute)*

RDA was not involved with rice or rice seed before they got involved with PETRRRA in its seed-health improvement project (SP 00). AKM Zakaria, the partner who represented RDA in two subprojects (SP00 & SP37), had been involved with hybrid maize seed in the CDP,¹¹⁶ on behalf of RDA. Personally, he reported that he had no prior communication skills and no experience of working with women or resource-poor farmers and that he had never undertaken any participatory research.

¹¹⁵ He held this position on an interim basis at the time of the interview.

¹¹⁶ Crop Diversification Project with the DAE, funded jointly by the Netherlands and the World Bank.

In PETRRA (SP37), Zakaria started to develop videos on seed health issues based on the learning captured from the seed-health improvement project (SP00). Based on the experience and skills developed during PETRRA, RDA went on to establish a Communication Unit. It is active and provides support across disciplines within the organization through the development of innovative communication materials. They learned to develop videos that captured the scientific information systematically.

Organizational support in continuing project/programme learning in RDA was very strong. RDA supported Zakaria in introducing the PETRRA learning into many other followup initiatives, project and programmes and in accessing new funding sources. Seed technology became one of the four major working areas of RDA. RDA has recently received an Independence Day Award for pro-poor seed technology development activities, along with other innovative work they do in the academe. As they consolidated their skills in PETRRA, RDA was thinking about starting a communication video-based action research project beyond agriculture; they already submitted a project to the government of Bangladesh on seed, seedling raising, and seed preservation techniques during floods and disasters. All such issues they learned from PETRRA.

It does not stop there. As a follow-up to what RDA achieved in PETRRA, they were able to secure DANIDA¹¹⁷ funding to establish a seed technology laboratory. RDA was able to conduct all sorts of seed-related tests in their lab. RDA also established a farm station where farmers can process and store their seed at a minimum fee. In all such new initiatives of RDA, Zakaria was able to use the research experience that he gathered in PETRRA in continuous partnership with poor farmers.

RDA has an ongoing project with IRRI on water-saving technology¹¹⁸; they got the project because of the reputation they earned in PETRRA. RDA was not the mandated or traditionally the right organization to be involved in such a project as it was not recognised as an agricultural R&D organization in the system. It has earned that reputation from international agencies such as IRRI. RDA was strongly recommended to become the principal partner. The competing organization and a natural collaborator for IRRI, BRRI, did not like it, but they could not stop it either. RDA offered the leadership to BRRI, but indirectly they prevailed due to their impressive work.

RDA has signed a MoU with RDRS, the Bangladesh Agricultural University (BAU), and DAE. With RDRS (a PETRRA partner NGO), they worked on the Good Seed Initiative project of CABI Bioscience, UK. At the time Zakaria was interviewed, RDA was actively considering to introduce a diploma course

¹¹⁷ Danish Development Assistance

¹¹⁸ Alternate wet and drying (AWD)

on agricultural and rural development. One major component of the course would be on seed. All such initiatives had direct links with earlier PETRRA experience.

Seed-health (SP00) videos produced by RDA have been screened in many different parts of the world. These were translated into five different languages. Those were taken to Cambodia, Nepal, and many other African countries. Paul Van Mele¹¹⁹ brought them to Africa.

5.4.5. M Nuruzzaman, Shushilan (SP09, NGO)

Before its involvement with PETRRA, Shushilan virtually had no agricultural programme and they had no experience working with farmers. They had a few nurseries, where group members used to sell saplings of fruit and timber trees. Their agricultural programme basically started with PETRRA in 2000. By the time PETRRA was closed in 2004, Shushilan had organised 60 farmer groups who were given credit, technology, and training by Shushilan. Most of those farmer groups were women. They used to buy seed from Shushilan on credit, a programme started under PETRRA. Shushilan developed its capacity to grow quality seed at the organization level and to provide training for its farmer members. However, it could not ensure quality seed production at the farmer level yet.

Shushilan developed a picture drama, the most important innovative element of their extension method, under PETRRA. They initially started with a few folk songs and then gradually made some picture songs, which they then transformed into a picture drama. They considered this their own innovation. They developed it gradually as they were looking for effective ways of presenting and disseminating agriculture knowledge to poor farmers. Shushilan initially learned and copied the picture song concept from another local NGO and then developed it further to a full-blown picture drama. Shushilan developed a good number of picture song collections on agriculture, which became a very important programme for them. They used to conduct at least 100 shows of picture songs in a year. Besides agriculture, Shushilan also used the picture drama and picture song as a method of extension for their other development programmes such as strengthening of local government, organic shrimp culture, and water and sanitation.

Shushilan developed as an organization with a strong foundation in agriculture. It took 5-6 years for them to establish this foundation. Initially, it was important for them to get support to make the organization strong and they were able to do that with support from PETRRA. They took up the

¹¹⁹ Paul Van Mele was the principal investigator of the CABI-led LCVIP project with RDA; they jointly developed seed health videos that won an international award for creative video development in the UK; these videos later were translated into many different languages and circulated in many Asian and African countries with Paul's and Zakaria's active initiative. These videos later also became the basis of many other videos on seed and agriculture at large.

challenge to develop a seed enterprise for the organization and they succeeded. Shushilan recruited their first agriculture staff under PETRRA in 2000 and, as of early 2008, they already had 20 full-time and about 60 part-time staff engaged in their agricultural programme. Fifty percent of Shushilan's projects and programmes have a agriculture components. Shushilan continued to develop their agricultural programme, especially on rice, which was started with PETRRA support. They linked that with the credit programme, providing input support that included quality seed on credit to the farmers. They had reached 1,500 farmers with their agricultural programme and they expected the number to increase to 5,000. For this, they were promised capital support to strengthen their credit portfolio by a government-sponsored financial organization, the Palli Karma Shayayok Foundation (PKSF¹²⁰) by the end of 2008.

PETRRA support helped Shushilan to articulate and link agriculture to other important activities such as those that tackle environmental and ecological issues in the region. They thought that agriculture would be the core activity as the lives and livelihoods of the poor farmers would be threatened as a consequence of likely environmental changes in the region. The PETRRA experience in agriculture as a whole helped Shushilan to respond to these challenges. Shushilan developed a long-term vision, they would like to be a leading NGO in the coastal region of Bangladesh and agriculture would be at its centre.

With no agriculture programme prior to PETRRA, by the year 2008, Shushilan had been totally transformed. They appreciated the role that PETRRA played as they thought PETRRA made them known in Bangladesh and abroad. Shushilan thought PETRRA made them what they are now (M Nuruzzaman SP09).

PETRRA made Shushilan a special star with a special light that others can take note of very easily among the many stars of PETRRA. The special nature of the light attracts people, they look at it very minutely and try to understand the nature of the light and explore its different colours. It was a great privilege for us. Different people ask questions about our specialty, they show their interest to know more about Shushilan. PETRRA made us well-known. It helped us build our reputation easily (M Nuruzzaman, SP09, Shushilan, NGO).

5.4.6. MG Neogi, RDRS Bangladesh (SP09, 25, 41, NGO)

Before RDRS became involved with PETRRA (SP09), they did not have any rice programme. RDRS used to believe that, since they work with landless and marginal farmers, they could not improve their livelihoods through rice. When PETRRA came, they conducted a survey among their members to know their involvement with rice. They discovered that all RDRS members including the landless, marginal farmers and even the day labourers were all involved with rice in some form or another. Then, they

¹²⁰ PKSF, rural employment assistance foundation, a government-managed foundation and World Bank assisted low-interest credit capital source for NGOs in Bangladesh, especially meant for the poor

realised the importance of rice and were convinced to work on the crop. Rice became an essential component in their programme. RDRS had about 267 federations¹²¹ of its group members. When the PETRRA project started its operation, RDRS thought of organising and making use of some of these federations to respond to the seed demand of their farmer members as quality seed in remote villages did not exist. Additionally, they thought that each of these federations could be a small seed business unit, which could respond to their own seed demand and could sell surplus produce for other federations and farmers. That was how a federation model for seed production, processing, storage, and marketing developed¹²².

The federation seed model was scaled up to other federations, from two federations initially in 2001, each producing about 3 tons during the life of PETRRA, it was replicated to 18 federations producing about 3,500 tons of rice and other seed (potato, wheat, and vegetables) in 2008. They used a revolving fund given by PETRRA as credit fund for farmers and revolved it for subsequent seasons. Seed were produced and used locally and the surplus produce sold in other areas of the region. RDRS had to establish a separate commercial unit to run seed-related activities commercially, which were self-financed. RDRS organised an enterprise unit of 30 staff who took care of the seed production and marketing. The RDRS enterprise unit introduced a seed dealer network of its own for seed marketing. Most of the RDRS members involved in rice production received training on rice production.

RDRS introduced student research partnerships with different national and international universities as part of the PETRRA project. Through such a programme, MS and PhD students from home and abroad were given the chance to conduct farmer participatory research based on farmer problems, thereby contributing directly to project outputs and gaining a practical understanding of farmers' problems. RDRS used such research results to develop programmes for their men and women farmer groups. RDRS was engaged in policy advocacy with the government and universities to institutionalise such collaboration. The core donors of RDRS were convinced about the benefits of student involvement in research on issues that were demand-led. The approach was mainstreamed within RDRS.

First started in PETRRA, a farmer-field-school-led agricultural research and development programme (SP41) was also introduced by RDRS. More than 60 percent of such FFSs were women-led. Those FFSs were being used to identify, validate, and disseminate technologies, which were either developed through the ongoing student-led farmer participatory research or picked up from research findings of national research institutes such as BARI, BRRI, BINA, and others. RDRS did not immediately go for

¹²¹ Federations are formed as apex committees with group leaders nominated from village groups

¹²² More details on the model are in the book Samsuzzaman, S. and P. Van Mele (2005). *Innovating with Federations: Community Institutions Take the Lead in Seed Marketing* Innovations in Rural Extension: Case studies from Bangladesh. P. Van Mele, A. Salahuddin and N. P. Magor. Wallingford, UK, CABI Publishing: 12.

large-scale dissemination of technology that they received from a source; they used to conduct further adaptive research first with farmers and fine-tune the technology with farmers of the target area. Then the best practiced technologies were disseminated.

RDRS also used to lead a regional forum on agriculture where all government, non-government, and private R&D agencies were members. They shared responsibilities and resources to address urgent regional agricultural issues in northwest Bangladesh. The concept of the forum was first started with PETRRA support and within the life of the project the idea was translated into practice. RDRS signed a memorandum of understanding with the DAE under which RDRS received technical support for their FFSs and DAE harnessed RDRS groups to disseminate the latest technological information that passed through them. This forum of agricultural actors was being used by different donors, government and non-government programmes and projects on work that touches on regional agricultural issues.

5.4.7. Sufia Khanam, Environment and Population Research Centre (EPRC) (SP42, NGO)

EPRC started with no experience in agriculture¹²³. In their project with PETRRA (SP42), they were responsible for identifying the best possible extension tools to disseminate knowledge in postharvest technologies to poor women household heads. From their project experience, they discovered a new area of work for their organization – they continued to work in the field of agriculture. They discovered that, through agriculture, it was easy for them to work with poor women's groups and they found that any project or programme that intends to work with poor women could benefit if it included an agriculture component. In their research, they learned that women were not only happy to get knowledge in postharvest technologies, but that they also wanted to have access to materials that could help them organise their postharvest activities more easily. After PETRRA, EPRC joined in a DANIDA-funded project, SID¹²⁴, in which they partnered with the women groups from the PETRRA project and outside and gradually developed a development component in all projects under the organization they got involved in since then. Starting with 5 tons in 2004 at the end of PETRRA, EPRC planned to produce 100 tons of rice seed in 2008. They had already achieved their 30-ton target in 2007. They used to collect both foundation seed and breeder seed. With the latter, they used to produce their own seed and gave foundation seed to their contract growers. They had linked their contract growers with BADC¹²⁵. They could use the BADC facilities for drying, germination testing, moisture testing, etc. They also organised local agents at the district level who looked after their business locally.

¹²³ Their focus was more on the environment

¹²⁴ SID stands for seed industries development project with DAE.

¹²⁵ Bangladesh Agricultural Development Corporation (BADC) is mandated to produce, process, and market quality seed to farmers; they also had provisions allowing seed entrepreneurs to use their facilities to process and store seed.

They also linked some of their women's groups with DAE in their farmer-level seed production programme, which they started on the basis of their new knowledge on seed gained from PETRRA. That relation with DAE helped their women group members to access foundation seed and fertiliser from DAE. The linkage with DAE continued to grow in later years after PETRRA. EPRC was happy to see that their group members continued to produce quality seed in the area.

Since their experience with PETRRA, EPRC continued to explore opportunities to link their research work to assist their clients better. They developed a practice to automatically focus on poor women and target them in their projects as they have learned its importance, even though projects did not always put any condition to do so. They claimed that they did not focus on poor women for commercial interest only. They felt that it was important to do something for the poor women and thought that they should work with the poor to see their potential to develop a seed business.

5.4.8. Sukanto Sen, BARCIK (SP22, NGO)

BARCIK (formerly known as IARD in PETRRA) was a research partner of PETRRA in its rice diversity subproject (SP22). Before their PETRRA involvement, they never worked in the field of agriculture and rice. In the project with PETRRA, they were responsible for conducting ethnographic studies on local varieties of rice in several villages in the southwest part of Bangladesh where the project was operational. BARCIK accepted the participatory varietal selection (PVS) process and adopted it as its main approach for biodiversity conservation. They visited IRRI and other organizations to learn more about the approach. They also adopted PVS in their research on vegetables and poultry, in addition to rice. They also learned about participatory plant breeding and became practically involved in the approach in 2005. They were also responsible for documenting the experience of PVS from the project. They learned and could use the learning in their followup activities after the project. They developed a product and a good practice book on the basis of the experience.

BARCIK continued to engage in exploring feedback from the field as they had done when they worked under PETRRA; they continued to inquire about the existence of the 57 local rice varieties identified during the project period. They continued to learn, updating the research they started under PETRRA. They did not end their activities at the conclusion of the initial research project. They very much appreciated their learning from the PETRRA project. The PETRRA experience helped them change their organizational strategy. Since then, they have termed their approach as farmer-led research. They were sharing their experience with other organizations at home and abroad. In November 2007, they shared their experience with an Indian agency. The German donor agency, Mijareo, which had

supported them since 2001, sponsored that meeting. The sharing meeting was held with farmers from the Indian states of Rajasthan, Tamil Nadu, and Orissa.

BARCIK continued to conduct ethnographic studies which they started in PETRRA. Two of their project researchers who worked in PETRRA subsequently became teachers in the department of Sociology, Khulna University. They continued to work on the issue. They signed a formal agreement with the Anthropology Department of Dhaka University; the two departments jointly run a certificate course on ethnography. BARCIK also introduced a joint certificate course under the Anthropology Department of Shahjalal University, Sylhet.

In Netrokona, northeast of Bangladesh, farmers in the past cultivated only a single rice crop. The rest of the time, they used to spend playing and watching ox fights. BARCIK helped them to diversify with different crops. They helped bring pulses, vegetables, and green chilli to the system. They introduced a system of competition and gave each successful farmer an award of Tk 3000-5000, instead of providing them micro-credit. They were trying to pursue participatory breeding issues into practice in order to sustain diversity.

BARCIK (NGO, SP22) learned over time and developed their in dealing with BIRRI scientists. Five years ago, in PETRRA it was difficult for an NGO like BARCIK to interact and let their voices be heard by a scientist who seemed to be very dominating. They seemed to feel a push from the part of BIRRI to promote their varieties and influence the PVS process. They could not be frank enough with BIRRI scientists about such issues at that point in time. As the relationship developed further, they could argue with them more confidently. BIRRI would also be freer to interact with NGOs and would be much more open to different points of view. PETRRA was the first project where BIRRI interacted with NGOs also. Sukanto Sen thought that BARCIK has been involved in a process of learning; they were trying to expand their learning further; they visited countries, which had such practices and research experience - for example, India and the Philippines. Many of their colleagues and some of their farmers also visited those places.

5.4.9. Rokeya Begum Shafali, AID-Comilla (SP27, 30, NGO)

For AID-Comilla, PETRRA was their first opportunity to get involved in an agricultural research project. They had previous experience in agricultural extension projects but it was only in 2001 when they started to work with PETRRA and got involved in two projects (SP 27 and 30) that they undertook the research.

In the DANIDA-funded IPM project they worked on before, they merely disseminated the technology which was developed by another agency. But, in the PETRRA Livelihoods Through Ecology (LITE) project (SP27), they were involved in the technology development process. They themselves came out with the results and could share these with confidence to the farmers as they developed that as part of the team. They could easily recommend the results to the farmers.

In the rodent project (SP30), they learned to conduct community-based rodent management techniques. In the process, they learned that, with active community participation, the research would be successful. It would have been difficult to achieve this without any community involvement.

The PETRRA project helped AID-Comilla to get access to a great many partners. They could not have done that earlier, even if they had wished to do so, because of the lack of resources. PETRRA contributed to opening up that relationship. AID-Comilla developed and won a research project under the DFID Research into Use (RIU) programme on rodent management in Bangladesh, a followup of the PETRRA-funded rodent management project. AID-Comilla was the lead agency of the project (Rodent Management for Rural Communities in Bangladesh) together with 11 other partners. The project was launched in August 2008. Five PETRRA partner agencies were also partners of this new RIU project. Three were partners from former PETRRA rodent projects and two were from the other PETRRA projects. AID-Comilla was exploring opportunities to disseminate the LITE technology also, as they did with the rodents. It worked as an inspiration for them.

5.4.10. Momtaz Roomy, Mukti-o-Nari (SP31, NGO)

During the life of PETRRA, the project (Approaching Poverty through Participatory Group Farming) did not achieve any substantial progress. But, in later years, Mukti claimed that they had been successful in implementing the main principles of the group farming approach. In the light of the *Moheswarchanda*¹²⁶ experience, they helped their members resolve the inner conflicts that they had before. They could convince them partially to get rid of isles in the farm land and were able to inspire farmers to apply fertiliser on the basis of soil tests. They successfully motivated the farmers to not cultivate tobacco, which farmers at first thought would not be possible. The farmers had the idea that they cannot grow anything other than tobacco on their land. Mukti was successful in eliminating that belief with the help of scientists. The farmers later experienced and believed that they could cultivate many other crops other than tobacco.

¹²⁶ *Moheswarchanda* was an exemplary case in southwest Bangladesh. It showed how poor farmers can change their livelihoods if they join hands and use a group farming approach. Under this project, PETRRA assisted Mukti in organising cross visits among farmers to learn from the *Moheswarchanda* experience and to apply the same principles in their PETRRA subproject.

Mukti deputised staff to assist the farmers in their work. The farmers also sought assistance when they needed it. Mukti had a plan to establish a federation of farmers combining all the farmer groups they had formed. Mukti was hoping that this would help farmers form a comprehensive committee of their own. It might take another 2 years to get there.

Mukti became a dissemination partner of AID-Comilla in their rodent management project in early 2008. The project aimed to disseminate technology from a PETRRA-supported research project on rodent management (SP30).

NGOs with no prior agricultural programme found it a very good entry point. According to M omtaz Roomy (Mukti-O-Nari, SP 31), they had no experience in the field of agriculture before they became involved with PETRRA. Being exposed to agricultural activities through PETRRA, they have worked with people whom they did not know before in the agriculture system. Since then, they have explored different opportunities so that they can continue to work in agriculture. Roomy realised that

If I want to work with the poor farmers in the village, I have to work in agriculture. As agriculture is the main source of livelihoods of the poor, we have to look into the problems of agriculture and explore solutions, we cannot avoid our responsibility when the poor remain unfed and do not get a good price for their produce. I am indebted to PETRRA; they helped me to build the bridge between Mukti and the farmers, which was an opportunity for me to work with the farmers (M Roomy, SP31, Mukti, NGO).

5.4.11. Mofizur Rahman¹²⁷ on CARE (SP00, SP 36) and FoSHoL-Action Aid (NGO)

FoSHoL-AA conducted action research on seed as they gathered experience from SHIP (SP00) in PETRRA. Many farmers who were trained under FoSHoL became skilled seed producers. Farmers organised as CBOs started their own seed business for rice and vegetables. They themselves used the seed they produced and also shared these with the community farmers. Farmer organizations decided which farmers would become seed producers among their members. FoSHoL placed primary emphasis on organizations but did not discourage individual initiatives; rather they encouraged individuals to take the initiative.

FoSHoL-AA tried SRI as they were also involved in that project under PETRRA (SP36) on a community basis around a shallow tube well (STW) and in a block. They got very good results. They introduced the participatory action research approach as they did in PETRRA. In the first year, they observed field performance and conducted large-scale dissemination activities. Thereafter, if a technology showed promise, as judged by the farmer members, it was widely replicated by many other fellow farmers in their respective areas.

¹²⁷ The respondent represented two organizations: CARE (SP 00) as a former staff member and FoSHoL-AA as he has been working with the project, which is a follow-up project of PETRRA.

5.4.12. Anwar Hossain and Mobarak H Khan, Proshika (SP00, 06, NGO)

The PETRRA experience (SP06) helped Proshika to assess their own strengths and potential to establish and expand linkages laterally. With PETRRA, they tested the Proshika union federation model for technology dissemination as a subproject. They learned from a few villages and replicated the learning and the model in other union¹²⁸ federations¹²⁹ and villages by utilising their existing institutional network for technology dissemination.

Proshika made innovative use of different communication materials such as posters and leaflets that were developed under PETRRA. They supplied CDs on different technologies to be shown in tea shops in their project area villages; such techniques were useful in sharing information with large groups of farmers. They also developed popular dramas to train farmers on the use, usefulness, and advantages of the use of machines. They organised popular dramas, especially to disseminate maize technology in areas where they promoted maize (Anwar Hossain, SP06, Proshika, NGO).

Proshika considered the development of the contract grower system, especially for rice seed, as a direct outcome of PETRRA. These growers were mainly Proshika group members, but there were farmers from outside Proshika as well. Proshika had a seed business before, but the PETRRA experience added awareness about the importance of production, processing, and storage of healthy seed. Proshika learned and used such knowledge in their seed production programme. This new dimension helped make Proshika seed very popular among the farmers. Proshika now sell their seed for a very good price. Farmers submit their orders long ahead of the season to make sure that they get the seed. Proshika produces several hundred tons of seed every year. The clients who buy seed from them include both Proshika members and non-member farmers.

5.4.13. Gopal Chowhan on SAFE (NGO) and their partnership with Syngenta (SP40) and BIRRI & others (SP36)

For SAFE, their success depended mainly on the success of their partners with whom they worked under PETRRA auspices. The nature of SAFE's responsibility was to provide specialist facilitation support to partners in participatory approaches on technology verification and pro-poor marketing strategy development; they did not have a programme of their own. SAFE also developed training materials for grassroots marketing agents, which were later used by Syngenta to conduct training.

¹²⁸ Union is the lowest administrative unit of the local government in Bangladesh. Proshika has organised federation of groups at this level, which they decided to use as a forum for technology dissemination to their members.

¹²⁹ Proshika has a few thousand union-level federations in Bangladesh.

From the information on herbicide sales, it was clear that Syngenta, SAFE's partner in the farmer field school subproject (SP40) on herbicide use, had raised their sales in the project area substantially. They were also able to upgrade their information system to expand business based on the subproject experience. SAFE's work helped strengthen Syngenta's business.

SAFE also worked as a coordinating agency to facilitate discussion forums on SRI. SAFE was successful in creating a good forum to continue discussion on SRI results based on field experiments conducted by different partners. This was a followup activity of their subproject on SRI (SP36) under PETRRA. The BIRRI director for research or director for administration and a concerned scientist regularly participated in the SRI Standing Committee meetings organised by SAFE. SAFE claimed that they earned a clear positive commitment from BIRRI as a network partner which had a negative attitude towards the SRI technology¹³⁰. NGO partners also continued to participate whenever the SRI coordination committee invited them. SAFE claimed another success; they could continue to mobilise members' participation in the meetings without paying them. SAFE noticed the enthusiasm among the partner farmers as well; farmers welcomed partner group members when they went for field visits. Partnerships and networking among different stakeholders survived beyond the life of the PETRRA project.

5.4.14. Dr Uttam Dev, Centre for Policy Dialogue (SP24)

CPD enjoyed the flexibility provided by the PETRRA project in their work. They had the freedom to experiment with new activities or to produce materials as outputs from the research. PETRRA always cooperated. They also had the opportunity to interact and work with a range of organizations, thus helping them build a large network.

CPD did not have such large-scale survey-based data linked to agriculture before. They had some field research linked to dialogue and policy advocacy in the field of agriculture in CPD, but the activity was strengthened because of the PETRRA project. It added new dimensions to CPD. This was a comparatively long-term commitment for 3 years. The activities of PETRRA complemented CPD's ongoing advocacy activities. The dialogues organised under PETRRA were focused and these dealt with both micro and macro level issues related to the problem and linked to field-level data.

This new data set¹³¹ gave them strengths in terms of accumulation of new knowledge in the field of agriculture. Different organization leaders from within the government asked for reports and solicited

¹³⁰ BIRRI agreed to engage in the forum and also continued to conduct research on SRI to further verify its potential as a good rice technology; BIRRI allowed its scientists to conduct PhD research on SRI.

¹³¹ He refers to the panel data set that was developed in the eighties and was again re-surveyed under PETRRA by revisiting the same households to see the change.

information from them in order to prepare their reports for meetings. This strength also helped CPD as they also established access to different policy-making bodies; they can collect any information they need for reports, dialogues, or talks.

As CPD developed its skill and reputation on important issues such as agriculture, the staff got invitations and are now included as members of many different important policy-making forums and committees. For example, on WTO issues, the government has about 10 committees and in about 8 of these, CPD members are present. They are always in an interaction process.

5.4.15. Fashiur Rahman, ABC (SP08, private organization)

ABC was not interested in seed before they got involved in the PETRRA project. It had a different business before. But, when they started working with PETRRA, they started to like it. They moved from their old business to rice seed production and marketing. Fashiur Rahman, the owner of the firm, commented:

PETRRA provided me with 10 lakhs¹³² taka in two stages as a revolving fund. I used this fund for training and demonstration. From that seed money, I started my business, started to buy and market seed. Today, the size of the revolving fund is a few crores of taka. Because of PETRRA, this much expansion of the business was possible. PETRRA was the first and last public fund that I received. From this example, you should realise how PETRRA helped me and changed me (Fashiur Rahman, SP08, ABC, pvt sector organization).

ABC used to produce foundation seed; they claimed that they could continue to keep high standards for their seed. They developed a family relationship with their contract farmers. They used to organise training courses for their contact farmers every year, especially the new ones. They developed a realistic system with the seed-producing contract based on profit for both parties, the farmers and ABC. They used to provide credit for farmers to get inputs and then take the money back when they buy seed from them. They established formal relationships with the seed certification agency (SCA) of the government to get proofs of seed quality. They recruited agriculturists in the team who trained the new farmers and monitored the crops regularly in the field.

They wanted to make sure that farmers use their seed to reproduce seed, not to produce paddy. They could not monitor it properly, but they specifically mentioned it on the bag in the form of instructions to the farmers.

In 2007, they grew *boro* rice seed on about 1,000 acres of land and had worked with about 1,200-1,500 farmers. They continued to operate their activities from their headquarters at Birganj, a remote area in the northwest portion of Bangladesh from which they first started their business with PETRRA support.

¹³² 1 lakh = 100,000 (one hundred thousand) 68 tk = 1 US\$; 1 crore = ten million; .

5.4.16. Mahbubur Rahman, Syngenta (SP36, 40)

The P ETRRA e xperience w as a n e ye o pener f or u s (Mahbubur R ahman, S P40, Syngenta, p vt organization).

Mahbub claimed that PETRRA had c ontributed a lot in the way they conduct business in Bangladesh now. They learned to mix social issues with business interest. They established a permanent training centre in Bogra to train commercial spray men. They started that during PETRRA and continued with it afterwards. PETRRA helped them to add value to their business. They wanted to educate their business partners/retailers properly so that they would have the right information and knowledge to be abl e to communicate with the ultimate users of the technology, the farmers. They also became more aware of their corporate responsibility as they were exposed to values such as the poverty focus in PETRRA. They wanted this in order to sustain their business in Bangladesh. They decided to target small and marginal farmers in their business. They decided to respond to the need of this group, supplying quality products at a low cost.

Syngenta's work with PETRRA was the first experience/learning of that kind. Donors such as Katalyst wanted to replicate the Syngenta experience in PETRRA with others. Through such activities, private agencies wanted to be close to development agencies.

Inspired by what was learned from PETRRA's capacity development approach, Syngenta (SP40, 36), a multinational firm engaged in marketing herbicides, developed a c omprehensive training programme. They successfully developed a training manual on weed management to train farmers. After PETRRA, they received funding to train farmers using the manual developed under PETRRA. They are using the PETRRA-tested whole family approach of training where both men and women heads of households attend. S yngenta B angladesh h as r eceived a gl obal aw ard f or t his ap proach f rom S yngenta International in 2007 (Mahbubur Rahman, SP40, Syngenta, pvt organization).

5.5. Conclusion

PETRRA, through its approaches and strategies, tried to develop the capacity of its partners, be they individuals, and organizations. Such approaches and strategies helped them develop their confidence and ability to manage and conduct pro-poor agricultural research and develop projects. Some scientist partners were able to develop new projects individually or in partnership with former PETRRA partners. Young scientists benefited most from such support. Some of the young scientists directly benefited as they developed t heir c apacity i n P ETRRA and w ere abl e to use i t i n ot her r esearch pr ojects a nd programmes during the post-PETRRA era. Many of them were able to access resources from other

available sources as they enhanced their competitive ability. Successful scientists earned recognition and appreciation in their own organizations and in the system. Partners were most benefited by their exposure to the external environment beyond their own organizations. Skilled individual partners joined in the new projects and successfully implemented and expanded PETRRA innovations into new projects/programmes. Many of them were successful in using that exposure to make their innovations popular and also in making partnerships for new initiatives.

Scientists learned to work directly with farmers in their fields, make partnerships, linkages and networks, learned to appreciate the importance of NGOs and private sector organizations, and learned to understand the importance of communication activities to ensure impact on resource-poor farmers. They also learned to appreciate the value of other disciplines and to recognise their importance. Many of them continued to involve professionals from other disciplines in their new endeavours. The partners from NGOs and private sector organizations learned to form partnerships with scientists, and appreciated their contribution to the development of technologies and training of their field staff. The PETRRA learning helped NGOs to develop their own extension models harnessing their own comparative advantage. None of these partners had developed any comparable model in the past. Most of them continued to improve their models and mainstreamed them within organizations after the PETRRA project ended. Some partners were even able to disseminate their models beyond their own organizations and beyond Bangladesh.

Many organizations, especially NGOs, were transformed. There were marked positive changes in their capacity development in agriculture programmes, in the understanding of agriculture as a means to reach to the poor, in their experience of working with the poor farmers directly, in working with the poor women involved in agriculture, in the developing linkages and networks with agencies active in agriculture, and in the development of their vision for agriculture as an effective entry for poverty reduction¹³³. A government organization such as BIRRI was able to show its skill as it gained experience in PETRRA. BIRRI scientists were successful in accessing resources from government sources under a competitive process after PETRRA. Their performance was the best compared with all the other NARS scientists. BIRRI used some of the PETRRA learning as their strategy for technology release; an example is the approach taken to institutionalise PVS. BIRRI as an organization was able to continue many of its projects with IRRI in new forms by accessing resources from other donors. IRRI was able to develop new projects based on its PETRRA learning, including values. Both BIRRI and IRRI continued to use and further improve on the new learning and capacities.

¹³³ An analysis is presented in Table 6.1, Chapter VI.

Partners learned to adopt a bottom-up approach of planning, designing, and conducting research with poor farmers. In many partner organizations, the individuals who were involved in PETRRA subprojects are leading new projects and programmes, taking important roles to negotiate with donors, and plan and design projects. The PETRRA experience provided these partners with the necessary training on logical framework development and financial management in addition to skills in conducting the research. Most partners did not previously have such a complete capacity building opportunity in any other project. Learning about qualitative methods from economists was new. They continued to use such methods in new projects. One partner agency learned to use policy dialogue as a tool to mobilise policy people in the field of agriculture, which had helped bring focus to resource-poor farmers more effectively. They continued to use policy dialogue as an effective tool to pursue a pro-poor policy.

PETRRA was able to help partners through facilitation to explore their own strengths. PETRRA did not push any new idea on them, but rather, they continued to ask questions and challenged the partners to comply with their own commitments. Partners appreciated the way PETRRA facilitated the process and found the challenges as good starting points to develop capacity. Partners also thought that the PMU had the necessary patience, skills, and background experience to facilitate the process where partners had the scope to learn and develop their capacity. An environment was created in which they were able to develop their own innovations based on their own ideas and with proper analysis of their strengths and weaknesses. The barriers to interaction between government, non-government, and private sector organizations were successfully minimised by the project. Engagement of PETRRA with partners with a cause to help them comply with values on a continuous basis has been useful for partners, they were able to judge the importance of their work from the seriousness and commitment that the PETRRA team showed. The PETRRA team was always with the partners to assist them. PETRRA never stopped providing capacity building ability to its partners during its life cycle. The impact of such capacity development effort on individuals was very positive. They learned many important aspects of project management and values that were essential for pro-poor impact. It was like a training of trainers for some partners. They had not experienced any other comparable project with such capacity development approaches.

There was flexibility as a basic element in the approach and in the capacity development process. But the project was able to maintain its principles and earned the freedom to be neutral; even with its own organization, it did not compromise. Flexibility came out strongly as an essential element to make a learning and process-oriented project such as PETRRA a success. It provided partners the opportunity to experiment with ideas and explore alternatives to come up with better results. As long as a partner was found sincere in its obligation, they were allowed to try different options. Partners had the freedom to change their logical framework and adjust their budget line to be able to adjust to changes. There

were examples in which extension method subprojects gradually developed their models; each was able to come up with a model as they had enjoyed the flexibility within the project. Flexibility proved to be an essential element for innovation. For some partners, this aspect was initially difficult to cope with, but before long, they found it very useful. They did, however, caution about its potential for misuse.

In this chapter, we have explored the diverse consequences for individuals and organizations after they learned the use, the rationale, and the practice of values and as they developed their own capabilities. Besides the other important innovations, how much of that learning and capacity could be sustained into the future? That is the subject of the next chapter.

Chapter VI

6. Impact and sustainability of PETRRA innovations

6.1. Introduction

Partners' reflections and interaction with the values were captured in Chapter IV. Chapter V captured the partners' reflections on the capacity building approaches and the enabling environment created by PETRRA through facilitation, which helped partners to learn about values. It also captured the way partners developed their capacity to appreciate and implement the values-based approach into their respective subproject as individuals and organizations. Chapter V also included partner reflections on how PETRRA as a project management unit facilitated the process in order to challenge individuals and organizations to internalise the learning. This chapter captures partners' reflections on what they thought about the long-term impact potential of the major outcomes from their respective subprojects in terms of technologies, extension methods, and other innovations. The chapter also captures partners' opinions on how much and what elements of the learning will be sustained by individuals and within organizations. Some stories that are mentioned here might have appeared before in the previous two chapters but the purpose and use of those stories here are different. Stories here hint at the impacts that are already evident and those that indicate long-term potential for impact and they are either already integrated or are expected to be integrated, replicated, scaled up, and used in the future by potential users and the stakeholder groups that worked with PETRRA.

The approach that is principally used here for the analysis of impact and sustainability issues in PETRRA is 'learning from the positive' as suggested by Biggs (2006). Biggs also described the approach as 'the more inclusive approach than just learning from the outcomes of past planned interventions':

...development opportunities are being missed by not placing more emphasis on learning from positive situations. The idea is simple: learn from the positive. This involves purposely seeking out and learning from past and contemporary political/cultural situations where positive things have already occurred, and learning from the way different actors were effective in bringing about positive changes. The entry point for this analysis is finding situations where there is empirical evidence that positive changes have already taken place (Biggs 2006: 2).

Impact and sustainability assessment has been emphasised here 'to link action research and action learning to facilitate effective communication and knowledge sharing among practitioners and leaders of pro-poor agricultural innovation processes' (Scoones and Thompson 2009:24). An innovation is defined here as a technology, an extension method, an approach of network or linkage development or new ways of doing things that are judged to be sustainable.

There were efforts to learn from the limitations as well as just the positives of PETRRA as perceived by the partners. Most partners presented limitations of PETRRA positively. They thought PETRRA was mostly positive, but there were areas that could have been improved further. These are included here in the chapter as well. There can always be people who would look at issues differently because of their background, attitude, professional bias, and many other factors. The short duration of the project was frequently mentioned as one of the limitations. All such comments are considered valuable and therefore captured here as learning for future projects and programmes.

6.2. Innovations and sustainability

This section presents evidence of the impact or impact potential of innovations to demonstrate the effectiveness of the values-based research management approach that was used in the PETRRA project. The evidence is presented in the form of technological, methodological, and other process-oriented innovations that are either being currently used within organizations and individuals or being disseminated through different means beyond the original subprojects and sometimes even beyond the original partner organizations.

Seed was prioritised as the number one problem in the PETRRA stakeholder analyses for researchable issue identification (Orr et al. 2007). Later, in the project, it proved to be one of the most important elements for achieving impacts on the livelihoods of the poor farmers in PETRRA. PETRRA responded to the resource-poor farmers' demands by commissioning 14 seed subprojects out of the total of 45. One of the 13 subprojects that were involved in seed issues was the Seed Health Improvement subproject (SP00), which was engaged in technology development for quality rice seed production, processing, and storage issues. The other 12 subprojects were engaged in extension method research on a range of issues such as network development, federation or group approaches, cultural approach, and women-led approaches. The first two of the following subsections focus on the seed network and seed health subprojects and capture significant impact and sustainability achievements of PETRRA. Subsequent subsections discuss the impacts and impact potential of the other important innovations such as partner-network-linkages, communication (rice knowledge bank, seed technology videos, communication materials for farmers) and capacity development activities, e.g., graduate education-research linkage and technologies and innovations developed and disseminated by various partners, projects, and programmes.

Important innovations include salinity-tolerant variety development and its subsequent follow-on research in other BRRI-IRRI collaborative projects, networks, and linkages among many PETRRA partners to disseminate rodent management technology (SP30), participatory nutrient management innovation (SP17) dissemination by NGOs and government projects. Impacts were also reported in the

organizational performance of some of the NGO partners (Shushilan, SP09), and in collaborative research and development programmes between BIRRI (SP01) and RDRS. There are examples of how BIRRI (SP19) continued to respond to farmer demand for duck technology and linked farmers with its former NGO partner, FIVDB; the transfer of learning about values such as partnership-linkage-network from one P ETRRA subproject (SP20) to another project (CPWF10); capturing lessons and creating learning alliances for SRI technology (SP35 & 36); internalisation of the IPM technology (SP27); pro-poor business development through aromatic rice production (SP29); and P ETRRA innovation dissemination through a followup project (FoSHoL).

6.2.1. Seed network: a small element in P ETRRA that became a major national programme

BIRRI (SP02) under P ETRRA developed a network with government agencies, NGOs, and private sector organizations for the distribution of breeder seed as demand was seen in different parts of Bangladesh. In the past, BADC, a public sector organization, was the only client that received breeder seed from BIRRI. Under P ETRRA, BIRRI started to expand its portfolio of network partners and also provided them with technical support, training, and information on relevant issues. The partners in turn provided support to farmers, helped them to produce and sell seed, and provided them with needed information. Partners who started their contact with BIRRI under P ETRRA to receive breeder seed were organised later into a network. The initiative of the subproject was backed by the development of a government seed policy that opened up opportunities for the private sector and for NGOs to play a role in the seed sector (GoB 1998) (Dr MK Bashar, SP02, BIRRI, NARS).

Dr Bashar mentioned that, with P ETRRA, they started forming a network with government, NGOs, and private sector seed production and marketing organizations. Many of them had no seed or agriculture programme before that. These network members maintained regular contacts for seed, training, marketing information, and technical support. The network was mainstreamed within BIRRI with the establishment of a formal breeder seed network after the P ETRRA project ended. The BIRRI seed network continued to evolve with new partners continuing to join. From initially having three partners in 1998, including the government seed production and marketing agency, BADC, BIRRI reported 54 network members in 2004, 250 members in 2007, and more than 406 in 2008 who received breeder seed from BIRRI. BIRRI, as an organization, supported the breeder seed network as it continued to grow and respond to the breeder seed demand that is coming from its network partners. BIRRI received government funding to support the programme that grew over time after P ETRRA funding ceased in 2004. BIRRI, from such support, increased its production volume of seed many times; in 2008, it was

100 times higher than the level in 1997¹³⁴. The trust built among the network members and BRRRI was such that they even asked for support to prepare business plans and strategies from BRRRI, an unconventional role for BRRRI (Dr MK Bashar, SP02, BRRRI, NARS; Salahuddin, 2009).

Dr Bashar observed some of the impacts of the seed network activities on its members. Besides many indirect impacts, there were direct ones. It reflects how network members had continued to develop their capacity beyond the life of the project.

Capacity of individual network partners is increasing slowly. Now, they know the basic aspects of seed production, processing, storage, packaging, and marketing. They were in close contact with me, calling me whenever they feel like asking questions, such as about production and marketing of seed. Some partners are even challenging us to prove the quality of our seed and try to outdo us by putting extra efforts in cleaning. Some have made packets of different weights, 2 kg or 1 kg, depending on local demand. All such can be considered as their own innovations. The spirit of such awareness and innovation is very encouraging (Dr MK Bashar, SP02, BRRRI, NARS).

The then¹³⁵ chairman of BARC, Dr Razzaque, thought that the seed network (SP02) of BRRRI worked very well. He noticed that, even in a remote area, farmers know about breeder seed. "I can give you an example: my uncle asked for breeder seed from me and I collected some from Dr Bashar (SP02, BRRRI). Then, he multiplied the seed into foundation seed¹³⁶ and sold it in the village", Dr Razzaque commented. He thought that a lot had been achieved in PETRRA (Dr MA Razzaque, BARC chair, TEC member, SP32, NARS).

NGOs and the private sector partners who were network members of the BRRRI seed network under PETRRA continued to maintain or further strengthen their membership. Some PETRRA partners who were not members during the project also joined later, as they discovered the importance of seed in giving better service to their clients and the importance of being linked with the breeder seed network. Some examples are discussed here to illustrate the impact of the network.

Starting with no rice programme, RDRS managed to consolidate their poor-farmer-led federation seed enterprise model with 3–5 tons of rice seed into two federations. By 2004, it had replicated the same model in nine federations using a revolving fund provided by PETRRA. As of 2008 January, the model has been extended to 18 federations and achieved a production target of 3,500 tons of rice seed¹³⁷ in two seasons a year. RDRS had to organise a separate enterprise unit to manage, support, and oversee these federation-led seed initiatives on behalf of RDRS. RDRS has signed an MoU with BRRRI to ensure the continuous flow of breeder seed (MG Neogi, SP07, 41, RDRS, NGO).

¹³⁴ In 1997, BRRRI produced 1 ton of breeder seed for its lone client, BADC. In 2004, when PETRRA was closed, BRRRI raised its production to 40 tons and, in 2008, production was 101 tons (Dr MK Bashar, personal communication)

¹³⁵ During the time of interview, end of 2007

¹³⁶ Produced from the original seed of a particular variety (breeder seed) and maintained by companies or agricultural agencies

¹³⁷ This quality of seed is called truthfully labelled seed (TLS)

Starting with no agriculture programme, Shushilan (SP09) had shown its success in developing a pro-poor seed system during the life of PETRRA. They continued to develop and strengthen their network relationship with BIRRI for the supply of breeder seed. Shushilan produced 3 tons of rice seed during the 2007 boro (winter rice) season, which was sold within 4-5 days at a price higher than that of the BADC¹³⁸ seed. Shushilan claimed that their seed enterprise has been economically sustainable. They also established appropriate linkages and partnerships with agencies – e.g., DAE for training, BADC for supply of foundation seed – those are important to make the pro-poor seed and agricultural programme successful (M Nuruzzaman, SP09, Shushilan, NGO).

There was a group of PETRRA NGO partners who were not engaged in seed during the life of the project, but as they discovered the potential in seed, they started to get involved in it gradually and established a network relationship with BIRRI for breeder seed supply. One such example was EPRC, the PETRRA partner in one of its extension method subprojects. EPRC (SP42) did not work in the field of agriculture and did not know actors in the field of agriculture before they got involved with PETRRA. But, based on their experience with PETRRA, they started to discover the importance of their poor women's groups and the power of seed as an entry point. After PETRRA was closed in 2004, EPRC, along with 26 other NGOs, undertook a DANIDA-supported Seed Industries Development (SID) project. They have now built up a relationship with BIRRI for breeder seed. They have also registered themselves as a seed grower agency with the MoA and with other research institutes such as BARI to work on vegetable seed (Sufia Khanam, SP42, EPRC, NGO).

Another PETRRA NGO partner, APEX (SP29, NGO), also started to develop a pro-poor seed enterprise after the project was closed. MA Salam indicated that APEX consolidated its skills as an NGO under PETRRA. They learned to work with resource-poor farmers and were able to reach a partnership with them as contract growers for seed production. The partner agency was able to further expand their social business in the area of rice seed in addition to their activities as an expert organization in the field of production and marketing of aromatic rice (SP29). They have strengthened their links with BIRRI as the source of breeder seed (MA Salam, SP29, APEX, NGO).

ABC is an example of the impact on a private sector agency (SP08). ABC started its rice seed enterprise in PETRRA and continued to expand the business and establish relationships with agencies such as BIRRI for breeder seed and with DAE and SCA for other seed-related support. ABC used PETRRA-provided revolving funds to develop a business model for rice seed through contract farmers. In PETRRA, ABC started with no rice seed experience in 2000 and utilised available human and physical resources from government agencies such as DAE and BADC in the area they worked in to

¹³⁸ Government agency specifically mandated for seed production at a large scale nationwide.

consolidate their business, working with 1200 resource poor farmers. PETRRA first introduced them to BIRRI and that was how the relationship grew further over the last few years; now they have a very strong relationship with BIRRI. They became the second largest client of BIRRI to receive breeder seed and signed an MoU with BIRRI and BADC for breeder seed and foundation seed, respectively. Fashiur claimed that they were in their good books. ABC was also registered with the seed wing of the Ministry of Agriculture. Fashiur also claimed that they became known to all people involved in the seed business within and outside government because of their work in PETRRA. Having started in one subdistrict, as of early 2008, ABC now sells their seed to 40 districts (out of a total of 64 districts in Bangladesh). In 2000, they started with 10 tons of seed production, then produced 170 tons in 2004 and 14,000 tons in 2008. They established their own dealer network; through the network, they sold seed and also got demands for seed variety and quantity. The area in which they grow their seed has the lowest volume of seed sales as almost all farmers there know the technique of good seed production and use their own seed. ABC do not need advertisements to sell their seed because they have gained a very good reputation from the quality of the seed that they produce (Fashiur Rahman, SP08, ABC, private organization).

BARD (SP23), a government development agency partner of PETRRA, acknowledged that they got different information and ideas about different ways of linkage development regarding seed from PETRRA uptake forum¹³⁹ members. From that forum, they could learn about seed sources and different policies that made the seed sector more open. They thought that, because of that network, they got access to breeder seed from BIRRI as BIRRI and BARD had to opportunity to exchange ideas sitting in the same meeting. BARD thought that the forum, and, as facilitator of the forum, PETRRA, had contributed to open up the seed sector in Bangladesh. After many years of absence from the field, BARD was inspired to get access to breeder seed supply from BIRRI to start seed-related development programmes with their poor client groups (T Bose & AK Azad, SP23, BARD, government development organization).

BIRRI also established a system of feedback with network partners to determine the demand for different seed varieties coming directly from the field; this helped BIRRI to produce the right varieties and amounts of seeds. BIRRI is engaged in brokering information among different seed actors on the market situation and on supply and demand from a cross the country. It also provides training and quality control visits as demanded by network partners as partners bear the cost of such visits (Dr MK Bashar, SP02, BIRRI, NARS).

¹³⁹ PETRRA organised and facilitated an uptake forum with all of its partners who were engaged in extension method research projects immediately after the first group of technology uptake projects was commissioned in 2000. DAE was co-opted into the forum as a member and as a resource organization as it had a nationwide network and a pool of skilled human resources throughout the country.

Some direct impacts were reported by the partners who met farmers from different parts of the country who were formerly engaged in PETRRA activities; they come to visit B R R I for seed, technologies, and information. This has happened because B R R I has become familiar with these people, having established relationships with them (Dr M K B ashar, SP02, B R R I, N A R S). PETRRA interaction with farmers was the first visible initiative to put the liberal seed policy adopted by the government into practice.

Some partners, such as Dr Bashar (SP02, B R R I), thought there was room for improvement in what was done in PETRRA. He thought his subproject (SP02) could have benefited more from intersubproject relationships with other similar subprojects of PETRRA. He regretted that he could not work closely with the Seed Health sub-project (SP00); he thought that the two subprojects could have benefited from each other, if they had worked hand-in-hand, as both projects worked on seed and thus had common concerns. The technology that was promoted by each of these subprojects could be sustained better if the two had had a strong collaboration (Dr M K B ashar, SP02, B R R I, N A R S).

6.2.2. Seed health technologies showed important pro-poor impact potential

Dr M A R a z z a q u e (B A R C, SP32) thought that the Seed-Health Improvement Subproject (SHIP, SP00) had developed a number of good technologies, and these were recognised by all concerned. The technologies were formally handed over to DAE for dissemination. He observed that the outputs of the research have brought a big change throughout the country. The subproject was able to communicate the benefits of using good seed to farmers in Bangladesh (Dr M A R a z z a q u e, SP32, B A R C chair, N A R S). Dr Bashar also thought that the SHIP (SP00) made a good contribution. He thought that the subproject was able to make a huge number of resource-poor farmers and extension workers aware of the importance of good seed nationally. He also observed that, in Bangladesh, everyone who works in the rice field of became more knowledgeable about the importance of good seed because of that subproject. They precisely learned the fact that good seed helps increase rice yield by at least by 10 percent. All concerned also learned that good seed means good harvest – the two became synonymous. Dr Bashar wanted to attribute the success to PETRRA because of its good work and the seed awareness it was able to create (Dr M K B ashar, SP02, B R R I, N A R S).

The effectiveness of the seed health technologies attracted many PETRRA partners. They used these technologies in their respective subproject, or in projects and programmes that were based on PETRRA experiences and beyond. All such efforts indirectly recognised and endorsed the impact potential of the technologies. Dr M A T a h e r M i a m mentioned that the SHIP (SP00) innovations were used by many

subprojects of PETRRA from within and beyond its own core partners. RDA, a SHIP partner, together with others, developed a Learner-centred Video Production subproject (SP37); they developed videos on seed-health technologies for large-scale dissemination. They developed their skills beyond seed production and storage, started to organise women and got them involved in the seed business, linked them with BADC to get foundation seed for seed production and also provided support to poor women groups for marketing their seed. The RDA seed and video unit, which was established with PETRRA support, was fully endorsed and recognised by the organization. They attracted donor support to establish a seed technology laboratory, which was initially a PETRRA commitment, where resource-poor farmers will have access to seed-related services at minimum fees (AKM Zakaria, SP00, RDA, govt development organization). EPRC (SP42) and AAS (SP39) in their subprojects used seed-health technologies to test their extension methods. WAVE (SP00), a dissemination partner in the seed health subproject, and Shushilan (SP09) disseminated technologies in their respective core programmes on their own initiative. All such initiatives complemented the main programme objectives of SHIP—creating an impact on the livelihoods of resource-poor farmers through simple and affordable technological interventions (Dr MA Taher Mia, SP00, BRRI, NARS). Most of them liked the technologies as they found them simple and pro-poor. Some more examples are discussed below.

HEED Bangladesh (SP28, 20) adopted seed health innovations (SP00) in their own programme, although HEED Bangladesh was not involved in any seed health project in PETRRA. They selected the innovations as they found those to be effective and remunerative for their clients. CA Mannan (HEED, SP28) indicated that they were not able to disseminate their innovation on the aromatic rice subproject (SP28) because of recurring crop losses caused by the floods after its completion. But they managed to work on useful PETRRA innovations developed by others, e.g. the SHIP, as they found these suitable to poor-farmers they worked with after PETRRA (CA Mannan, SP28, 20, HEED Bangladesh, NGO).

FoSHoL (Action Aid) conducted action research on seed-health technologies that they learned from SHIP (SP00) in PETRRA. Many poor farmers who were trained under the project became skilled seed producers. Later, some of those trained farmers formed CBOs and started their own seed businesses for rice and vegetables. Farmers belonging to such a CBO would produce for their own use and would share a portion of the seed they produce with community farmers. And the surplus they would sell it in the market. Mofizur Rahman thought that the development of such small-scale seed enterprises was one of the major successes of the FoSHoL-Action Aid project that have contributed to pro-poor impact (M Rahman, SP00, CAREB and FoSHoL-Action Aid, INGO).

Based on PETRRA experience, in the FoSHoL (PETRRA followup project funded by EC) project, one partner (Practical Action, INGO) has established a seed school in some of their villages. Farmer

members of these seed schools have been trained; they were linked with the GO-NGO seed networks so that they can access foundation seed and sell their produce in the market. AKM Ferdous, a PETRRA partner who later worked in FoSHoL, successfully used his PETRRA experience in running the seed school activities (AKM Ferdous, SP05, AAS, NGO & FoSHoL- Practical Action, INGO).

6.2.3. Salinity-tolerant variety development research had longer term impact on the way research should be done

The salinity-tolerant variety development subproject (SP13) was a joint BRRI-IRRI subproject. This was one of the subprojects that had continuity beyond PETRRA, without any gap as the research theme was transformed into another project under the Challenge Programme for Water and Food (CPWF 7) within the CGIAR. The subproject introduced the farmer participatory research approach, known as participatory variety selection (PVS), for the saline-prone unfavourable areas in southwest Bangladesh. BRRI did not have a proactive PVS prior to the subproject in 2000 and IRRI then was in its early stages of formulating its PVS practice. The two aspects that attracted Dr MA Salam, the project leader in BRRI were, first, the variability of farmers' fields from one plot to another, providing an opportunity to test varieties across a large number of micro-ecosystems within a particular region. It was easy for scientists working with participating farmers (men and women) to decide the most promising lines. Second, another important aspect was the farmer participation itself. Participating farmers (men and women) constantly worked in the planning, designing, testing, and evaluation of different lines. Farmers then chose their own sets and again cultivated these with their own resources and fed the results back to scientists in different forums. They also brought their own varieties for comparison with the lines tested. The process was convincing for both scientists and farmers. For scientists, the scientific basis for what they recommended was based on adequate data and multiple comparisons. For farmers, it was 'seeing and believing.' The spread of farmer-selected lines and the seed production business of farmer-selected lines by local NGO partners were some of the early indications of success of such selections. Scientists discovered the role of local NGOs in this research process. There was no familiarity before this partnership. This new relationship between scientists and local NGOs created a new opportunity in the area of natural resource management research. Immediately after the PETRRA project finished, a new variety, BRRI dhan 47, was released as a salinity-tolerant variety, a product of the subproject. A few more lines in the advanced stage are to be released soon (Dr MA Salam, SP13, BRRI, NARS).

This experience brought a new energy at BRRI and IRRI and later it was the basis for a number of followup research and development initiatives led by IRRI. Those were the Challenge Programme for Water and Food (CPWF) Project 10, Generation Challenge Programme for germplasm development

and dissemination, and German funding (BMZ) for the continuation of CPWF10. Another project that continued to expand further was the recently commissioned Bill and Melinda Gates Foundation-funded project entitled 'Stress-tolerant rice for poor farmers of Africa and Asia' (STRASA) led by IRRI. Those projects included many other partners across South and Southeast Asia, Africa, and other parts of the world. The Bill and Melinda Gates Foundation projects started to utilise and scale up all materials developed under the previous projects for the purpose of changing the livelihoods of resource-poor farm families. From mere varietal development under PETRRA, the followup projects gradually included issues interfacing water resource management projects (CPWF7) and the programmes of other national research and development agencies that are involved in such projects. For example, in Bangladesh, the CPWF7 involved the Bangladesh Water Development Board (BWDB), the Department of Fisheries (DoF), the Department of Agricultural Extension (DAE), universities, and concerned ministries to address livelihood issues, changing cropping patterns from shrimp only to rice-shrimp and understanding the likely impact of the project on beneficiary farm households. Similar activities were organised in India, Vietnam, Egypt, and Iran (Dr I. Abdelbagi, SP13, IRRI, IARC). Such interactions between two apparently divided disciplines helped create the synergy between salinity-tolerant variety development work that was started in a PETRRA subproject (SP13) and optimum utilisation of coastal water resources (BRRI, SP20) for additional crops, including varieties that are salinity-tolerant.

In addition, there were positive signs in the takeover of responsibilities. The government of Bangladesh has agreed to accept PVS data as the basis for testing a variety prior to national release. This avoids multilocation testing and saves at least a year in the breeding process. Parallel to the research process, farmers and local NGOs are producing seed for marketing and dissemination. The BWDB was initiating a programme to disseminate technologies generated from the project to all potential areas in which they are active. The same network of partners and relationships were used for similar initiatives afterward. This includes the Bill and Melinda Gates Foundation-supported STRASA project with the outcome of ensuring the transfer of rice and other technologies to millions of poor farmers living in marginal areas in South Asia and sub-Saharan Africa (Dr MA Salam, SP13, BRRI, NARS; Dr G Gregorio SP13, IRRI, IARC; Dr I Abdelbagi, SP13, IRRI, IARC).

6.2.4. From PETRRA partnership to many networks and linkages nationally

The seed network developed by BRRI (SP02) was mentioned earlier as the most significant network that evolved in Bangladesh, which involves about 408 government, NGO, CBO, private sector agency members in 2008 (it started with only eight PETRRA members in 2000). The network alone shows the big impact of PETRRA.

Many other PETRRA partners continued to maintain their relationships in different formal and informal forms on different areas of pro-poor agricultural research and development activities after the closing of the project. Some of them maintained their relationships, even though they were not engaged in a formal contract. These were developed as they collectively participated in PETRRA meetings, workshops, or management meetings. But, as they each worked in the project, they came to know each other so well that they developed a relationship. Some of them used that relationship, forming groups to compete for new projects and programmes collectively. One such example was the AID-Comilla-led Community-Based Rodent Management Project, Bangladesh (CBRMP B). AID-Comilla (NGO, SP27, 30) started the project recently (early 2008), funded by RIU¹⁴⁰/DFID, and which was developed based on an earlier project jointly commissioned by PETRRA and NRI, UK¹⁴¹. They included a number of former PETRRA partners; some (BARI, NRI) of whom they had worked with directly and some (e.g. Shushilan, SP09, Mukti, SP31), they had not (RB Shafali, SP30, AID-Comilla, NGO). Some have strengthened their relationships with the partners, even formalising the relationship by signing MoUs¹⁴². For a small and local NGO like Shushilan, the partnership and the relationship with other PETRRA partners had a long-term impact. Getting involved with PETRRA for them was a linkage gain much more than a financial gain. M. Nuruzzaman (SP09) described the example of the RIU project experience and showed how that worked for them.

I must tell you a story about this to understand how important it is for us. Azaad from AID-Comilla, another PETRRA partner, whom I did not know before PETRRA, approached me a few weeks ago. They want to submit a concept note on rodent management to a donor; they want Shushilan to be one of the partners in the proposed project. We agreed to join them and I was informed a few days ago that, yes, that CN has been accepted and Steve Belmain (another PETRRA partner from NRI UK) will come to Bangladesh to write the research proposal this month (Jan 2008). You see the linkages were not stopped as PETRRA closed, it is continuing (M Nuruzzaman, SP09, Shushilan, NGO).

M Nuruzzaman also indicated that their experience with PETRRA was the beginning for them; they became known after they started to build networks and linkages. Through their work with PETRRA, they became known to the world as an important regional NGO in southwest Bangladesh and, after PETRRA, they gained a strong momentum to develop even stronger network linkages with many others. They developed a joint Plant Health Clinic programme with other PETRRA partners such as CABI and RDA (SP00). The PETRRA success of Shushilan attracted the attention of other donors (CONCERN Worldwide and Winrock International) and they received grants from them. Such commitments inspired Shushilan to ensure a long-term commitment to agriculture.

When we started our work with PETRRA, nobody had heard our name, but now, everybody seems to know Shushilan in the NGO world. Shushilan is very well-known also to the donors now. We are one of the network members of UNDP in Bangladesh, among the 30 international and local NGO partners. PETRRA helped us to be known to other agencies through different communication events. Now,

¹⁴⁰ Research into Use programme of DFID (Department for International Development, UK)

¹⁴¹ Natural Resources Institute (NRI) is a specialised institute in the UK

¹⁴² Memorandum of Understanding

wherever we go, we find people who recognise us as a PETRRA partner (M Nuruzzaman, SP09, Shushilan, NGO).

The AAS (SP05, 17, NGO) model of forming networks of local NGOs and CBOs was recognised widely by other agencies and later was used by many. The model includes partners without any financial cost, where all would get the benefit of their relationship. AAS developed the approach in its FARMSEED model for technology dissemination. AAS continued to adopt the model in their work with some of the PETRRA partners in SHIP (SP00) such as CABI, RDA, and TMSS in the field of agricultural R&D after PETRRA ended. Together, they developed and continued the Good Seed Initiative (GSI) project until the end of 2007. Together, they further developed the PETRRA videos developed in its Learner Centred Video Production subproject (SP37) on seedhealth issues (SP00) and incorporated additional innovations. They revised the videos made during PETRRA and developed three additional ones and finally made a total set on rice seed technology starting from production to postharvest to storage (Harun Ar-Rashid, SP05, 17, 44, AAS, NGO; AKMZakaria, SP00, 37, RDA, govt. development organization).

Not all partnerships were sustained. Over time, the ones that had appropriate background and potential for complementarities were sustained and further strengthened. ARDBRRI (SP01) had worked with several NGO partners in its adaptive research on rice technologies. Among them, the partnership with RDRS was sustained as RDRS had continued to champion agricultural R&D since they have worked with PETRRA. The partnership was founded on a strong relationship that benefited both parties; BRRI continued to arrange a number of demonstrations and exchange visits at RDRS farmers' fields (Dr Musherraf Husain, SP01, BRRI, NARS).

Some PETRRA partners from BRRI continued to maintain their relationship with their NGO partners. One such example was Dr GJU Ahmed who used to send farmers interested in duck hatchery technology for training to FIVDB, a skilled NGO on duck technology dissemination and a former partner in the integrated rice-duck subproject in PETRRA (Dr GJU Ahmed, SP19, BRRI, NARS).

The partners' ability to operationalise values into practice grew over time in PETRRA and some of them had the opportunity to use some of those experiences in subsequent followup projects that originated from PETRRA work. The learning process that Dr Mondal (SP20) experienced in PETRRA on the value of partnership was discussed before. Here, he described his colleagues in the CPWF10¹⁴³ project as having undergone a similar process.

Partners of CPWF10 project enriched themselves by establishing linkages; they did not realise the importance of partnership and linkages so strongly before. They also introduced their new learning into

¹⁴³ Stands for Challenge Program on Water and Food under the CGIAR; IRRI in partnership with BRRI and some other partners implemented the project as a followup of PETRRA in the field of water management.

the papers they were producing. The recognition of partners about other disciplines in their writing was very evident; engineers took care of social and environmental issues, poverty issues, etc. Those were new phenomena (Dr M Mondal, SP20, BRRI, NARS).

6.2.5. Communication activities had strong elements of impact

For BRRI scientists, communicating scientific information to its ultimate users, the farmers, for impact was not formerly part of their mandate. They never felt that as their responsibility. But, in PETRRA, as the communication needs of resource-poor farmers unfolded, like other partners, they too gradually learned to appreciate the importance of communication and understood its need for impact. Dr Bashar considered communication as one of the major significant achievements of PETRRA. He observed that those who were involved in PETRRA research learned that it is not enough to develop a technology: someone needs to communicate and disseminate it. Each of the researchers involved in the project experienced the benefits from doing it. He thought that the scientists who were involved in PETRRA ultimately came to know the importance of exposing and presenting their innovations to a wider community (Dr MK Bashar SP02, 22, BRRI, NARS).

6.2.5.1. *Bangladesh Rice Knowledge Bank: important seed sown for impact*

Sustaining knowledge in the system through knowledge bank development was a significant initiative in PETRRA. The concept was initially brought from the IRRI Knowledge Bank on rice but developing something similar in the local language and making it a national hub on rice knowledge and getting the highest level of scientific endorsement was something very exciting for the project. Partners understood the importance of such a knowledge hub and, within few years after PETRRA, some other national agricultural institutes also followed similar paths to develop a knowledge bank on other enterprises such as vegetables, fisheries, livestock, and many others.

Partners recognised that much of the work done before could not be sustained. They thought that PETRRA rightly chose to digitise the materials and make them available in a website, namely the Bangladesh Rice Knowledge Bank¹⁴⁴ being developed and managed by BRRI. In this era of technology, partners expected that farmers should be able to know, see, and listen to information about a technology at home as they would be testing it in their fields (T Bose & AK Azad, SP23, BARD, govt development organization).

¹⁴⁴ Rice Knowledgebank (www.knowledgebank-brii.org), developed in partnership with BRRI, is available at the net. Initially, it was started with PETRRA subproject materials but gradually all sorts of rice knowledge materials, including training modules produced by BRRI and other organizations were archived in it. The site is managed by BRRI.

Many materials developed under the project such as leaflets and posters for farmers on technologies were included in the B RRI published book on rice production technology (B RRI 2 007), a logical destination for rice knowledge in Bangladesh. The Bangladesh Rice Knowledge Bank was developed to preserve all such materials, which were apparently found not much useful at that moment but development of such a digital archive of rice knowledge was very important for the future. The development of fact sheets and other tools, which was initiated under PETRRA for the knowledge bank, was not stopped (Dr Saidul Islam, SP33, B RRI, NARS).

Partners recognised the Bangladesh Rice Knowledge Bank (BRKB) as an effective tool for sustaining knowledge beyond the project. Policy-level stakeholders such as the secretary and the adviser for the Ministry of Agriculture were aware of the significance of the tool. National news media gave good coverage of BRKB in the news (Dr M Musherraf Hossain, SP01, B RRI, NARS). Knowledge-bank-based rice production training modules were developed and published and training was organised on the basis of those modules. This was expected by Dr Rafiqul Islam of B RRI to be a very significant course for farmers and extension workers in the long run, when access to computer would be easier locally (Dr M Rafiqul Islam, SP26, B RRI, NARS). T Bose and AK Azad (BARD, SP23) found Bangladesh Rice Knowledgebank as a unique innovation in P ETRRA (T B ose & A K A zad, SP23, B ARD, govt. development organization).

6.2.5.2. Seed technology videos made a big impact

It was mentioned earlier in this chapter that RDA, in collaboration with CABI Bioscience, UK, and some other partners had the subproject in PETRRA, the Learner Centred Video Production (LCVIP, SP37) that developed videos based on seed-health technologies and innovations that came out from the PETRRA SHIP (SP00). Videos produced jointly by R DA and C ABI (UK) under P ETRRA were disseminated to many parts of the world. The videos were translated into more than 30 different languages by WARDA, the Africa Rice Center. These videos were disseminated to India, Cambodia, and Nepal by IRRI and to many African countries by WARDA, the Africa Rice Centre. The principal researcher¹⁴⁵ of the (LCVIP) subproject (SP27), who has been working in WARDA, Africa, had taken them to Africa¹⁴⁶. Dr Mahabub Hossain, former head of the Social Sciences Division of IRRI and a seed health research team member of IRRI, had helped disseminate 60,000 CDs of seed health videos alone to the Indian states of West Bengal and Assam. RDA continued to provide video-based training learned under PETRRA project support to PETRRA followup (CPWF7, CPWF10) projects (CURE¹⁴⁷ of IRRI,

¹⁴⁵ Dr Paul Van Mele is presently working as the Programme Leader, Learning & Innovation Systems, WARDA (Africa Rice).

¹⁴⁶ Two recent papers gave a very promising picture of the use and impact of videos across Africa. During 2005- 2009, Bangladeshi rice videos have been translated into 30 African languages; the videos helped strengthen the capacities of 500 organizations and hundreds and thousands of farmers. Van Mele, P., J. Wanvoeke and E. Zossou (2010). "Enhancing Rural Learning, Linkages and Institutions: The Rice Videos in Africa." *Development in Practice* 20(3), 414-421. Van Mele, P., et al. (2010a). "Video bridging Asia and Africa: Overcoming cultural and institutional barriers in technology-mediated rural learning." *Journal of Agricultural Education and Extension*.

¹⁴⁷ Consortium for Unfavourable Rice Environments

FAO). RDA seed and video units, which were established with PETRRA support, were fully endorsed and recognised by the organization. Later, the PETRRA video unit was established as a permanent video unit for the institute (AKM Zakaria, SP00, 37, RDA, govt. development organization).

In addition to seed health videos, based on their experience, RDA, in collaboration with its partners in PETRRA supported the LCVIP subproject which CABI Bioscience started to develop, complete with seed production, processing, and storage videos under a project called Good Seed Initiative (GSI). In that followup activity, RDA continued to include a former partner from BIRRI, Dr Taher Mia, as an adviser to review the scientific content of the video (Dr MA Taher Mia, SP00, BIRRI, NARS).

In late 2007, the agricultural adviser of the Government of Bangladesh (equivalent to a minister) visited Maria village where the PETRRA seed health (SP00) research was conducted; he witnessed the use and development of the technology and saw the videos while discussing with the project women. The adviser was familiar with the seed health videos that RDA was associated with from the BTV programmes; when he got the practical positive experience from that village visit, he then immediately instructed RDA and the ministry to immediately organise a regional divisional conference for the deputy commissioners and DAE high officials in the region (Rajshahi) to disseminate the technology. Later, BARC, in collaboration with the DAE, developed and distributed training and dissemination materials and video CDs to scale up the innovation in the region at a large scale through the network of deputy commissioners and DAE officials (AKM Zakaria SP00, 37, RDA, govt. development organization).

6.2.5.3. *PETRRA materials continued to be used to deliver impact*

Most partners continued to the development of materials and tools for communication and built on the experience that they gained in PETRRA. They utilised all possible opportunities created by others at home and abroad in their projects and programmes. The communication materials developed by EPRC in PETRRA are still being used by many (Sufia Khanam, SP42, EPRC, NGO). The innovations in the LITE subproject (SP27) continued to be shown on TV as it remained relevant to farmers. The relationship that was developed among partners and the TV channels also remained as both parties benefited from it (RB Shafali, SP27, AID-Comilla, NGO).

Syngenta, a private sector multinational company, jointly worked with an NGO (SAFE) and developed a training manual on herbicide use under a PETRRA subproject (SP40). The manual was found very effective in training field workers and herbicide dealers on weed management using herbicides. If not government departments, many private sector agencies have been using this manual. Many of them asked for copies of the manual from its developer partners (SAFE & Syngenta). Syngenta working with

an NGO partner was a first in the PETRRA project; it was an eye opener for them. Now, they work with many other NGOs. They have worked on similar development issues with many donors since then: the DFID-funded project with NRI, Swiss contract, Katalyst. Wherever they work, they have a business interest. From PETRRA experience, they learned to mix social issues (e.g., working with resource-poor farmers) with their business interest. They have established a permanent training centre in northern Bangladesh to continue training on development issues that interface with their business interest. They started this in PETRRA and they are still continuing and developing the profile further (Mahbubur Rahman, SP40, Syngenta, pvt sector organization).

FoSHoL, the PETRRA followup project for disseminating pro-poor agricultural innovations (including the ones developed in PETRRA), had, in many respects, replicated PETRRA communication tools. They published magazines/newsletters for their members, organised a large number of field days, organised local fairs, distributed posters and other communication materials in the field, and organised cross visits for farmers. Action Aid Bangladesh, a FoSHoL partner along with the help of their subpartners, established a cultural wing that worked closely with the organization-building cell of the organization. They also had engaged strongly with the media (M Rahman, FoSHoL-ActionAid). Some other projects such as the ICM of DAE mentioned earlier used PETRRA materials developed by the Participatory Integrated Nutrient Management subproject (SP17) and incorporated the concepts into their programme (Harun-Ar Rashid, SP 05, 44, 17, AAS, NGO).

6.2.6. Graduate education-research linkage - an important capacity development impact

PETRRA adopted a training guideline very early in the project. One aspect was clearly mentioned in the guideline: that the degree (MS and PhD) would be linked to a subproject and the research for the degree should be guided toward achieving the subproject purpose. In practice, the partners achieved much more than what was captured in the guideline.

A research activity within the RP (research proposal) may constitute postgraduate degree-level thesis work. It is in the context of thesis work linked to a research output that the term degree training applies (PETRRA 2000d: 1).

Many subprojects utilised this opportunity to train their researchers in MS and PhD programmes in-country and abroad. Research under this programme was linked to the research and development agenda of the PETRRA subprojects. This research extended opportunities for university teachers and students to be exposed to demand-led, poverty-focused, and participatory and impact-oriented research. Such opportunities also helped the concerned subprojects as they received direct output. And the universities concerned had the opportunity to enter into a new experience with practical

implications; they had a chance to make research-education relevant to poor farmers. For some subproject leaders, this has been an emotional attachment and a great achievement as they could mainstream and transmit their knowledge of values-based research to future generations. This new approach and the partnership between research and education helped universities to revise their curriculum. It was also a pressure on them to change the existing postgraduate research-education system (Dr M Mondal, SP20, BRRI, NARS; MG Neogi, RDRS, SP07, RDRS, NGO).

Traditionally, in agricultural universities, graduate students (MS and PhD) used to decide, conduct, and publish a research based on an experimental design and interpretation of data gathered by the students, without having any involvement with farmers. They used to come out with recommendations that were not used. RDRS (SP07) introduced a new approach in graduate research¹⁴⁸ and study, which was based on the demand and participation of the poor farmers. It was not the case in traditional postgraduate research prior to the PETRRA project. The approach involved students, farmers, the community where the research was conducted, the student supervisor from the university, RDRS, and the farmer organization (known as the federation). All these actors constituted a forum through which research experience is shared. By the end of 2008, 70 students completed their MS or PhD research. By the time PETRRA closed in 2004, 24 students had completed their research. Each student addressed one specific local problem, the result of which was shared within the group and the community. RDRS used the research findings; fine-tuned, and added them to their agriculture programme. They also shared the findings in wider forums. The practical benefit for each student was better employment opportunities; they performed better in selection tests for jobs. This initiative was started as a component under PETRRA and was gradually developed as a core programme of RDRS. RDRS has already signed an MoU with several universities in Bangladesh and abroad for pro-poor agricultural research and education on a partnership basis. These institutes are convinced about the effectiveness and positive impact of farmer-need-based participatory research in the field of agricultural education that was piloted and experienced in PETRRA. It has been further supported through RDRS's core or newly initiated project funding. RDRS has been planning for an advocacy programme with the government and universities to mainstream the approach within the agricultural education system of Bangladesh (MG Neogi, SP07, RDRS, NGO; Salahuddin, 2008 #155).

BRRI partner Dr MK Bashar introduced a seed technology course in the university, BSMRAU, and has already trained several scientists on seed technology. He has also been supervising other postgraduate students who are conducting their MS and PhD research in the same university. Dr Bashar plans to pursue on the condition that future seed-producing agencies should follow: to employ at least one agriculturist who will have a degree on seed technology so that they can contribute to the impact more

¹⁴⁸ Perhaps for the first time in Bangladesh

professionally (MK B ashar, SP02, B RRI, NARS). In the B RRI-led coastal water management subproject, two PhDs from the University of the Philippines and 10 MSs were produced from Khulna University Bangladesh. Dr Mondal, the leader of the subproject from B RRI, commented: 'My intention to include Khulna University in the project was to open up their eyes in research for the area where their university is located'. He expected that such awareness will have a big impact on future research, which is demand-led and pro-poor impact-oriented (Dr M Mondal, SP20, B RRI, NARS).

Four PhD research studies were conducted on SRI, the controversial technology on the part of the scientists from B RRI. Gopal Chowhan from SAFE, a PETRRA partner in one of the SRI research subprojects (SP36), found this a very positive development. This showed clear recognition of the need to work closely with NGOs, poor farmers, and the extension department on a technology that originated from farmer practice. Such research would help understand the impact potential of the technology on resource-poor farmers (Gopal Chowhan, SP36, SAFE, NGO).

6.2.7. PETRRA innovations disseminated by organizations, projects, or programmes

The dissemination and use of PETRRA innovations have also been taking place in unexpected forms. It happened among subprojects, which exchanged innovations with each other. There were examples of new subprojects that were formulated on the basis of innovations emerging from earlier subprojects of PETRRA. There were examples of projects and programmes that have learned from PETRRA and have used these to formulate new programmes, as they found them useful for their clients and as they were convinced of the potential of the innovations that would complement their objective. A few have already been mentioned in the sections above, some more significant examples are presented here in brief.

Dr M A Saleque (B RRI, SP17) referred to the DANIDA-funded ICM (integrated crop management) project. It has been engaged in the field of nutrient management, together with the DAE, for a long time in Bangladesh and had replicated participatory farm mapping tools developed by B RRI and the AAS-led participatory nutrient management subproject (SP17) of PETRRA. Dr Saleque and his other partner colleagues in the subproject gave a briefing on the innovation to the DAE ICM formulation team as a part of their dissemination strategy at the end of the subproject. The initiative inspired the ICM project staff to disseminate the innovation and expected the results to be good as they had read about the innovation story in the book *Innovations in Rural Extension* (Saleque et al. 2005). But, later, the PETRRA partners found that the ICM project was technically successful in replicating the PETRRA learning without having any face-to-face briefing by the team. The team struggled to achieve as great a

poverty focus in their programme as they expected. For the ICM project, it was the ability of the PETRRA partners to achieve a poverty focus that impressed them and that was why they were interested to learn about that aspect of values from the PETRRA subproject partners. ICM was first piloted in three upazilas and later was replicated throughout Bangladesh. Dr Saleque also had received very positive responses to his paper on the PETRRA innovation (Saleque et al. 2008) from journal editors/ reviewers as they found the story of participatory nutrient experience to be very innovative. Dr Saleque considered all such evidences as positive responses to his innovation that will have longer term impact (Dr MA Saleque, SP17, BRRRI, NARS).

MA Salam confidently indicated that APEX (SP29, NGO) consolidated its skills as a NGO under PETRRA. They learned to work with resource-poor farmers and were able to reach a partnership with them as contract growers of aromatic and fine rice. APEX also managed to link the poor farmers with the market through traders and millers. The traders the farmers were linked to were from both local and international markets. APEX continued to develop and expand the link with the poor farmers' groups under the PETRRA followup project, FoSHoL. The partner agency was able to further consolidate their social business with fine and aromatic rice export. MA Salam reported that APEX continued to maintain its link with all former PETRRA partners in the business chain: the exporters, the millers, and the local traders who worked with them in the PETRRA subproject (SP29). As FoSHoL had emphasis on poverty reduction as well, they could continue to keep their focus on PETRRA values, working with the poor and with women, maintaining linkages and partnerships as a strategy for poverty reduction (MA Salam SP 29). Dr M A Razzaque (BARC chair, TEC member & SP 32), research manager, was happy to see a number of subprojects commissioned by PETRRA on non-traditional issues. He thought the organizations benefited from those subprojects for a long time. He gave the example of the aromatic rice production and marketing project (SP29); he thought that the subproject was innovative and was able to link greater livelihoods issues within them and also investigated the ways and means to achieve rice provisioning ability by poor farmers. According to him, PETRRA had all the necessary elements to bring about change (Dr MA Razzaque, BARC chair, TEC member & SP32, NARS).

The introduction and funding of the FoSHoL project by the European Commission was an endorsement to PETRRA's pro-poor, simple, and impact-oriented research outputs. The project drew on technologies primarily from the PETRRA project and aimed to contribute to increased food security¹⁴⁹ (IRRI 2004). FoSHoL tried to disseminate technologies and innovations from PETRRA as much as possible through its three principal international NGO partners and many other local partners, but each of them chose

¹⁴⁹ The overall goal of FoSHoL was 'to improve the livelihood, and specifically the food security, of small and marginal farmer households by increasing the availability and access to food, as well as improving its utilisation by those households' IRRI (2004). Inception Report: Food Security for Sustainable Household Livelihoods (FoSHoL). Dhaka, International Rice Research Institute: 80.

technologies and innovations at their own convenience. Many examples from FoSHoL that referred to the uptake of PETRRA technologies and innovations appeared in interviews and are presented in appropriate sections in the thesis.

SAFE (NGO, SP36), along with other partners (BRAC, Syngenta, and POSD, SP36), had worked on SRI technology under PETRRA (SP36). Based on that experience, later they worked with the OXFAM-funded river basin project partners from different parts of Bangladesh. All these partners came to know about the SRI¹⁵⁰ technology and the work of the PETRRA partners. They collected some of their materials and started working on their own initiative. SAFE, together with these new partners, has been trying to organise an advocacy programme at the national level to help formulate national policies to upscale the SRI technology in Bangladesh. Gopal Chowhan was optimistic that he can get such support from the government (Gopal Chowhan, SP36, SAFE, NGO).

AID-Comilla, in their core programme, disseminates PETRRA-LITE¹⁵¹ (SP27) learning. They tried to include their learning on IPM from PETRRA with farmer members who are engaged in activities such as agriculture, fisheries, and vegetable gardening. Some are done as part of their credit programme. In addition, they also shared LITE results among 19 local NGOs during the life of the PETRRA project and the rodent findings (SP 30) with three NGOs (RB Safali SP 27, 30).

RDRS was involved in three subprojects under PETRRA (SP07, 25 & 41). They packaged all the innovations that came out of these subprojects and incorporated and scaled them up into their mainstream programmes. The research findings that emerged from PETRRA have directly benefited farmers, the community, and RDRS as an organization (MG Neogi, SP07, 41, RDRS, NGO).

As for the sustainability of the innovations, some NGO partners thought that those with agricultural programmes before had the advantage, they could start dissemination activities easily compared with those who did not have any. Chashi (HEED Bangladesh, SP 28, 20) observed that most NGOs with agricultural programmes from before could continue to disseminate innovations immediately and continue the same even after the PETRRA project was terminated (CA Mannan, SP28, 20 HEED Bangladesh, NGO). There were examples that suggest exceptions; many of the NGOs that did not have agricultural programmes early on also had success stories afterward.

Some of the PETRRA subprojects achieved unintended impact as the technologies that were tested with poor farmers had such potential. The engagement process of the research team with poor farmers

¹⁵⁰ System of Rice Intensification

¹⁵¹ LITE, which stands for Livelihood Improvement through Ecology, was the short name of the subproject with PETRRA; it actually developed IPM practices.

was such that they together could achieve much more than what was originally anticipated and, in some cases, the poor farmers accepted only the technology elements that matched their demand, instead of the complete technology package. Two examples are presented here. In the case of USG technology, farmers tested the technology on rice under PETRRA but later used the technology for other crops such as vegetables, betel leaf, and horticulture crops. Dr Mazid considered it a farmer discovery (Dr MA Mazid Mia, SP21, B RRI, NARS). Another example was the SRI technology; in many places, farmers did not accept the complete package of the technology but accepted some basic elements, which they found profitable or cost-saving¹⁵² (Dr M A L atif, S P35, B RRI, NARS; Go pal Chowhan, SP36, SAFE, NGO).

6.3. Organizational and institutional sustainability

6.3.1. Some indications of organizational and institutional impact

The policy-level engagement that PETRRA started in the field of agricultural research and development for pro-poor impact continued to be strengthened. CPD (SP24) continued to work in the field of agriculture, in both research and policy dialogues that they started under PETRRA. With former partners such as Dr M Hossain from IRRI (who recently joined BRAC as executive director), they continued to conduct research on agricultural issues that started under PETRRA. The research products of the PETRRA subproject are being used by different users such as the government, the donors, and the projects as basis of the latest available knowledge in the country; these documents and results helped policymakers gain a complete understanding of the relationship and link between rice research and poverty elimination. Many of the partners of the subproject were like-minded, they together could work comfortably with due recognition of each other's work. The relationship continued in some form, even after the subproject was closed (Dr Uttam Dev, SP24, CPD, NGO).

There were some concrete outcomes from the efforts of PETRRA; some organizations such as B RRI and other NARS institutes got access to funds through a semi-competitive system. The engagement of policy people in PETRRA activities had a big impact on the way the government allocated resources and gave priority to agricultural research and development activities. Dr MA Salam (SP13) had the opportunity to observe PETRRA activities from different perspectives. He was an active subproject leader and later, he, together with IRRI scientists, developed a few more projects under the CGIAR Challenge fund. He then was promoted as director for research of B RRI. He saw closely how PETRRA

¹⁵² Some of them are the use of one seedling per hill, the use of young seedling, judicious use of water for irrigation, line transplanting, and wide spacing.

influenced the national system. He thought PETRRA was successful in influencing policymakers to allocate more resources for research.

The government is now coming up with special efforts, allocating resources for research, encouraging submission of proposals of new research, and encouraging recruitment of scientists for special research programmes on a temporary basis. During PETRRA, the NARS leaders and the ministry people had a lot of engagement; they visited most of the research areas, which was very helpful to make leaders understand the need for additional investment on research (Dr MA Salam SP13, BRRI, NARS).

Dr Thelma Paris observed changes at IRRI and she wanted to attribute the change to PETRRA. She (IRRI, SP24) indicated a number of positive impacts that she observed in IRRI, to which, she thought, PETRRA has a direct or indirect contribution. The statement below captures her opinions.

After PETRRA, at IRRI, more and more scientists are talking about scaling up. CPWF projects talk about impact pathways, objective tree, most significant change, etc. Many biological scientists now use PRA, FGD, and surveys. There was lots of capacity building on such issues. PVS became a new tool for many scientists; at least 20 percent of the women are included in PVS. Field days are organised by technical persons. There is an indication of change among scientists. In IRRI, we have projects on technology dissemination funded by IFAD and we have the Consortium for Unfavorable Rice Environments (CURE). These projects have many aspects in common with those of PETRRA. All these perhaps can partly be attributed to PETRRA.

Noel (former PETRRA project manager) is now part of Program 7.5, which is responsible for organising and assessing the pro-poor impact of IRRI research activities. We are able to institutionalise the learning and are in a better position now. Suppose there was no Noel, I am not sure what would have happened (Dr Thelma Paris, SP24, IRRI, IARC).

Dr MK Bashar thought that PETRRA was a successful project. 'Perhaps that was why the World Bank has recently introduced the National Agricultural Technology Project (NATP), to replicate the approach in Bangladesh; it especially incorporated the competitive research commissioning system of PETRRA', he commented as he referred to the new project, initiated by the World Bank Bangladesh (Dr MK Bashar SP 02, 22, BRRI, NARS). Another partner, AKM Ferdous, commented that 'PETRRA was a successful project; it gave birth to a new project, FoSHoL' (AKM Ferdous SP 05, 17, AAS, NGO & AA-FoSHoL, NGO).

6.3.2. Some organizations were transformed

Many partner organizations have been transformed as they became PETRRA partners. Some had limited or no prior agricultural programme, many had no exposure to agricultural research, and many did not have any linkage with any research or extension agency. For many of these organizations, working with resource-poor farmers or working with poor women on agricultural issues was never an experience or an expertise, as most of their activities involved non-farm activities in relation to micro-credit. But, after their positive experience with PETRRA, almost all of them got involved in agriculture, worked with poor farmers and women, and they became known as good organizations that coordinate national research and development activities in the field of agriculture. Working in agriculture and

finding agriculture as an important entry point for poverty elimination was a discovery for many of these NGOs. A brief summary of the achievements of the partner NGOs, which captures the change among the organizations, is presented in Table 6.1 below. The table is prepared on the basis of the interviews with MG Neogi, SP07, 25, 41, RDRS, NGO; M Nuruzzaman, SP09, Shushilan, NGO, Momtaz Roomy, SP31, Mukti, NGO; Sufia Khanam, SP42, EPRC, NGO; Fashiur Rahman, SP08, ABC, pvt organization and Mahbubur Rahman, SP40, 36, Syngenta, pvt organization.

Table 6.1 Change in organizations because of PETRRA involvement that created impact potentials

Indicator Partner organization	Agricultural programme involvement	Importance in agriculture	Experience in working with poor farmers	Experience in working with women in agriculture	Linkage with agencies active in agriculture	Future vision on agriculture as an organization
RDRS (SP07, 25, 41)	From weak to strong now	From low to very high now	Had but not as efficient as it is now	Was limited in homestead but now in all kinds of agriculture	Champion of linkages with organizations working in agriculture from no or very low level of linkage with a few organizations only	Most important means to reach and sustain development among the poor
Shushilan (SP09)	From almost no programme to strong now	From no awareness to high now	Worked with the poor but not always with farmers; they are in focus now	From no experience to high coverage	From no linkage to strong linkage with BRRI, DAE	Reaching resource-poor men and women through agricultural activities
Mukti-O-Nari (SP31)	From no programme to some now	From no awareness to high now	From no awareness to high now	From no awareness to high now	From no linkage to moderate linkage with a few organizations	Reaching resource-poor men and women through agricultural activities
EPRC (SP42)	From no programme to some now	From no awareness to high now	Worked with the poor but not in agriculture; they are in focus now	Worked with the poor women but not in agriculture; they are in focus now	From no linkage to good linkage with NGOs working in the field of agriculture and BRRI for breeder seed	Making sure that all projects and programmes have agriculture component with women
AID-Comilla	Only had some on IPM that has been strengthened further	From low to very high now	From no target to focus on the poor now	From no awareness to high now	From low level of linkages to many national and international organizations now	Becoming a specialist research and development organization in the field of IPM and rodent control
ABC (SP08)	From no programme on rice to strong rice seed programme now	From low to very high now	From no awareness to high now	From low to moderate now	From low level of linkages to very strong with national institutes, farmers, and seed dealers	Becoming champion in the field of social seed business in agriculture, especially in contract farming of seed
Syngenta (SP40)	Had but only business	From moderate to very high	From no awareness to high now	From low to high now	From no linkage to good linkages with many national organizations and projects active in the field of agriculture	Becoming champion in the field of social agro-business with poor farmers

6.3.3. Focal Area Forum – a sustainable approach for scaling up impact¹⁵³

The development of the Focal Area concept and the way it has unfolded until today is an example of a sustainability concept that one project could think of. It started with an intention to be inclusive of non-project players and actors so that project and sub-project learning can be communicated and scaled up for wider impact. During the life of the project (1999-2004), PETRRA had begun to mobilise project and non-project partners of the regions to up-scale available technologies and extension methods through the use of locally available human, physical, and financial resources. At the end of the project, there was an established forum committed to experimentation and dissemination of pro-poor technologies. A MoU¹⁵⁴ was signed between DAE (government extension agency) and RDRS (NGO, SP07, 41) to ensure a government and civil society partnership for regional development. While RDRS was entrusted as the permanent secretariat, the regional head of BRRI was the first chair of the forum. The minister endorsed the forum and under the MoU, cooperation among all concerned parties continued to unfold (Van Mele et al. 2005).

The concept development process was conceived as the PETRRA-PMU was drafting its project exit plan. It was recognised that, within a given region, there is a range of government institutions, NGOs, and private sector agencies that, together, could ensure a greater impact of agricultural research and development (R&D) for resource-poor farmers. Through a forum, it would be possible to bring research and delivery organizations closer to their clients (PETRRA 2000; PETRRA 2000a). The justifications for such a forum were as follows:

- Many activities are ongoing in the regions, which are very relevant to poor farmers but are not known to relevant actors;
- There is a national agriculture extension policy¹⁵⁵ (NAEP) that gives legitimacy to the actors working together;
- Such forum can help develop communication and linkage among actors;
- Consistent knowledge of innovations and their movements can be ensured through forum networks;
- Raising the voice of the resource-poor men and women would be easier through GO-NGO extension agents;
- Advocacy and gender issues could be addressed through such forum;
- Joint capacity development activities for farmers and field workers could be easier through such forum; and

¹⁵³ This section is written based on a conference paper at the Seasonality Revisited Conference at IDS. The actual information was extracted from the interviews with concerned PETRRA partners. Salahuddin, A., M. G. Neogi and N. P. Magor (2009). Addressing Monga Through a Collective Regional Forum Response in the Northwest of Bangladesh. *Future Agricultures Consortium International Conference on Seasonality* IDS: 11.

¹⁵⁴ Memorandum of Understanding (MoU)

¹⁵⁵ New agricultural extension policy GoB (1996). The New Agricultural Extension Policy (NAEP). M. o. Agriculture. Dhaka, Government of Bangladesh. This encourages actors to work with existing farmer groups instead of individual farmers. As the government extension agency, DAE does not organise farmer groups as they could easily use NGO-organised groups to disseminate technological information.

- Sharing human, physical, and financial resources according to each agency's provision for common cause could facilitate collective activities where all could share due credit.

Although the PETRRA PMU conceived the idea,¹⁵⁶ it did not have a clear strategy to facilitate and implement the activities of the focal area forum. For the PMU, the commitment was to help actors discover an effective way of working together with different stakeholders that would help consolidate direct impact from ongoing research and development activities for resource-poor farm households. PETRRA wanted to bring together actors with potential for impact, regardless of their organizational identity as government or non-government agencies. This was new territory for I RRI, as it had traditionally worked with government agencies only. PETRRA decided to be open and experiment with different alternatives in three different regions of Bangladesh. These were the northeast, the southwest, and the northwest.

In the northeast, the leadership was tried with the district office of the government's Department of Agriculture Extension. The frequent transfer of district government extension officers meant that DAE providing the facilitating leadership was problematic. A regional NGO, Friends in Village Development (FIVDB, NGO, SP19), was also approached, but the leadership within the organization for agriculture meant that they were not ready to give such a leadership. Later, another agricultural NGO, the Agricultural Advisory Society (AAS, NGO, SP05, 17) was asked to take the lead. AAS was not from the region but, through PETRRA, has done excellent work in the region. However its presence was dependent on projects and it did not have a long-term presence. From this perspective, it was not a good choice.

In the southwest, the B RRI regional office was approached to take the lead, but the local head of B RRI did not take up the challenge. As the activity was not part of the head's 'official' mandate, participation was not obligated. Within a government agricultural research institution like B RRI, success in a regional station is very dependent on the motivation of the individual. The response in the southwest contrasted with that in the northwest.

It was the northwest region that responded to the focal area forum concept. A factor that was essential for such a forum was the existence, interest, initiative, and leadership of a regional NGO actor that could take the role of host.

¹⁵⁶ The focal area forum development concept was not a part of the original project document.

Northwest Focal Area Forum: an example of a sustainable strategy for pro-poor impact:

The northwest focal area forum was formally established in 2002 after one year of discussions and meetings with all actors in the region who work on rice and do agricultural research and development-related activities. The members were farmer representatives (men and women) from federations, government agencies (DAE, BRRI, BINA, BADC, BARI), and NGOs (RDRS & GKF), and private sector seed production and marketing agencies (East West Seed and Namdhari Malik Seed). RDRS (NGO, SP07, 41) was entrusted as the secretariat and it was decided that each agency will chair the forum by rotation.

The Northwest Focal Area Forum articulated four objectives (Van Mele et al. 2005):

- Movement of knowledge on rice-based innovations: Under this programme, the members disseminated PETRRA-identified suitable technologies for the regions such as Brridhan28 and Brridhan29¹⁵⁷, LCC¹⁵⁸ dissemination, and capacity building for its use and the RDRS federation model for seed uptake (Samsuzzaman and Van Mele 2005). The forum used the RDRS-organised farmer field schools - the majority of whom were female groups - for technology dissemination. The availability of consistent knowledge has been a big challenge for extension agents as they would often receive different versions of recommendations from different agencies and even from different divisions within the same agency.

A second set of interventions focused on *monga*¹⁵⁹-mitigating technology after PETRRA was closed. The forum introduced a short-duration rice variety, Brridhan33, and the direct seeded planting method. RDRS, BRRI, BRDB, and two other NGOs (TMSS, SP37 & USS) in the region jointly implemented the programme under the leadership of the forum. The programme was funded by Research Initiative Bangladesh (RIB). IRRI, under the Irrigated Rice Research Consortium (IRRC), engaged with the focal area forum. In 2006, IRRI, with some of the local NGO partners of Inter Cooperation (SOLIDARITY, USS, GAUS, SEED), researched and further refined the *monga*-mitigating technology through a package of technologies that comprised direct-seeded BRRIDhan33 (Mazid et al. 2009). The technology and its refinements have been highly endorsed by all concerned. Since its introduction, it has proven to effectively generate employment for poor households through the labour required for early harvesting. The technology and the approach taken by the northwest focal area forum were widely accepted. It

¹⁵⁷ BRRIDhan28 and BRRIDhan29 are two modern winter rice varieties developed by BRRI adapted as suitable varieties for the region under the PETRRA-supported and RDRS-led seed uptake project.

¹⁵⁸ The leaf colour chart is a simple diagnostic plastic tool used to understand nitrogen need in rice plants; it was initially developed at IRRI but adaptive research was conducted in Bangladesh under PETRRA.

¹⁵⁹ 'Monga, a local Bangla term, is used to describe famine-like situation in northwest Bangladesh during which the poor suffer from acute deprivation caused by the lack of purchasing power.' Salahuddin, A., M. G. Neogi and N. P. Magor (2009). Addressing Monga Through a Collective Regional Forum Response in the Northwest of Bangladesh. Future Agricultures Consortium International Conference on Seasonality, IDS: 11.

has since then become a national programme of the government and has been implemented by many more agencies and groups within and beyond the forum (RDRS and NW Focal Area Forum 2007). Neogi, a PETTRA partner (SP07, 41, RDRS, NGO), claimed in his interview that, in one location, there was no incidence of *monga* in 2008 due to the success of an initiative that brought 40,000 ha of land under BRRIDhan33 cultivation. The DAE, through its programme, was responsible for the largest area of adoption.

Recently, IRRI reviewed the potential of the forum and engaged in discussion to replicate the model in the testing and dissemination of stress-tolerant rice varieties in its CSISA¹⁶⁰ project. The comment of the deputy director general (Research), on the basis of a recent field visit, reflects IRRI's renewed organizational commitment. This also reflects the fact that, since PETTRA was closed in August 2004, IRRI did not seriously think about utilising the potential of the forum.

During the visit to Rangpur, I became aware that a focal area forum for the NW area already exists. It was set up in 2002 under the PETTRA project ...with representation by key public and also some private stakeholders. ...Officially, it still exists, but it had been less active in recent times. ... Two questions arise from this: We need to ask ourselves why we would want to set up a new Technical Working Group in NW Bangladesh when such a similar mechanism already exists? Both Dr. Mazid and RDRS leaders agreed that it would be better to simply utilise, revitalise, and improve the existing FAF. We should even consider setting the same model in the CSISA Central Bangladesh hub. Is that a model we could generally follow in other CSISA hubs too, particularly with regard to copying the operational/governance procedures? ... we need to review the TOR and operational mechanisms that had been used in the FAF. They may match well with what we had in mind for the CSISA TWG. Then, decide on the appropriate composition. I had already commented earlier that (i) CGIAR scientists should be no more than resource persons in such a locally owned partnership and (ii) we should strive to add more strategic private sector and NGO partners to it (Dobermann 2009).

– Developing capacity of the farmers and field workers:

The forum decided to develop the capacity of farmers to use the above tested technologies on a large scale through GO-NGO field workers. The forum utilised the existing human resources from BRRI and RDRS through first organising a training of trainers (ToT) for field workers and then training RDRS-led FFS farmer-promoters who in turn trained the farmers. The model of training that was tested in 2004 under PETTRA is presented in Figure 6.1 below.

¹⁶⁰ Cereal Systems Initiative in South Asia (CSISA) is a project funded by the Bill & Melinda Gates Foundation

Figure 6.1 NW Focal Area Forum approach of training

NOTE:
This figure is included on page 227
of the print copy of the thesis held in
the University of Adelaide Library.

Adapted from RDRS (RDRS 2004)

This approach of dissemination and training was highly appreciated by the government and was duly endorsed. The state minister for agriculture instructed the DAE to work closely with the forum and to extend all necessary support for training and technology support for NGO-organised farmer groups (FFS). A MoU was signed immediately after the instruction; it remains valid until today (even after the change of the government in 2009) (DAE-RDRS. 2004; Van Mele et al. 2005).

It is interesting to note that DAE field staffs are being trained by RDRS, BRRRI, and DAE senior officers as field-level technical persons with the responsibility of providing training for poor farmers who have been organised in FFS and federations by RDRS. This arrangement of GO-NGO collaboration in the region does not exist in other regions of Bangladesh.

The PETRRA-PMU played a crucial role here. The PMU asked questions about sustainability at strategic times and encouraged each local initiative in which members took the lead. The PMU attended the different meetings as facilitators and observers. Their focus was on the focal area forum, finding its own niche in the regional setting. The forum was an example of decentralised decisionmaking (Magor and Salahuddin 2009).

– Seed:

Seed was another important area in which the forum worked together. Farmers' access to quality seed of recommended varieties was a high priority. RDRS developed a federation-led seed production and marketing model that was replicated to a further 18 federations. The model ensures the availability of quality seed at the doorstep of poor farmers at an affordable price. This is in an environment in which only 15 percent of the total demand of quality seed comes

from the formal sector. Other seed actors also wanted to be partners of the forum, as it meant that they could participate and share proper information on varietal demand. Within the forum, a regional seed network that involved the federations, BADC, and private sector producers was established.

– Voice:

Within the focal area forum, there have been several strategies for listening, accommodating, and responding to the voice of resource-poor households. First, men and women representatives of farmer federations were made active members. They regularly participated in the meetings and represented farmer concerns and demands, being in a position to give suggestions. Second, resource-poor farmers directly participated, guided, and evaluated farmer participatory research. It was conducted in their own fields tackling their own problems. This has been strengthened through an innovation of RDRS. RDRS has been active in institutionalising a model approach of farmer participatory research that links with the graduate education of national and international universities in the field of agriculture and agricultural extension. Third, seed has been the one area where the voice of the poor has played a very significant role. The farmer federations have organised their own seed production and marketing systems in different parts of the region. The concerned federations have each formed a seed committee, which runs the business based on local variety demand. RDRS is playing an important role in providing business support to these federations. The focal area forum has been instrumental in its support of such enterprises and has assisted through market information and capacity building (RDRS 2005; Salahuddin et al. 2009).

The success of Focal Area Forum so far has been possible due to two major principles that were agreed upon by its members. Firstly, they agreed to rotate the leadership, which reduced tension among different member organizations as to who should lead such a forum and secondly, the silent leadership that was provided by the RDRS being the secretariat for the forum. RDRS's long-term commitment to development, especially in agriculture for the resource-poor farmers has been consistent with what was promised in the concept of the forum.

6.4. Reflections on limitations

Partners reflected on limitations from a positive perspective. They thought that the responses to limitations could make a project such as PETRRA more impact-oriented. The issues raised here are reflections of the individuals as they experienced them and expressed in a manner that obviously reflects the individuals' own biases, attitudes, and emotions. These are realities. The objective of

presenting these here is to reflect on multiple realities and perspectives that can exist in any project or programme. These are lessons for potential similar projects or programmes of similar nature and for concerned stakeholders such as donors, research managers, and host agencies to learn from.

6.4.1. Duration was too short for PETRRA

Project duration was the only limitation of the PETRRA project (Harun Ar-Rashid SP 05, 17, AAS, NGO).

The closing of PETRRA was like a short story (Gopal Chowhan, SP36, 40, SAFE, NGO).

PETRRA was all along mentioned as a 5-year project. Partners also knew about it but since the project was performing reasonably well and was appreciated by many, the partners developed a strong belief that the project would be extended. But like Harun (Harun Ar-Rashid, SP05, 17), many others were disappointed too when they witnessed its closing. For many of them, it was so sudden. They could not agree with whoever had decided to close the project so soon. The reflections and comments here imply the rejection of the decision to close the project after 5 years; many of them thought that the sustainability of the innovations generated by the project could not be ensured because of this decision.

6.4.1.1. Strategy development for sustainability was not possible

There was an understanding in the project document (DFIDB 1999) that subprojects would be commissioned for a maximum period of 3 years, but not all projects could have that much time because of late calls and commissioning. Most projects of PETRRA actually lasted two years. CA Mannan (CA Mannan SP28, 20, HEED Bangladesh, NGO) argued that the project should have been extended at least for 2 more years for the following reasons:

- Because of its early phase-out, some organizations like BIRRI fell back to its original approach of research. Two more years could be used to identify ways and means to sustain innovations.
- PETRRA could not fully utilise their time; they could hardly use 50-60 percent of the total time effectively because of management pressure. An additional two years could allow them to work on better strategy development and dissemination activities to sustain the innovations. Because of time pressure, impact as desired could not be achieved (CA Mannan, SP28, 20, HEED Bangladesh, NGO).

6.4.1.2. Followup activities could not be taken up

Dr MA Salam mentioned about the frustrations of BIRRI partners as there was a lack of followup activities. They thought that the research studies were suddenly stopped; they could not continue their innovative work further. Some of the projects had a very short life, one or one and half years. At the time that they have developed their capacity to contribute, the activities were stopped. They became frustrated. Many of the researchers had reported their frustrations personally to their supervisors. Dr Salam thought that the FoSHoL (IRRI-EC) project could utilise some of these researchers in some

forms to access the technical backup support that could give them room to get out of such frustrations. They could also continue their innovative initiatives, but this did not happen (Dr MA Salam¹⁶¹, SP13, BRRI, NARS).

6.4.1.3. *The short life of the project limited the potential for sustainability*

RDRS, as a regional but big NGO, was able to manage the continuation, but Neogi expressed his skepticism about the others as the short life of the project affected all.

Research projects need sometime to give yield. You need continuous refining based on findings. There was potential for further dissemination, we could have achieved better research findings with reduced cost compared to its initial investment if we could continue for some more time. We could achieve double with the same amount of expenditure as the initial investment as in later years you don't need any establishment cost, yet you get the same benefit. When the project was set for better return, it was closed. RDRS could continue the activities in some form, but I am not sure about others, whether they could continue to support their activities or not. Many of them did not have the capacity to continue investing. Some subprojects had a life of one year only. One subproject should have continued for at least 3-5 years (MG Neogi, SP09, 41, RDRS, NGO).

RB Safali considered the short duration of the project as one of the weaknesses of PETRRA. According to her, as the projects could not disseminate the results to a large number of farmers, it was not possible for them to achieve great success. There was no reason not to extend it. She thought that the partners, together with PETRRA, could easily disseminate the results to many areas instead of concentrating in one place only where the research was conducted. But it could not be done. In that sense, she thought, the project was incomplete (RB Safali, SP27, AID-Comilla, NGO).

6.4.1.4. *Duration was not enough to get a momentum*

Partners from government research institutes commented that research projects need some time to get momentum. Dr MA Razzaque commented about his concern about the short duration of the project.

The subproject had a very short period to work in and to organise the activities, only one year. When it started getting some momentum, the project was closed. Usually, it takes a year for a scientist to get hold of the work; only in the second year can they make some progress, but in PETRRA, partners in most subprojects already got the signal to close the project in the third year. This was a weakness of the project. One needs to continue the experiment at least for 3 years to put data side by side, then the findings get strong. A project should continue for 5 years. There was no time to scale up the findings. PETRRA should have been extended for another 2 years (Dr MA Razzaque, SP32, BARC, NARS).

BRRI partner Dr MK Bashar (SP02) and Dr GJU Ahmed (SP19) commented:

The closing of PETRRA suddenly before getting full momentum was a blunder; the project could not show its full potential for success (Dr MK Bashar, SP02, BRRI, NARS).

Researchers did not get enough time to consolidate the results. The donors perhaps failed to show enough patience. One cannot get technology results within such a short time (GJU Ahmed SP19).

¹⁶¹ At the time he was interviewed, he was the director of research at BRRI.

T Bose and AK Azad from BARD (SP23) thought that if a subproject could run its activities for some time, it could achieve stability in building relationships with research partners and in disseminating the technologies. From their own experience, they mentioned that, when a project starts to work with farmers, initially it takes time to build a relationship with them, gradually it gains speed from year two, and in the third year, it gets the momentum. Such experiments need to continue for 4-5 years (T Bose & AK Azad SP 23).

6.4.2. There was a lack of followup strategy for better impact

Partners emphasized the importance of followup activities for greater impact immediately after the research was conducted. They thought that one should not just stop after the research phase is done; that is what happened with most of the subprojects that BARRI was involved in. Some forms of appropriate strategic steps are needed by the concerned agencies as followup action to make research technologies and innovations available to farmers, he thought. Otherwise, these will not be used. Dr MA Mazid Mia cited the example of the USG¹⁶² sub-project (SP21) where he was involved under PETRRA. He thought farmers would not use the technology, unless normal urea is unavailable in the market as it is not an inevitable technology for the farmers. Farmers would continue to use it because it is easy to spray in the field, even if USG is economical; they would not like to ask the mill to make the USG for them. He thought there was a lack of such a policy action immediately after the research was conducted (Dr MA Mazid, SP21, BARRI, NARS).

The organizational commitment of the partners who were involved in research to adopt and to disseminate technology was vital in the SHIP project (SP00) of PETRRA. Most partners were selected in the research with the hope that they would disseminate the technologies automatically as they emerged. But, Dr Taher Mia was disappointed with the performance of many of his partners¹⁶³ in the subproject. He found it as unfortunate that a number of partners did not attempt to disseminate the technology.

GKF was weakened because of management problems; BRAC only looks for business interest, and perhaps they did not find much business in the SHIP technology. There were efforts to convince the top management of all partners, a tour was organised for them to visit IRRI. Proshika did some work, but BRAC did not do anything. RDA also did some work and are still continuing at the local level, conducting training for farmers. The video development work of RDA has been ongoing. BARRI researchers tried to conduct participatory research, which was not clearly known by BARRI managers. Researchers could not engage managers into a serious discussion as to how they could disseminate the results of the

¹⁶² USG stands for urea super granule.

¹⁶³ As indicated earlier, the seed health improvement subproject (SHIP, SP00) was approved as a separate project before PETRRA as a project was approved. It was not commissioned on a competitive basis. Partners were selected on the basis of their size, national coverage, reputation, and work in the field of agriculture, with the view that they would disseminate the innovations from the project among their client members immediately. The formal partners were BARRI, GKF (Grameen Krishi Foundation), BRAC, Proshika, RDA (Rural Development Academy), and BAU (Bangladesh Agricultural University). It was expected that BRAC, Proshika, and GKF would disseminate the innovations countrywide as they had a large network of poor farmers.

participatory research. Making a proper assessment about the ability of the partners was important and, accordingly, an agreement should have been made, which could not be ensured beforehand. Also, there was a gap between what was done by the subproject researchers and the research managers and policymakers of the concerned partner organizations. If that could have been addressed early on in the process with the managers, then they could institutionalise it easily (Dr MA Taher Mia, SP00, BRRI, NARS).

Gopal Chowhan (SAFE, SP36, 40) noticed that the PETRRA-PMU had organized a lot of workshops with the DAE and other government agencies to sustain and further institutionalise the innovations, but for him, it was a pity to see DAE working only while there was a project. When there was no project, there was no work. He thought that the government should have a firm commitment to institutionalise the learning from projects such as PETRRA and that it should be reflected in their policy documents as a clear strategy for its implementation exists (Gopal Chowhan, SP36, 40, SAFE, NGO).

Dr Uttam Deb (CPD, SP24), based on a positive experience in PETRRA, thought that it could have been better if the follow-up project, FoSHoL, would have provision for activities similar to what CPD did in PETRRA in organising studies and policy dialogues. It could have been good for sustaining the approach tested in PETRRA, but unfortunately, that could not be continued (Dr Uttam Deb, SP24, NGO).

6.4.3. Achieving sustainability had a few challenges

The challenges of sustainability to safeguard or to expand the sphere of impact were felt by the partners at different fronts. Some partners faced the challenge within their own organizations, some with their partners, and some with the approach used by the donor.

The acceptance of values and approaches of PETRRA was limited to individual champions. For example, little happened at the organizational level in BRRI. Dr MA Saleque (BRRI, SP17) indicated his frustration. He thought that BRRI, being the host and collaborator of the PETRRA project, should have been more serious about establishing a lesson-learning mechanism within the organization. He observed that there was no such formal mechanism within BRRI to appreciate good innovative research work and promote that in the system. In this connection, he mentioned his own subproject work on participatory mapping innovation in the field of nutrient management under PETRRA. He observed that, while people from outside BRRI appreciated the work, most BRRI scientists were not aware of the work (Dr MA Saleque, SP17, BRRI, NARS).

Dr MA Taher Mia (BRRI) who worked with IRRI in the SHIP subproject of PETRRA (SP00) observed that, sometimes, the lead organization (in this case, IRRI) did not recognise the contribution of BRRI scientists, not giving due credit in publications that had been produced on the basis of work done by

BRRRI scientists. Such instances create tensions among partners and work against relationship building. He thought that that the relationship needs to be built upon mutual respect. (Dr MA Taher Mia, SP00, BRRRI, NARS).

There were frustrations among some partners as they did not see the continuation of the relationships. NGO partner M Nuruzzaman (Shushilan, SP09) felt frustrated as they did not find further expansion of PETRRA partnerships/relationships and linkages after the project period to the extent it was expected during the project period. Some were happening but at a very low scale. He expected that the government would take the GO-NGO partnership forward and mainstream it, but that did not happen.

Many ministers came to PETRRA meetings; they just recited what PETRRA had written for them to talk about; if they would write about what they wanted to say, that could bring some change in them. Words should have come from their heart. The money PETRRA spent was nothing for a minister, he could allocate a similar amount for such research and development investment easily, but that did not happen (M Nuruzzaman SP 09).

A similar frustration was indicated by BRRRI partners Dr MA Mazid Mia (SP21) and Dr M Musherraf Husain (SP01) about the IRRRI-BRRRI relationship. They thought IRRRI failed to maintain the relationship and linkage with BRRRI in its PETRRA followup project FoSHoL. IRRRI-FoSHoL could use the BRRRI human resource as experts to make the programme more effective. This too did not happen. They indicated that as a very bad example of IRRRI-BRRRI relationship. As IRRRI had been coordinating the project, it could contact the appropriate BRRRI scientists for technologies that have already been implemented in the field to maintain the research-extension feedback loop by the FoSHoL partners (Dr MA Mazid Mia, SP21, BRRRI, NARS; Dr M Musherraf Husain, SP01, BRRRI, NARS).

As BRRRI partners look forward, they see a big problem because of the inadequate allocation of financial resources for transportation to the field in order to continue farmer participatory research. A number of partners raised the issue, as they thought the provision for such resources in PETRRA was adequate, and that was why they could conduct field-oriented research with poor men and women and spend a lot of time in the field and achieve good impact. But, in normal research activities, such provision would not be available. The issue was crucial and they expected that management should be able to respond to it, so that they can all work toward achieving the desired impact (Dr MA Salam, SP13, BRRRI, NARS; Dr M Mondal, SP20, BRRRI, NARS).

There was an unsuccessful effort to replicate the PETRRA approach within the public research system by its donor agency DFID, following an apparently inappropriate approach. They wanted to create a foundation through which they expected that future donors would invest in agricultural research and development and they would not need to negotiate projects on a one-on-one basis. But after efforts that lasted a year or more, the team of consultants responsible for the formulation of the new approach failed to achieve a consensus with its government counterpart. Dr MA Razaque, the then chair of the

Bangladesh Agricultural Research Council (BARC), observed that the DFID approach was wrong (therefore failed) as they pushed for *Projukti*¹⁶⁴ Foundation to replicate and scale up the PETRRA approach across all sectors of agriculture. He thought that the concept was developed by the consultants, which was wrong. Dr MA Razzaque had analysed why DFID failed to convert the concept into a new entity, a foundation.

The idea of the foundation should have been developed slowly in a series of participatory discussions with the stakeholders of different institutes, as the World Bank has done for NATP (National Agriculture Technology Project). The consultants failed to establish the ownership of the idea by the people from the NARS. The consultants pushed too much, in the name of 'good' initiative, they wanted to impose a 'good' approach too much. I tried to tell them that if BARC cannot work from the system, how can a foundation do it? I also raised a question about the nature of the foundation they were thinking of. My question was: is it going to be a private organization or a government organization? I told them that if it is private in character, then BARC cannot be involved. The rules and regulations of the two different approaches will not obviously match. We also suggested putting it under a BARC governing body, working with a set of multistakeholders from government, hired personnel, and some from outside the system managing the project, which could gradually be developed and further adjusted. They did not do it and brought in a totally new idea. They suddenly withdrew from the discussion and deserted the whole idea, which was very unfortunate; they invested so much on the consultants for such a long planning period, about a year. DFID closed PETRRA with the view to come out of rice and wanted something big sectorwide. I am not sure when and who decided to quit from the discussion (Dr MA Razzaque, BARC chair, PETRRA TEC member, BARC, NARS).

The story involved some degree of the politics of aid here. DFID and the government bureaucracy of Bangladesh failed to achieve a 'win-win' outcome and as a result were not able to put forward a continuing PETRRA model. This prevented the possibility of an immediate implementation of the PETRRA pro-poor agricultural research and development management approach within the R&D system in Bangladesh.

6.5. Conclusion

The values-based research management approach of PETRRA enabled partners to rightly identify gaps in the existing agricultural research and development system. As they engaged with poor-farmers and chose partners who worked closely with them, they were able to address issues that had the most impact potential. The areas of research and development mentioned here as examples have demonstrated the tremendous potential to bring positive impact on the lives of resource-poor farmers. Examples were diverse and this diversity is noteworthy. A round seed, there was the national seed network, the numerous pro-poor seed enterprises, and the seed-health technologies. There was the coastal water management that enabled double cropping of rice, the participatory integrated nutrient management approach, the government-NGO model for adaptive research with resource-poor farmers that was inclusive of women, the aromatic rice value chain from farmer production to urban and international markets, and the rodent adaptive research and control management. There were

¹⁶⁴ Projukti is a Bangla word which means technology,

communication materials such as the seed health videos that have been extensively used in Africa and other parts of South Asia; the development of the Bangladesh Rice Knowledge Bank for extension training and demand-led research-education linkage with universities. This is not exhaustive. Coupled with this was engagement with policymakers through dialogue and communication fairs and meeting farmers in the field. All proved to be impact-oriented.

There were gaps in the system for such initiatives and PETRRA partners were able to identify the gaps and then address some of these. In the process, partners discovered the importance of a values-based approach and were able to incorporate this within their own approach and often within their organizations. Evidence in this research indicates that this process contributed to impact. Impact was achieved as innovations were chosen rightly, the right approach was used to develop those, and they were integrated within the respective organizations.

The positive signs of impact helped partners to consolidate the innovations into longer term projects and programmes. Partners were involved with those new projects and programmes personally and mostly as organizations. There was recognition for partners from both their own organizations and from outside. Some donors also recognised PETRRA as a success. The European Commission funded IRRI and three other international NGOs and their partners to disseminate PETRRA innovations through the FoSHoL project. The DANIDA-supported DAE-ICM project disseminated the PETRRA innovation. The positive experience helped to break the tradition of many rigid government organizations. A large number of NGOs were transformed; many of them started in PETRRA with no or limited agriculture programme but ended up identifying pro-poor agricultural programme as their organizational priority agenda (more in Chapter VII). The experience helped individuals and made national and international organizations to look beyond their own comfort zones to work and collaborate for research and development activities. The barriers between government and non-government, national and international, government and private agencies were broken and each seems to have discovered themselves as new actors in agricultural research and development in a way that serves poor farmers, both men and women. This developmental so helped minimize the divide between research, development, and extension. It helped graduate individuals and organizations in their understanding of development and the potential that each of them has to contribute to achieve pro-poor impact. Significant impact was achieved when individuals and organizations were able to share the common objective of poverty reduction and were able to accomplish that together. Many formal and informal networks and linkages were established and some of them started to collaborate in new projects and programmes. All such developments are strong signs of sustainability.

The evident success of the focal area forum took place within the context of a home-grown regional multistakeholder initiative. The actors achieved their confidence through a previous history of working together under the PETRRA project. It illustrates a decentralised joint public-civil society- private sector initiative that can be replicated in other regions of the country and also in similar situations in other countries. However, there is a need for a local champion like RDRS that can anchor the development activities and facilitate the process in such a way that all others can play their respective role. In the process, there is a critical need to find an appropriate facilitator who can continuously ask the right questions at the right time. The northwest focal area forum experience suggests that, at a regional level, it is possible to organise collective activities that use the available physical, financial, and human resources for training, extension, information exchange, and validation of innovations. Such a forum does not need to be dependent on external resources. The experience of the focal area forum added the dimension of decentralised approach in the understanding of PETRRA values-based research and development management approach. The experience was positive and it successfully opened up new avenues in the thought process. The comment of the deputy director general of IRRI was a brilliant example, indicative of the new thought process that began the context and new realities that are evolving in the international arena of research and development. However, it should be noted that there was also early work on establishing two other focal area forums, one in the northeast and another in the southwest. These were not successful. The lack of sufficient time and facilitation along with strong local leadership were considered contributing factors to the lack of success.

The short life of the project was raised as a constraint for the PETRRA project. Frustration was evident in some of the respondents' statements as they perceived irrational decision making on the part of the donors when they did not continue the PETRRA project for a reasonable period of time. That time constraint was expressed with respect to the technology development and dissemination process.

Limitations of the project were mentioned by the partners as a learning agenda so that a potential future project or programme such as PETRRA could learn from it, avoiding certain mistakes and ensuring further sustainability of the innovations. Those comments fundamentally complemented the project experience and most of those were reflected in a positive way to help make future projects and programme more sustainable.

What seems to have emerged from the PETRRA experience is that pro-poor R&D is possible within a traditional organizational setup and perhaps the need for a total overhaul of the research and extension system, as expressed by some, is in fact not a requirement. It seems that there is adequate evidence in the experience of the project that a values-based research and development approach produces

changes, which are sustained long after the project itself. Initiatives and approaches were sustained reasonably well in both upstream and downstream research.

Chapter VII

7. Wide open future

7.1. Introduction

The discussion and findings of the last three chapters overwhelmingly support the utility, advantages, and potential replicability of a values-based approach to agricultural research and development. The PETRRA project values were introduced and operationalised in a context. Through the practice and testing of these values within their respective subprojects, partners were able to discover the usefulness of each. They became convinced of the rationale and usefulness of each value as they found a logical interconnectedness. They were able to practically operationalise these within their own subprojects and experienced positive results. Some values evolved to satisfy new demands from within the project as it progressed. *Poverty-focus* was in the centre of the discussion. The project over time made adjustments to the initial project objectives to sharpen the pro-poor focus and to respond to the evolving nature of the issues that needed to be addressed.

Almost all partners appreciated, enjoyed, and highly valued their involvement in the project. Many of them regretted that the project was closed 'prematurely.' It was felt that this affected the potential sustainability of some of the subproject innovations. The limitations and weaknesses of the project were discussed positively in terms of providing what issues to avoid in future projects. Partners positively expressed these limitations to ensure that these would be taken into account in the future and thereby could further strengthen the achievements that were already evident in the project.

The lessons were of different dimensions as partners and stakeholders found multiple attributes in their experience in the project. For individuals, there was a positive attitude change and for organizations, there were positive shifts in their commitments in the way pro-poor agricultural research could be conducted. Many individuals, partner organizations, research managers, and policymakers have found important sustainability elements in project outcomes. Many of these outcomes showed potential for longer term impact on the livelihoods of the poor farmers. Such reflections were evident from the list of followup projects that evolved from PETRRA innovations and approaches. There were marked changes in the capacity of the individuals and organizations that reflect their ability to conduct and appreciate values-based research and development management. Institutionalisation of lessons learned within public sector organizations and some of the big NGOs have raised concerns, although individuals within such organizations had shown lots of personal commitment.

This chapter concludes the thesis by capturing some of the overall lessons. It captures the contribution of different partners and stakeholders in the way they have interacted with the values-based approach and contributed to the making of the values-based agricultural research management approach. It tried to link project concepts and experiences into the realm of practice to be able to utilise the lessons. The chapter also includes recommendations for the major stakeholders of PETRRA to enable them to take the lessons forward.

7.2. PETRRA was everybody's story

PETRRA was a creation of all stakeholders. All those who worked with PETRRA can claim themselves to be the creators of PETRRA. All have made specific contribution at different times and in different capacities. Interviews with partners gave testimony to such a claim. Each had their own story. For example, the person who managed the RDA component of the seed health improvement sub-project (SP00) and seed health video extension method subproject (SP 37) site of Maria village, illustrated this in his comment: 'I carry 8 years of PETRRA impact in me'. Because of his conviction, he had gone on to ask his colleagues in the region, the deputy commissioners, officials from DAE and BARC, to package the Maria village story for dissemination to poor farmers, men and women, in other villages so that they could listen and change their own livelihoods. There were partners who credited PETRRA with enabling them to find their niche as an organization in such a way as to break the GO-NGO divide. An outcome was a national seed network within the government system that was inclusive of all potential actors (BRRI, SP02). Some actors were newly active in agriculture (Shushilan, SP09, Mukti, SP31, EPRC, SP42) or especially in rice as they discovered the importance of rice in the livelihoods of their poor clients (RDRS, SP07, 41, 25). Each has its own story.

It was evident from the interviews that ministers also have their own stories, which developed through their participation in a number of policy dialogues, communication fairs and workshops on specific technologies or innovations, or from inaugurating events such as the RKB-based training programme at BRRI. The secretaries of agriculture, who chaired the PSC, approved rules for PETRRA, and participated in a number of events and shared in the progress, also have their own story. In addition, the research managers of BRRI, BARI, BARC, DAE, the NGOs, and private agencies each had their contribution through the PSC or TEC meetings and in other occasions in which they participated in a range of PETRRA events. For TEC members, there was also their heavy involvement in scrutinising and making recommendations for CNs and RPs.

DFID, as a donor, might find it interesting to know that, even within a fairly traditional setting, there was potential for values-based research without making a revolution in the system by way of major

institutional or structural change. They seemed to be convinced with what PETRRA has achieved. As a result, they wanted to establish a National *Projukti* (Technology) Foundation. They finally gave up on the idea,¹⁶⁵ but their recognition of the success of PETRRA was evident. They also made a substantial contribution in the way they participated in reviews and allowed the logical framework to accommodate changes in project objective setting and implementation. Their story was not explicitly expressed, but a story is there, which is worth knowing.

BIRRI, as the national collaborator of the project, can claim to be the co-implementer of the project as they hosted PETRRA and shared both responsibility and success. The credit was both organizational and individual as there were many scientists from BIRRI who were involved in the PETRRA subprojects. In addition, the chair of the TEC and member secretary of the PSC was the director general of BIRRI. For many BIRRI scientists, PETRRA was a life-changing experience. Their stories are reflected in many of the interviews that were reported in the previous chapters.

For IIRRI, PETRRA was a new experience; many scientists who were involved in PETRRA found that experience as a source of great learning and went on to use that learning in many of their followup projects. The IIRRI story of involvement in PETRRA did not stop with the closing of the project. Many individuals continued to push the boundary of learning in subsequent projects and through their engagements in policy dialogues.

One partner from BIRRI (Dr MA Mazid Mia, SP21) regretted that he was retiring soon and would, therefore, not be able to use the learning he had from PETRRA. For him, PETRRA came late in his life. He thought it would have been great if he could have some more years to use his learning from PETRRA. PETRRA will remain a mixture of both a good and a sad story for him. Another IIRRI scientist (Dr TPTuong, former DDGR research) also regretted that he was not involved in any PETRRA subproject and therefore had no scope to experience the PETRRA learning directly. He found himself relatively lucky as he was able to share the learning from his colleagues in IIRRI and in the PETRRA followup project (CPWF10) through Dr Mondal who had direct experience (SP20). All these people together made the PETRRA story and, as a consequence, each may claim that it was their project.

¹⁶⁵The very fact that DFID was unable to convince the GoB to approve a foundation may partly be explained by the gap that was created between DFID and the GoB in the understanding of the modality of operation of the proposed foundation. The government wanted the foundation under its control, but DFID wanted it to be independent. This was evidence of the 'politics of aid' from the part of DFID and GoB. The issue could not be explored further as the officials of DFID who handled the matter with the GoB at that time were not available for interview. It may also be due to the fact that, although the secretary of the Ministry of Agriculture chaired the PSC, it remained a routine role for the chair and the GoB never owned the project as theirs. Therefore, when the proposal for a foundation was presented by DFID, it failed to secure buy-in of the ministry in its favour. There is a lesson there for both GoB and DFID and it is related to closing the gap in such endeavours in the future.

A question can be raised as to who is the potential user of the learning and the experience. The way in which partners and stakeholders have all claimed ownership and appreciated the learning suggests that all are potential users. The results indicate that the experience provided each with principles that can be adapted to differing situations. It is evident that all strongly endorsed the values and their potential for pro-poor impact. From the PETRRA experience, they also learned about the use of tools to work out the values in the field in a practical way. They learned from the experience as they undertook their subprojects. It was, however, evident from the stories that the individuals accepted and responded to the values comparatively more easily than their respective organizations. The individual shift, in itself, indicates a big step forward. For a national research or development institution, such as BRRRI or RDA, these individuals have demonstrated resilience in commitment to the values. This suggests that even a traditional institution accepts sufficient diversity of practice to positively change and move forward.

It was a story of the 'champions' both individuals and organizations. Very often it was the individuals for whom it was easy to become champions across different categories of organizations but not many organizations could become champions. In places, in which both individuals and an organization could respond to the values with equal importance, most change occurred. The variation may be explained partly by the McKinsey's 7S model referred to in the first chapter. Organizations having unclear structures, strategy, leadership style (culture) or lack of skill among personnel or organization and no strong shared values failed to produce champions (Waterman Jr et al 1980).

7.3. PETRRA values and their potential strategic use

As mentioned in Chapter I, the set of values adopted by PETRRA is not new and much literature is devoted to their usefulness for developing a pro-poor agricultural research system. What PETRRA did that stands out was identifying the important values for a poverty focus through action and reflection with partners and then incorporating these into a management system that was coupled with capacitybuilding to facilitate the process. The actors in each subproject incorporated the values through action and then as a collective of subprojects shared that experience. By engaging with values, the subprojects were able to discover the benefit of the approach and to observe the visible impact this had on partners, both as individuals and organizations, and on the poor men and women with whom they worked. The stories told in Chapters IV, V, and VI demonstrate this impact. Partners have fully endorsed the importance of the poverty focus and its justification based on their own experience. The other values were found complementary to achieve the poverty focus and to achieve scale and impact. While reflecting on the importance of a poverty focus, they also mentioned the importance of capacity building and the interconnectedness of values, capacity building, and the management approach that PETRRA used. PETRRA's approach to research management focused on creating the potential for

poverty elimination. It is this that was mentioned earlier as missing in the system by Kerr and Kolavalli (1999).

7.3.1. PETRRA experience provides clues and examples for pro-poor R&D

To date, the issue is not whether the national and international agricultural research systems recognise the importance and/or feel the need for a values-based research management approach but whether there is a scarcity of evidence that demonstrates 'what it is and how it can be implemented' in practice. There were issues emerging in the existing literature that need clarity and there were issues concerning implementation that make people hesitant about embracing the approach due to lack of evidence based on experience. Some of these concerns are the following:

- What is the issue? (poverty definitions, who are the poor, etc.)
- Is there any need to really do R&D directly with the poor? (the trickle down syndrome)
- Can it be done at all? (the question of confidence and capability)
- How does one address the issue? (the experience)
- How are the elements of values interconnected? (the clarification issue on the basis of practical experience)
- What is the evidence? (like PETRRA or similar experiences)

PETRRA provides experiential evidence that answers these questions on how to do it and what can be achieved in terms of positive practical outcomes. While some of the other promising approaches (e.g. innovation systems framework) fail to target poverty as their core focus, PETRRA's approach starts with it (Pound & Essegbey 2008). In other words the PETRRA approach illustrates the importance of the values approach that comes from business literature as highlighted in chapter I. This is clearly reflected in the experience of the partners presented in the previous chapters. PETRRA worked like a 'strategic organization.' It adopted a strong organizational culture that helped partners look for responses 'toward creating a better future for themselves and their society' (Korten 1984).

7.3.2. Simple approach made a big difference

From the stories, it was evident that apparently simple tools such as 'a definition of resource-poor farmers' or 'providing knowledge to both men and women' gave partners a basis for working towards a developmental goal. Through partnerships and networks, partners discovered their comparative advantage and disadvantages; they recognised these and addressed such limitations through complementing each other through partnerships. The story told by Dr MA Salam (SP13) of his journey towards understanding the value of poverty focus and participatory research is exemplary (please see section 4.5.4). Anyone having a doubt about the value of farmer-participatory research in the so-called

upstream research or working with resource-poor farmers in situations that exist in countries like Bangladesh or the value of partnership would find the interview illuminating. The theoretical basis of the importance of working with the resource-poor has been greatly reinforced through such experiences. Partners could easily link their work on rice research and extension with wider developmental objectives. They found several rationales in favour of working with the poor farmers as they evolved from their experience in PETRRA.

- Most land is being operated, if not owned, by resource-poor farmers as large landowners lease out land to such farmers due to increasing labour costs; resource-poor farmers are the largest group involved in farming;
- Resource-poor farmers are desperate to improve their condition and want to ensure food security;
- Resource-poor farmers are more enthusiastic than the non-poor, the non-poor appear to have limited time for interaction;
- Resource-poor farmers do not get any support from government or non-government delivery agencies, while the very poor people are included in different safety net programmes and the non-poor enjoy the benefit of government subsidies and have access to information and media; the poor farmers want knowledge, not subsidies;
- If a resource-poor farmer gets knowledge, she or he can use it in his/her land and can use the same on the rich people's land if they are hired or given land for sharecropping; if a rich farmer gets the same knowledge, it will only remain with him/her.

7.3.3. Values helped organizations to reveal reality

The experiential learning process of the partners helped to expose the shortcomings in some of the rhetorics that existed in the system. Different stories reveal the fact that NGOs do not give due importance to agriculture, even though agriculture is the main source of livelihood of the poor. Micro-credit is not used as a strong supportive programme of agriculture. Through PETRRA, NGO partners (RDRS, SP09, 41; Shushilan, SP09, EPRC, SP42) discovered that their lack of recognition of the potential of agriculture in poverty elimination seriously constrained their understanding of development issues and potential interventions. The general understanding is that NGOs always work with the poor but the reality, as discovered during PETRRA, was that many NGOs do not always work with the poor when it comes to agriculture (see Chapter IV, Table 4.1) and, surprisingly, that many NGOs did not know how to target or achieve the participation of the poor in agriculture. PETRRA also helped reveal that agricultural development does not automatically benefit the poor farmers, but through their direct engagement in the process, it can be increased. The mainstream belief among the actors was that women do not need all kinds of agricultural knowledge but only for those activities in which they are directly involved. This was challenged in PETRRA. Partners came to recognise that the participation of women in all stages of the project cycle and the provision of equal knowledge to women paid dividends. The PETRRA experience illustrated that complex technology can easily suit the poor, provided there is a proper understanding and a support system by way of 'social technology' put in place around the 'physical technology' (Nelson & Nelson 2002). This learning defies the myth that complex technology

does not suit the poor (e.g., rice-duck, SP19) as also endorsed by Magor in the discussion of enterprise web (2005). Magor took into account the institutional barriers for poor farmers in terms of their high transaction costs to receive a R & D service, an issue not touched upon by innovation systems approach. But the values based approach is more aggressive in defining the values that affect outcomes. Thereby it complements the enterprise web/transaction cost approach and can enrich the innovation systems approach.

It has been popularly believed that GO-NGO partnership in agriculture is ineffective. But, in PETRRA, GOs found NGOs an effective means for reaching the resource-poor and for organising participatory research with resource-poor farmers (e.g., Dr M Musherraf Husain, SP01, BRRI; Dr MA Salam, SP13, BRRI). Similarly, for many NGOs, their partnership with GOs opened up opportunities for them to better serve their rural clients and to develop sustainable programmes in agriculture (e.g., RDRS, SP07, 41; Shushilan, SP09) (Salahuddin et al. 2007).

There are myths that organizations such as NGOs have strongly embraced the values as highlighted in this thesis. The experiences mentioned above suggest that, in order to contribute to pro-poor impact, all organizations, including NGOs, need to be engaged in a process of unlearning and relearning. Dalrymple (Dalrymple 2004), as mentioned earlier in this thesis, has rightly recognised the varying performances of NGOs. There were myths about government organizations as well—that they cannot reach the poor. But the PETRRA evidence showed that some organizations (BARC, RDA, and BARD) can directly reach the poor and some can work with the poor indirectly with NGO partners. The challenge for partners was to show intention and willingness. Most government partners have successfully accomplished it. A values-based management approach would prevent such organizations falling back to their non-inclusive approach of the past.

7.3.4. Partnership: time to recognise an expanded NARES definition

The PETRRA partners' experiences suggest that there should not be any limit in the selection of partners. Each group of actors possesses specific expertise and services that may complement the efforts to increase the impact on resource-poor farmers. It was evident that all have benefited from the partnerships and that many have continued to explore and consolidate such partnerships and to work with those partners in new endeavors. The evidence shows that the relationships among organizations and individuals have moved beyond the life of the project and are being diversified as new collaborations and linkages are being developed in post-PETRRA projects and programmes.

There was significant learning from the P ETRRA experience. Partners, who worked in the project, found strong and practical reasons for their partnership. It was based on their area of expertise and track record. The partnerships complement each other in the achievement of a common objective: achieving impact on the livelihoods of resource-poor farmers. A model emerged and was appreciated by all stakeholders. This is a significant experience and it deserves the attention of policymakers. It suggests that existing definitions and boundaries of NARES¹⁶⁶ need to be reassessed and realigned based on this experience. A new structure is needed that will accommodate and recognise all actors that demonstrate their strong commitment and potential contribution to agricultural research and development. Instead of only government agricultural research institutes and extension, it has to incorporate agencies such as NGOs, private sector agencies working in agriculture, government development institutes such as RDA, BARD, universities, and regional government actors, including farmer federations. All barriers need to be eliminated and brought under a national network of organizations for A&D. Scoones and Thompson have also indicated and supported similar ideas elsewhere and emphasised the need to form an 'Innovation Alliance' that 'could help reinvigorate and expand the Farmer First movement' (2009:310).

Experience also suggested that the element of competition can be a very effective tool to promote innovative and appropriate partnerships to make a project or programme successful. While implementing a particular project or programme, the element of competition needs to be integrated within the system strongly so that organizations that are accepted as partners can bring their innovative ideas into it and add value. This would protect partners from losing their interest on the project or programme and will inspire them to own the project. The automatic inclusion of partners in a project or programme based on past good experience will not always ensure effective contribution from all organizations all the time. Competition proved to be an effective tool in P ETRRA as it was used successfully during the life of the project in mobilising and inspiring partners to bring the best possible services, performances, and presentations in terms of compliance with outcomes, reaching poor farmers, including women, and scaling up and communicating innovations to farmers and policymakers for sustainability and impact. Competition in the common space of the project also created a positive learning environment from each other for the partners. Competition did not encourage partners to keep their innovations within themselves as each one of them had uniqueness in their research agenda. Sharing their innovations with others gave them the opportunity to receive constructive feedback from fellow partners and thereby strengthen it further. Competition helped partners keep creative thinking alive all the time.

¹⁶⁶ National agricultural research and extension system; traditionally it includes only government research and extension institutes.

It is worth reflecting on the role of IRRI in PETRRA and its contribution to the innovation of expanded partnerships. IRRI provided a management and facilitation role in the PETRRA project in addition to its traditional role as a science and technology centre. It actually demonstrated itself as a champion of agricultural development by nurturing the project new partnerships. In a country like Bangladesh, with many challenges in governance that do affect the ability of government and NGOs and private sector agencies to work together in a complementing way, IRRI, through the project process of PETRRA, played an innovative role. IRRI and other CGIAR institutions can play a significant role beyond their traditional sphere of activities in terms of facilitating impact-oriented research and development. It can influence policymakers comparatively more easily than any other agency because of its knowledge of science and its proven track record of cooperating with national organizations such as BRRI. But the question is - can IRRI do the same in its other in-country programmes/projects with a different team/project management unit? This needs to be explored further.

7.3.5. Values: visible change in individual and organizational behaviour

The values-based approach has had a profound impact on partners both individually and organizationally. Statements given by the partners provide evidence of a change in individual and organizational behaviour. For most individuals, behavioural change was quite clear, whereas for an organization, behavioural change was not always apparent. It depended on the type of organization and the ability of the individual to influence an organization. An organization such as RDRS was responsive to whatever they had learned from PETRRA. RDRS has realigned its agricultural programme, established a federation-led seed model with resource-poor group members, and introduced participatory research linkages with universities. It has also actively supported a regional forum, which is a regional partnership with other actors for marginal farmers in the area. RDRS management has allowed individual team members to invest time in PETRRA activities and has internalised the learning and experiences gained by these individuals into the organization itself. This represents an ideal example of the response by individuals flowing through to the organization. On the other hand, for BRRI, there were visible changes among a significant number of scientists as individual champions. They set examples within BRRI, inspired younger scientists to submit concept notes for competitive research, added new meaning to the interpretation of participatory and demand-led research, and made a breakthrough in the way they work with other partners, especially with NGOs. There was a new orientation toward the need to work with resource-poor farmers within a government research institution. However, the learning was not formally accepted or mainstreamed or sustained within BRRI as an institution. Nevertheless, at the personal level, change was clearly evident. The

PETRRRA projects started where people were at but they were changed over time. Some of the significant changes among the individuals and organizations are captured in Table 7.1 below.

7.1. Features and dynamics of culture change among partners over the life of PETRRRA

Indicator	In the beginning of PETRRRA	Late in PETRRRA
Attitude towards meetings, discussions, stakeholder analysis meetings	Resistance	Advantage recognised, spontaneous participation
Attitude towards values	Resistance, 'we know already', no importance	Very important; 'what we did so far was wrong'
Poverty focus	'We work with them already'; 'all farmers are poor'	'We know who they are'; 'we should work with them'
Women as active partner	Antagonism or reluctance	Appreciation; impact-friendly
Participation	'We know and practice'	Learning; very important for quality impact and scaling up
Demand-led R&D	'We know from our experience'	'We need to engage more, apply new tools to explore further'
Partnership	Not a necessity	Complements our work; keep contact for followup projects and programmes
Competition	Struggle	Significant entry point for the competent ones
Communication	'Not our responsibility'	Essential part of results and sustainability
Forum	One way communication; not effective	Focal area forum; interaction; redefined potential of the National Agricultural Extension Policy (NAEP)
Sustainability of knowledge	Training	Knowledge bank for archiving knowledge and interactive training
Capacity	Training, we provide	Wide meaning; we need more such provision in future projects; it should have come early in our life
Facilitation	Distant knowledge	Many champions
Flexibility	No experience	A culture; at times difficult to adjust but conducive for enthusiasm and innovation

Most of the champion individuals and organizations mentioned earlier experienced the most change in their own attitudes and mindsets. Yet the challenge remains. These champions could not guarantee the longer-term support that they would require to sustain the dividend from the change which depends upon policy and institutional change within the organizations concerned to be able to be responsive in support of the champions. The issue of policy and institutional change has been outlined as a big challenge for the success of other closely related concepts such as innovation systems framework as well (Hall 2007).

7.4. Building on the strengths of organizations

Through the PETRRRA value orientation and facilitation efforts for capacity building, individuals and organizations discovered, over the life of their respective subprojects, their own comparative advantages, strengths, and weaknesses. Through practical experience, they gradually discovered reasons to appreciate each other. Organizations began to recognize their respective areas of specialisation, along with appropriate roles for other partners, such that they could work jointly to

accomplish a common objective. Government agencies such as B RRI (SP01) had strengths in technology development but had limitations in their ability to form networks and linkages to conduct adaptive research under PETRRA; for this, they relied on their partner RDRS that had 250 farmer federations at the union level for farmer contact and interaction. RDRS organised their federation-led seed model (SP09) because of the management ability of their federations and their strong client base at the village level. A small NGO skilled in technology dissemination and training such as AAS (SP05) had worked with 64 CBOs across regions, trained field workers and farmers, and developed a farmer-to-farmer seed model. Understanding and identifying strengths in organizations and helping them to discover the same ultimately helped many such organizations to develop their own extension model and to expand the range of their development efforts and their ability to secure donor funding (Van Mele et al. 2005; Salahuddin et al. 2009).

PETRRA experiences showed that innovation qualities exist in most organizations. A proper value orientation, facilitation, and a flexible and learning-oriented environment can help them achieve their developmental objectives. Organizational strengths matter, but they can be acquired as well if an organization has a clear goal and it wants to get there. They can easily overcome limitations if appropriate partnerships, linkages, and capacity support are available. Organizations need to learn their strengths and weaknesses quickly to be able to utilise and address them to their advantage. It is important that an organization has confidence in itself, in its own strengths, and has the courage to believe in itself (Waterman Jr et al 1980). Perhaps, the challenge is to ensure a flexible facilitation support that works silently, patiently, and with a lot of optimism in the midst of an environment in which people often have a sense of hopelessness.

PETRRA's interaction with the large public sector organization, the Department of Agricultural Extension (DAE), requires comment. The DAE has a large network of offices and trained human resources throughout the country. It did not compete for resources in PETRRA and therefore had no PETRRA subproject. But its organizational strength to provide technical support at the local level for training and scaling up was critical for many subprojects managed by the G O-NGO partners of PETRRA. There was a functional relationship at the field level. It was at this level that both PETRRA partners and DAE field officials utilised each others' strengths. The DAE was able to contribute through technical expertise and the NGOs were able to mobilise field activities through their resource-poor farmer groups. In the end, both claimed success for their work in the community. There were complaints that PETRRA had failed to link with DAE for sustaining the technologies and extension methods nationally. Nevertheless, PETRRA was successful in making strategic use of the technical strengths of the DAE. The DAE had provided an important training input for farmers and field workers at the village level. This input was scarce at the local level but was provided, even when there was no

formal partnership. The process used for engaging with the DAE provides interesting strategic learning in terms of a way to avoid the influence of such traditional large public organization that may pose a potential threat to a value-oriented R&D.

Partners talked about a problem that existed within government organizations and large NGOs. It was the lack of organizational commitment to institutionalise either values-based approaches or the technology or extension method innovations arising from the research. For government organizations like BRRI or BARDA (SP23), the problem was structural. First, the individual partners from these organizations could not secure any buy-in from management into the learning process as much as they may have liked to. Second, the PETRRA work was only a small part of their work responsibility as individuals and as an organization and, as such, may not have been able to influence the mainstream activities of the organizations strongly. Third, for large NGOs such as Proshika (SP06, 20) and some others¹⁶⁷ (BRAC, SP03, GKF, SP04), their top-down administrative structure and the mainstream business models were quite different from the culture of PETRRA. For example, a person within GKF had championed the development of a good seed production and marketing model, but there was difficulty in gaining acceptance from his own organization (Van Mele et al. 2005). However, even though it was a government research institute, BRRI, provided freedom to its scientists, allowing some to become champions in PETRRA. This message came through strongly in the interviews. BRRI's defined role in the PSC and TEC and its long relationship with IIRRI did mean that the senior management of BRRI was quite open to the innovations of PETRRA, though it was not totally comfortable with the process. BRRI's ability to work with existing networks and linkages and to continue to adapt with the value-oriented practices was mentioned earlier as a useful direction to follow in the future. However, for large NGOs, such as BRAC, Proshika, or Grameen, a project or programme such as PETRRA will need to engage with their top management very heavily from the beginning so that they know, plan, and own the outcome as the activities progress.

7.5. Facilitation: a virtue and a challenge

Facilitation can be a mode of interaction in almost every human relationship and context. It is part of a participatory paradigm, feeding into and being informed and itself transformed by the experiences of process. For professional, institutional, and personal change, PMs (participatory methodologies) and facilitation appear potent points of entry. The big question is whether on a large scale they could be significantly transformative in our world (Chambers 2008:179-180).

¹⁶⁷ BRAC (SP03) and Grameen Krishi Foundation (SP04) (GKF, a sister organization of Grameen Bank) were partners of PETRRA. BRAC failed to develop any extension model but the partner from Grameen developed a very interesting business model for seed which was, as mentioned, not taken up by the organisation as a whole.

The PMU played the role of facilitator. Instead of dictating the rules or guidelines of the project, it facilitated an environment in which ideas were developed by all concerned stakeholders according to the scope of their involvement in the project. The ideas came from many sources; from farmers, partners, and stakeholders (e.g., donor, government, research managers). Through the facilitation of the PMU and in conjunction with the stakeholders, these ideas were further articulated and translated into action to accomplish objectives. The process of facilitation appeared to have been effective as partners have clearly recognised its importance. Partners felt ownership of the technologies or extension methods for which their subproject was responsible. Each could claim the innovation as their own, while at the same time showing due recognition to the contributions of other partners (SP02, SP20). This was possible because of the nature of the facilitation and the relationship that had developed between partners and PETRRA PMU. There was genuine mutual respect in the process of facilitation that gave recognition to what each partner brought into the project and had the potential to offer. An environment was created within the project that was inspiring for partners to learn from each other and strengthen each others' profile. The process was goal-oriented; that goal was to contribute to poverty reduction for the resource-poor men and women farmers through technological or extension method interventions. The PMU was able to create forums for sharing and arguing about issues of common concern around values and then to adopt different strategies to attain these (Burrows 1997).

Learning organizations need to think more about the development and utilisation of facilitation skills to be able to provide appropriate service to poor farmer clients who will live in an increasingly complex environment. The partnership profile for national and international research organizations is becoming much more diverse and thereby requires interfacing with many stakeholders. As a consequence, organizations such as IRRI at the international level and BRRI at the national level will need to dedicate considerable human and financial resources to ensure facilitation to enable all partners to play their due role in AR&D. A well-planned facilitation strategy could utilise and optimise the contribution of all such actors to ensure pro-poor impact from an AR&D project or programme. The PETRRA example presented in Table 7.2 illustrates the diversity of actors in a particular context.

Leadership style and skills as articulated in 7S Model proved to be very important elements for the success of PETRRA (Waterman Jr et al 1980). It was mentioned by several respondents. The PMU team was not just a nominal group of individuals; they complemented each other professionally to become a dynamic team. Project leadership regularly assessed the skills gap within the PMU and also within sub-project teams and tried to fill-up the gap either by creating through the provision of resources for capacity building. Educational background and work experience of the PMU leadership also contributed to attain such required efficiency. The leadership had a agricultural and social science

education and experience in agricultural research and development organizations, government and non-government.

Table 7.2. Facilitation need for a diverse group of actors: the PETRRA example

Actor	Actors at international level	Actors at national level	Actors at local level	Farmers at village level
Main actors ¹⁶⁸	IRRI	IRRI, BIRRI	PETRRA partners (BIRRI, NGO, pvt sector, international organizations, universities, BARI)	Partners resource-poor farmers (men & women), groups and individuals and partners
Management support actors ¹⁶⁹	IRRI, review Missions, grid, CABI, consultants (M&E, livelihoods, institutional)	BIRRI, PSC, TEC, partners, media, Steps, PPS, AIS, pvt. sector (web, printing, supplies, etc.)	BIRRI, partners, DAE, NGOs, Ffrums	Resource-poor groups and households, non-participating HHS, partners
Policy support actors	DFID	DFID, MoA, BIRRI, TEC, PSC, DAE, MoA, NGO, BADC, BIDS, BARI, review missions	Regional BIRRI, NGOs, DAE, BARI, BADC, universities	CBOs, farmers
Partners	IRRI, NRI, CSIRO, CABI	BIRRI, BARI, NGOs, BADC, DAE, pvt sector universities, BARD, RDA	BIRRI, BARI, NGOs BADC, DAE, pvt sector universities, BARD, CBOs, LG	BIRRI, BARI, NGOs, BADC, DAE, pvt sector universities, BARD, participating households
Collaborators	CIMMYT, HARP, CAZR	DFID, REFPI, SUFAR, CBFM, RLEP	Universities (BAU for RDRS), focal area forum members (GO/NGO)	Local government, DAE, village people

Many new generation AR&D or agricultural research for development (AR4D) projects will require interactions among such diversity of actors and stakeholders so as to respond to the increasing demand for impact. A potential lead agency, such as IRRI, should be adequately skilled and equipped to facilitate and manage such a complex set of actors and stakeholders through adopting a culture of learning through action and reflection, through capacity building and field based experiential learning, and through mastering the art of ‘asking the right question at the right time’ (Magor and Salahuddin 2009).

From the PETRRA experience, partners found that capacity development had a wider meaning and was not limited to being simply a training course. It also referred to creating an environment for learning, praxis, and enabling through facilitation and engagement. The target for any facilitation support should be to help an organization best utilise its strengths and comparative and competitive advantages in support of the innovations it is engaged in. In addition, facilitation should help an organization develop and sustain its learning and innovations and to mainstream these within the organization in such a way as to strengthen its mandate. The capacity development efforts of PETRRA helped develop many champion individuals and organizations among the partners. These champions

¹⁶⁸ As per project document

¹⁶⁹ Actual and shadow actors who were engaged as needed

continued to enrich their experiences and keep their creative innovations alive in different forms. Other projects and programmes are getting the advantage from their services. Many of them are leading organizations.

The challenge lies on the lack of appreciation of the need for such facilitation within organizations. Generally, there is little support of such a role in the R&D system. Organizations look for actors, not enablers. It is also often difficult to find the right persons for this role. Very often, an organization misinterprets its role in a project or a programme; for example, it may depute an expert in technology research and development as the leader of a project or programme that may in fact have a predominant development objective, e.g., reaching poor farmers with simple affordable technologies. Such a bias, in fact, sends a wrong signal concerning the project as a whole. As a consequence, the wrong team members may be selected, the wrong activities may be emphasised, and the wrong partners may be chosen, which ultimately may produce sloppy outcomes. The PETRRA project showed the way to overcome such problems by engaging appropriate team members of mixed disciplines in the PMU, in subprojects, and in different committees; it is apparent that partners appreciated, recognized, and enjoyed the outcome. It is a challenge for such projects/programmes to recruit such a balanced team.

7.6. PETRRA values-based research management approach

The project introduced a number of values in its approach, management, and capacity building. The importance of values was recognised in the course of project management but a lot could still be done to establish them within institutions and to identify different appropriate pathways to operationalise them in the system. In PETRRA, an attempt was made to introduce them into practice, but they still required efforts for further consolidation within public agricultural research systems like IRRI and BRRI. The project developed some researchers as champions who embraced the values well, but they may not be able to sustain the achievement. It is not enough to establish a culture that embraces values within a project; it has to be established in the agencies so that the praxis continues after the project ends.

7.6.1. Important lessons for stakeholders

The question is how to take this forward and how to scale it up across agencies and across continents both vertically and horizontally. There were examples of organizations that recognised and institutionalised the experience and therefore scaled it up both horizontally and vertically (e.g., RDRS, RDA, Shushilan, IRRI, BRRI, Syngenta, EPRC, ABC). On the other hand, within some agencies, there

were persons who picked it up strongly but were not able to take things forward as much they would have hoped (e.g., BRRRI, BARD, BARC, GKF, IRRI)¹⁷⁰.

It is already recognised that all stakeholders and partners were co-creators of PETRRA. All concerned have their own stories and all will obviously continue to enrich their experience further as opportunity arose. Some will be pro-active, some will be able to acquire resources, and some will wait with patience to avail themselves of any such opportunity in the future. There is reason to express this optimism. It is strongly reflected in the partner interviews that are discussed in Chapters IV-VI. The project was diverse in terms of multiple stakeholder interests, involvement, and lessons learned. There was diversity in research issues the partners were involved in, the range of values they interacted with, and the variety of innovations they developed. This diversity in agenda and experience has been very rich and the evidence suggests that much has been sustained within respective organizations. A question can be raised as to what all such stakeholder groups would consider as important lessons learned from their participation in PETRRA and will therefore take forward for their future use. Table 7.3 presents a summary based on individual stories. It may or may not always reflect exactly the position of the organizations concerned.

Table 7.3. A tentative list of elements of values-based management approach as take-home for major stakeholder groups

Value	IRRI	NARES	NGOs	Private agencies
Attitude towards values	Effective experience; more practice needed	New knowledge; continuity in practice needed	Reorientation	New knowledge
Poverty focus	Learned in partnership	Learned in partnership	Orientation to systematic approach	New knowledge
Demand-led	Learned and can link	Learned and can link;	Reorientation	New orientation to pro-poor demand
Women participation	Useful; learned in partnership	Effective discovery	Reorientation in agriculture	New knowledge; important breakthrough
Participatory R&D	Learned the value	Reorientation	New meaning	New knowledge; effective tool
Partnership	Widened the sphere	Reorientation	New orientation	New opening
Linkage and network	Expanded horizontally and vertically	Made a breakthrough	Effective discovery	New opening
Competitive approach	Reorientation to a project/programme context	New orientation	New opportunity in agriculture	New opportunity into public resource
Communication (farmer materials, media, policy)	New orientation	New orientation; effective discovery	Reorientation and new access	New orientation to pro-poor approaches and

¹⁷⁰ BRRRI and IRRI are in both groups as there were successes in both.

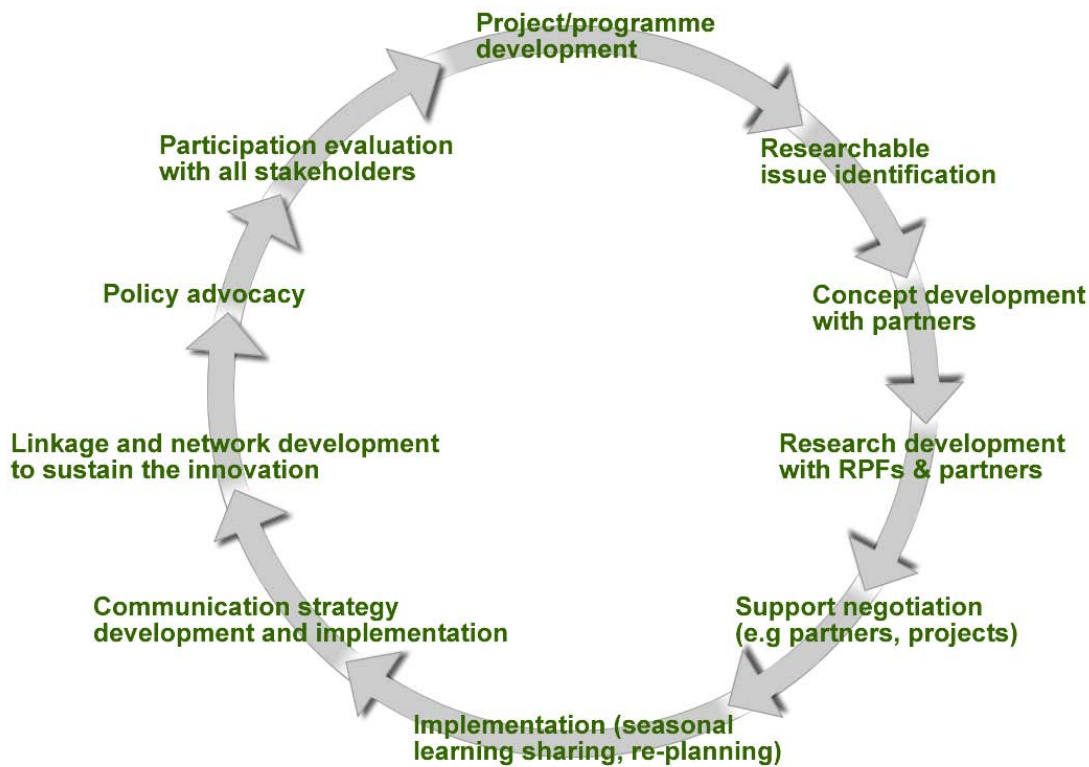
Value	IRRI	NARES	NGOs	Private agencies
dialogue, fairs)				to public space
Capacity development	Reorientation	Very effective; appreciate future opportunity	New orientation	New orientation (especially to pro-poor dimensions)
Flexibility	New meaning	Effective new experience	Very effective; guaranteed smooth entry as an actor	Effective; guaranteed access to public space
Facilitation	New role; needs to unfold further	New role; needs to unfold further	New orientation	New knowledge
Forums (meetings, workshops, focal area, uptake)	New orientation to expanded opportunities	Orientation to expanded opportunities	Guaranteed legitimate entry in agriculture	Guaranteed legitimate entry into public space

7.6.2. Values-based project/programme cycle for management

The generic¹⁷¹ description of the project cycle appears to be insufficient to represent a PETRRA type project or programme as it involves a few more essential steps to be able to make a research or development innovation sustainable in the system. This may start with the stakeholder analysis in order to understand the need and demand of resource-poor farmers. This enables the development of a concept note with potential partners in collaborating countries and may end up with an evaluation by in-country stakeholders, including farmers, government, and the R&D partners. Steps such as linkage and network development, communication strategy development, and in-country policy dialogues for large-scale dissemination of innovations for impact could be components and steps in the project/programme cycle. Figure 7.1 illustrates the possible project/programme cycle.

¹⁷¹ A generic project would involve six steps as referred to by Biggs and Smith: programming, identification, design, support, implementation, and evaluation. Biggs, S. D. and S. Smith (2003). "A Paradox of Learning in Project Cycle Management and the Role of Organizational Culture". *World Development* 31(10): 15.

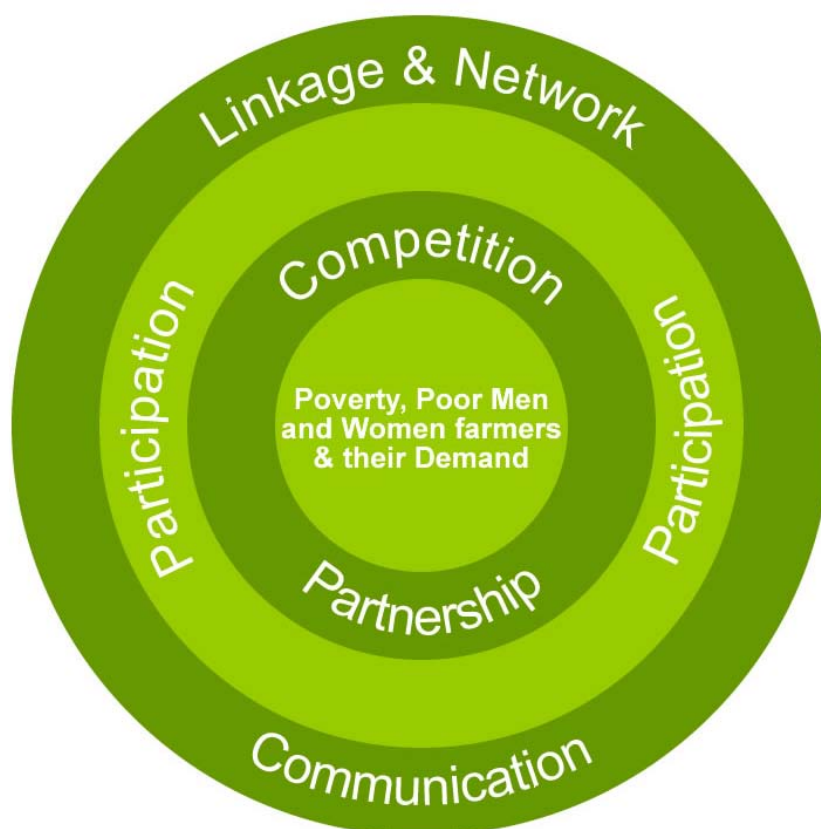
Figure 7.1. Values-based project/programme cycle



7.6.3. Values are interconnected

The values discussed in the thesis were found to be clearly interconnected. Each value had a particular function, depending on the context in which each of them was used. Any future project or programme in the field of agricultural R&D or R4D that aims at poverty reduction as its objective will find such values as useful concepts to work with. Poverty, resource-poor men and women farmers, and their demand and need for livelihood improvement through agricultural research and development initiatives are core values and these therefore will always be the centre of attention. The inclusion of all other values ensures the facilitated learning; their inclusion ensures that the central focus is achieved sustainably. Evidence in PETRRA shows that, although all partners tried to engage with all values, yet each had different levels of attainment. Figure 7.2 presents other important values located in the circles based on the PETRRA experience.

Figure 7.2. Values and their interrelationship



In PETRRA, the central focus was on the *resource-poor men and women farmers and their demand*. Organizations formed *partnerships*; partners were decided following a *competitive* process to address problems of the resource-poor according to their organizational skill and capacity. Some had worked on technology in partnership with organizations that had skills in organizing and interacting with the resource-poor. The interaction between the resource-poor farmers and team members of the partner organizations had to be *participatory* for demand analysis, project planning, design, implementation, and monitoring and evaluation. Partners needed to *communicate* innovations and develop *linkages and networks* to disseminate the innovations to achieve scale and to achieve impact on a greater number of resource-poor farmers and to ensure the sustainability of the innovations.

PETRRA evidence shows that the quality of partnerships helped ensure quality in the targeting of resource-poor men and women farmers. The commitment and leadership in partnerships determined the quality of female participation in R&D activities, women-led subprojects worked with the women. The importance and benefit of giving women equal knowledge as men constituted a strong message from the PETRRA project that proved effective. It is an aspect that has never been previously emphasised in gender discussions in the field of agricultural research and development (Paris et al. 2005). The competitive approach helped break the tradition of only working with government research institutes and led the project to select partners with the right qualifications and to bring in many different

ideas, especially in the area of extension method research. The competitive culture also helped to achieve quality in communication activities and in the accomplishment of the other values, e. g., targeting poor and women. Communication activities such as communication fairs helped partners to meet and know the activities of many different actors in the field of agriculture to form networks and make new linkages, and to participate in formal and informal forums. It also helped different actors to be close to each other and to interact with policymakers.

7.6.4. Values-based agricultural research management approach

The model of values-based agricultural research management approach that emerged in PETRRA provides practical evidence in support of what Mog referred to as a daptive management (2006). It addresses the issue of accountability by working with the primary stakeholders, the resource-poor farmers, directly in the field on a mandatory basis and by co-creating an innovation with many other partners having other important skills (e.g., technology generation, organising and managing groups, and dissemination) from outside the community to attain impact and sustainability.

The approach proved successful as it was able to ensure the strong commitment of IARC and NARS scientists who worked in PETRRA in support of farmer participatory research. It was mentioned before that Becker had observed a growing positive trend of the use of participatory approach (2000). The evidence of the positive experience in PETRRA will help further strengthen the practice of participatory research within the CGIAR. PETRRA partnerships and network and linkage development activities assisted the poor men and women farmers to establish strong coalitions with the 'powerful' people as partners from different GO-NGO-IARCs who had worked with them closely. This partnership helped poor farmers to successfully overcome the obstacles, which Reece et al encountered elsewhere as 'difficulties in building a powerful coalition to assist powerless people' (Reece et al. 2002). PETRRA was a proof of what can be achieved through innovative partnerships.

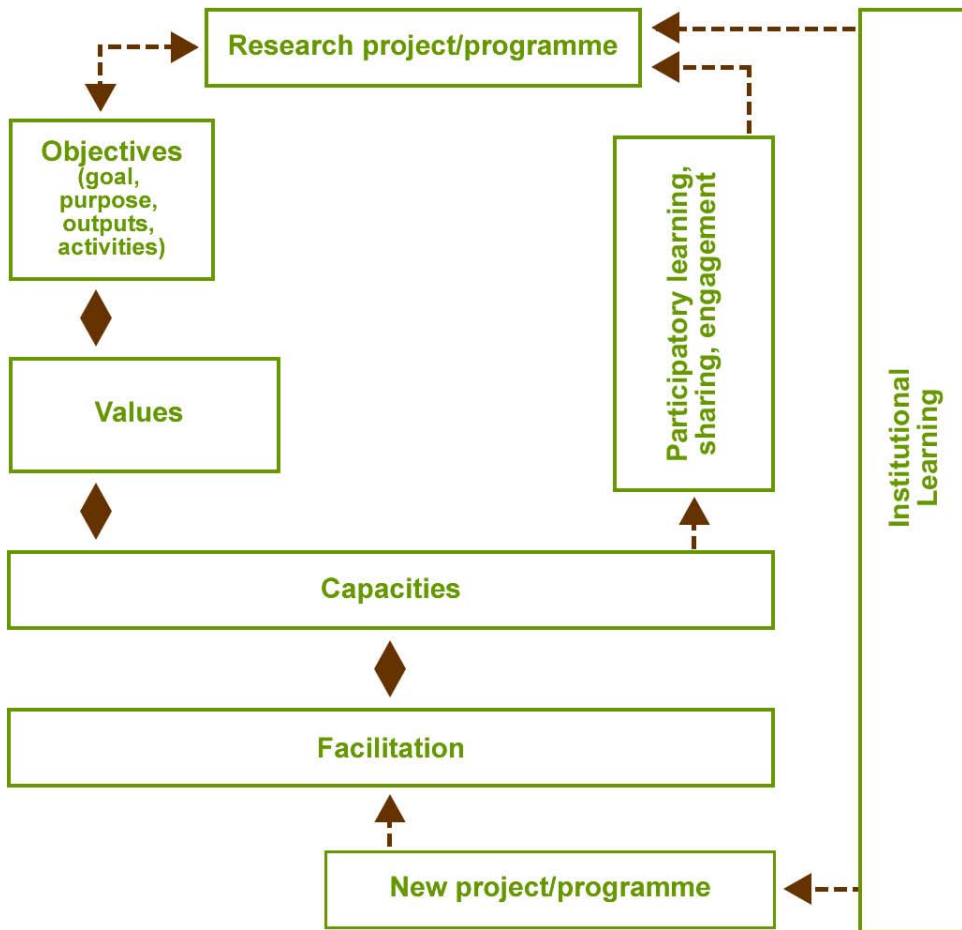
The most critical aspect was the incentive for a researcher involved in a pro-poor impact-oriented agricultural research and development process. Chambers and Gildyal have highlighted the importance of such an incentive (Chambers and Gildyal 1985). In the traditional system, the main incentive for scientists to be involved and to produce good results was to be able to publish in internationally reputed journals. The PETRRA experience provided evidence as to how an agricultural researcher can be rewarded for his/her good work. Such evidences were reflected in their stories. PETRRA introduced incentives for them through communication activities and policy dialogues. Through such initiatives, the scientists had the scope to expose innovative technology and extension

models to people from outside the project, and they had the chance to know, judge, and recognise the innovation. Partners appreciated this opportunity and felt that they received a social reward in terms of recognition and satisfaction of contributing to a national development goal. It did reduce the alienation between researchers and other concerned stakeholders (poor farmers, donors, policy makers, non-traditional partners such as NGOs and private sector etc.). However, for a scientist the institutional reward system of 'the publication imperative for promotion' may act as a barrier to full commitment.

The PETRRA experience suggests that poverty elimination through agricultural research and development can be strengthened through the innovative use of a values-based management approach. In a project management system such as PETRRA, values need to be carefully chosen so that they complement each other and help in easy implementation, 'the ultimate discipline is what works with the people and communities' (Chambers 1997). One value needs to be used to strengthen the effectiveness and to complement the other. Values need to be very closely linked with management strands such as capacity development, facilitation strategy, and a flexible learning process. Scientists need to learn to appreciate 'social' knowledge as having importance to knowledge of the physical world. All concerned need to learn to use flexibility as an enabling capacity towards a balanced management approach, a 'social technology'. All attention needs to be focused on poverty elimination, 'with respect to the choice of both purpose and means', of resource-poor men and women farmers (Korten 1984).

The PETRRA experience calls for the need for institutional learning to achieve greater sustainability of innovations for the core purpose of poverty reduction. The conviction is that institutional change is required to enhance the ability of an agricultural research and development system that can easily appreciate values and help achieve pro-poor impact. There was strong evidence of change among the individual champions. Some of them could influence their organizations in favour of the values-based approach and create potential for change within their organizations. Perhaps, the greatest promise that it created was the hope that within any traditional organization, change can come. The PETRRA approach does not suggest that the place to start is with evaluation, as the ILAC concept would do (Horton et al. 2003; Watts 2005). It aims to generate conscious and planned effort to influence each and every step in the project cycle through a values-based management approach as outlined in Figure 7.3 below and introduced in Figures 7.1 and 7.2 above. This is an important point to make in process learning. The positive outcome of the PETRRA experience across so many actors across such diverse institutions and organizations suggests that the immersion within the system with praxis is a far more effective means of learning and rather than simply an external evaluative approach.

Figure 7.3. Values-based agricultural research management approach



A project or a programme (i) will need to have the clear objective of poverty reduction that needs to be engaged with (ii) a set of values as needed that facilitate pro-poor impact. This will require (iii) a strategic capacity support. (iv) The principle of facilitation needs to be adopted as the guiding management tool in the approach. (v) A participatory engagement strategy for learning-sharing, monitoring, and evaluation needs to be in place so that interaction and exchange take place on a continuous basis in the system that ensures (vi) regular feedback and institutional learning. The new learning will allow projects and programmes to tap into this for future activities.

The experience of PETRRA has addressed the gap that existed in the literature as mentioned in Chapter I. The model starts with the focus on poor men and women farmers. This has been a concern regarding CGIAR centres and it has been suggested that the response to picking up this 'new' awareness has been slow (Kassam 2003). The unique learning that the model offers is the knowledge that tells the story of how to reach these poor farmers, how to talk with them, how to know their problems according to their own definition, and how to work with organizations that work with these poor people. It is the art of engagement with poor farmers that allows partner organizations and individuals to discover themselves and define and refine their objectives on a continuous basis through

a number of means and actions as practiced in PETRRA. The PETRRA approach encouraged partners to operate like a learning organization, to go far deeper into the process than the concept such as ILAC would consider regarding institutional learning (CGIAR 2005). It allows actors to get access to the process by closely working with the poor and discovering their limitations (both their own and those of farmers) in every step and rectifying them on an ongoing basis. On the very first day, they are in the field interacting with the poor farmers, not waiting for an evaluative enquiry process at the end of the year or a project. It is more than 'farmer first' as it aims to take along and build on the important role and potential of the other actors (Chambers et al. 1989). It is more than participation of the poor; it is about many other important values (as mentioned in Figure 7.2), capacities and facilitation towards a lively learning environment that helped participatory research and development concepts to be more meaningful and effective. The approach helps actors to utilise the available entry points, e.g., vision statements, MDGs, new donors such as the Melinda and Bill Gates Foundation that opened up in favour of the values-based approach. The beauty of the PETRRA approach is that it can comfortably embrace all past positive efforts, intentions, motivations, and actions towards pro-poor impact-oriented outcomes but yet shows its unique difference from others. The insightful comments of Bill Gates bring the values-based approach into reality:

...I believe that helping the poorest small-holder farmers grow more crops ...is the world's single most powerful lever for reducing hunger and poverty... The next green revolution must be guided by small-holder farmers... We see all our investments through the eyes of small farmers... We're responsive to the needs and recommendations of the farmers themselves. And we respect the expertise of the women farmers... Poor farmers are not a problem to be solved; they are the solution – the best answer for a world that is fighting hunger and poverty, and trying to feed a growing population. ...It will take passion and focus and a sustained sense of urgency. It will take a willingness to put aside old divisions and come together behind this cause (Gates 2009).

The statement is a strong endorsement of the PETRRA approach, focused on the need to work with poor farmers. The PETRRA approach also appreciates some of the innovation system concepts that go beyond 'farmers' and 'technologies' (Hall 2007) and recognises the need for a values-based management that determines the sustainability of the approach and indicates pathways as to how to conduct R&D that would have the best chance to bring impact on the poor farmers, not just feeding them through adequate production from the diffusion of technologies (Ruttan 1984). Many actors and systems are more receptive to values-based approaches now; what they need is to follow a systematic approach with the right kind of leadership.

7.7. Policy recommendations to take learning forward

There is a need for nurturing the relationship for sustainable development of programmes and projects by the partners. Projects such as PETRRA developed and accumulate so much experience and information but, in most cases, these are not systematically documented, analysed, and used in similar

projects or programmes. Organizations tend to ignore the value of such learning and aim to ‘reinvent the wheel’ again and again while it could very well be used as the basis for starting a similar new initiative. It is important to map out the range of learning that a particular project or programme has to offer and identify best practices to be able to internalise and institutionalise them within an organization. The scope of such practice may vary, but all concerned who learned from a project or programme can always pick up elements that are appropriate for themselves and which fit in to their organization. Organizations may have a list of values in their vision documents but they rarely develop them based on such rich evidence-based experiences. They hardly accumulate those experiences as part of their institutional commitment to be able to support the next round of projects or programmes to carry forward their values. The PETRRA project experiences provide a scope to develop strong institutional commitment in many of its stakeholders, including IRRI and DFID. IRRI, for many of its in-country R&D and R4D projects and programmes, can systematically use such a rich experience. There was recognition of such a need, but the reality is that much more could still be done to institutionalise such learning (Van Mele et al. 2005; Chambers 2007; Dobermann 2009; Smith and Chataway 2009).

Hall has referred to similar frustrations and concerns which arise when one seeks to bring about institutional and policy change and to the difficulty in achieving collective learning and appreciation of diversity in innovation experiences. He emphasised the need for a ‘Community of Practice Approach’ to take the innovation systems approach forward. The same is true for the values-based research and development management approach. There is a need ‘to share these experiences in an effort to stimulate the virtuous spiral of innovation practice and policy learning’ (Hall 2007:27).

As far as Bangladesh is concerned, all major organizations involved in the project might find the research outcomes of interest. BRRI, the Ministry of Agriculture, the NGOs, private agencies, government development agencies, the Department of Agricultural Extension, the Bangladesh Agricultural Research Institute, and the Bangladesh Agricultural Research Council – all such organizations could explore opportunities to design and implement such initiatives as all were convinced and found the experience as positive for pro-poor impact. Resources could be sought from different sources: donors, government funds, or own organizational funds. The challenge perhaps is for any of these organizations to take the initiative, all others would hopefully respond to that positively.

Each stakeholder needs to have its own approach of responding to the learning from PETRRA, although the common purpose for all is poverty elimination. However, here are some policy recommendations for the major group of PETRRA stakeholders.

7.7.1. IRRI

An organization such as IRRI can be very influential in terms of taking forward a values-based approach as evidenced in PETRRA. IRRI does have an influence on NARES professionals and research managers and does influence policymakers. The approach of PETRRA nurtured a set of partnerships and linkages that enabled its advanced research in collaboration with NARS to be adapted and validated at the farm level. This is evidenced in the followup Challenge Programme projects and the Bill and Melinda Gates Foundation STRASA project. This is a more recent role for IRRI. Is it a long-term directional shift? If the response to this is positive, then, in PETRRA, it has a model for moving forward in partnership with NARES and NGOs that enables direct engagement with resource-poor households and the organizations around these households.

IRRI as the implementing agency is in a position to learn the most from the PETRRA experience and respond to this learning by incorporating it into future projects and programmes. Any new research, research and development, or research for development project and programme under IRRI should be able to set poverty elimination as its core objective. In all of its future programmes, it can work with diverse groups (GO, NGO, private agency, government development agency, universities) of partners that are useful to accomplish the target of poverty elimination. IRRI should carefully select the leader of a project or programme that has a strong target of poverty elimination and pro-poor impact. It needs to ensure that the right people with the right experience and management style are placed as leaders. It needs a working definition of the poor to work with and all associated actions should be directed towards achieving the intended outcome. IRRI also needs to plan and design projects with all potential stakeholders to avoid any likely limitation during implementation. Being a technology leader, IRRI needs to accommodate the values-oriented management system as part of its organizational culture if it wants to be a champion organization embracing poverty focus as a core value.

7.7.2. BIRRI

BIRRI as the lead collaborating agency and as the most active partner implementing the subprojects had a very rich experience in PETRRA. As the pioneer implementer of such a values-based agricultural research initiative, BIRRI can be a model NARS organization for rice-producing developing countries in implementing pro-poor research and development. The first step for BIRRI is to further internalise the learning into its own working practices. It can influence national governments by providing the PETRRA example as evidence for the adoption of a poverty-focused approach in agricultural research and development. BIRRI, based on their positive experience in PETRRA, should try to convince the national

government to work with poor farmers since that could help achieve the national goals of food security and poverty reduction. Based on its experience, BRRI can confidently open up its partnership policy to accommodate all actors active in the field of agriculture and not limit itself to simply government agencies. For each region, around each regional station, BRRI can actively develop a set of partners for research and extension. This could become the basis of regional forums that enable technology validation and dissemination to a large number of resource-poor men and women farmers. BRRI can also formulate a national capacity-building plan that incorporates all stakeholders. BRRI can implement training and extension activities that includes the development and best use of the Rice Knowledge Bank. BRRI can try to convince donors such as DFID to invest more in PETTRA-type projects/programmes that enable pro-poor impact. BRRI can advocate that NGOs invest more in agriculture and establish formal linkages with research institutes. This would enable collaborative research and development activities to continue and to not just be dependent on a specific project or programme.

7.7.3. DFID

DFID is regarded as a value-sensitive and a committed donor agency. There is sufficient evidence in this research outcome to favour more investment in projects that utilise a values-based approach. The evidence from this research suggests a process that has definitely been successful. DFID was, in fact, willing to support a larger project based on its positive experience in PETTRA, in partnership with other major donors in Bangladesh. They may find that attempt still appropriate and relevant to a country such as Bangladesh and many more in Asia and Africa where poor farmers will continue to depend heavily on agriculture for their livelihoods.

DFID is a big picture donor, often active in reform processes internationally and within country. What is striking in the outcome of the PETTRA project was the extent of innovation that was possible through two quite traditional research institutions, namely IRRI and BRRI. The practices underpinning PETTRA management and the potential with such approaches do need a closer scrutiny of DFID and with that its potential funding of projects in the future.

DFID has been recognised as a good donor as it allowed a project such as PETTRA to be learning-oriented. DFID should be proud of what it had achieved through PETTRA and should replicate such examples more in their future development cooperation in countries such as Bangladesh. They should be able to appreciate the benefit of investing in pro-poor agricultural research and development like PETTRA. The discontinuation of such support in the future would mean their non-action in a potential and proven area of development cooperation. As a donor, it can also communicate its suggestions to

governments and NGOs to take up such programmes as part of their overall support to development cooperation. They can also advise other donors to invest in such programmes.

7.7.4. Government of Bangladesh

The Government of Bangladesh (GoB) should be congratulated on the way it supported and actively participated in the implementation of the PETRRA project. It is now important for the government to implement the lessons learned in the project. An important step is a clear recognition of the role of all actors in delivering public goods in the field of agricultural research and development as legitimate partners. The government may recognise partnerships across public institutions, the private sector, and NGO/civil society and with this, the signing of any MoUs for any such R & D collaboration. The Government can cite the example of PETRRA as a success case and pursue donors to invest in projects/programmes such as PETRRA. NGOs, government development agencies, and private agencies active in the field of agriculture need to be duly recognised and they need to be brought in under a national network so that their services can be utilised according to their potential. The outcome of PETRRA suggests that a competitive process can serve to ensure compliance with a poverty focus that is women- inclusive and reflects appropriate partnerships. The Government may suggest that its agricultural research and extension system continue to use PETRRA's pro-poor approach as their guiding principle for R&D activities in their regular programmes. In addition, the concept of focal area forums, which already has the endorsement of the government, may be replicated in other regions of the country. In agricultural education, respective universities may link their graduate education-research programmes with agencies working at the village level with resource-poor men and women farmers.

7.7.5. NGOs

NGOs in Bangladesh had the biggest exposure to the world of research and development in agriculture through PETRRA. It should be noted here that, although NGOs represent a particular type of organization, there is considerable variation in approach and performance and so the recommendation here cannot be taken as being generalised to NGOs. In fact, the CN scrutiny process as elaborated in Chapter II found many wanting. The findings indicate that the NGOs engaged in PETRRA had discovered their own comparative advantage in agriculture as an entry point to contribute to overall poverty elimination. NGOs can use the experience of PETRRA to consolidate their learning and apply that in their ongoing development programmes. It is important that they build strong agriculture programmes by allocating adequate resources. There is a need to invest more in human resource development in the field of agriculture to be able to help their poor men and women clients. It was

clearly evident that a strong linkage with the agricultural research and development agencies as the knowledge source for technologies, information, and training was critical to their own engagement with agriculture. Research-education linkage with universities showed another area in which the role of NGOs was vital. This was demonstrated clearly by RDRS. There may be other NGOs, active in agriculture, which can establish strong linkages with regional-national universities to make education research more relevant to poor people.

7.7.6. Government development agencies

Government development agencies such as BARD and RDA were demonstrated as high potential agencies for agriculture, yet their mandate and role appear to be nationally underutilised. It is evident that RDA has assumed a higher profile in agriculture than is recognised by the government. Each has tremendous potential to work in agriculture due to the nature of their activities of adaptive research for development and training. They have considerable infrastructure and human resources to be involved in agricultural programmes. The PETRRA outcome has demonstrated their potential to add value to the national AR&D system. BARD and RDA need to pursue this at the appropriate level where they can show their PETRRA experience as evidence. Other actors such as IRRI and BRRI can be approached to bring them into the fore, using their expertise as active agents for AR&D activities in the future.

7.7.7. Private agencies

The PETRRA experience has been an eye opener for private agencies such as ABC and Syngenta. Probably, what came through the strongest was the value each received from their links to government expertise and knowledge. There would be a benefit, as demonstrated under their PETRRA subprojects, in keeping a focus on small and marginal farmers as clients as these groups together constitute the largest and most vibrant section of farmers.

7.8. Conclusion

PETRRA technologies and extension models were already showing impact at the farmer level; there were champion individuals and organizations that were substantially changed in the process of engagement in the project. There was strong evidence of followup development after the project was closed: examples are the seed network of BRRI, the farmer participatory model of salinity tolerance breeding, the federation seed model of RDRS, the Maria seed village model of RDA, and the focal area forum of the northwest. Coupled with this were individual and organizational examples of the ongoing

incorporation of values into their R&D (Chapter VI). PETRRA was a success. The evidence suggests that the contributing factors were rightly identifying the values, organising capacity development around these values, employing facilitation as a guiding principle for capacity building, and accommodating these essential elements into a management approach.

While each value alone was found important and useful for ensuring a positive impact from agricultural research and development initiatives, the impact of their usefulness in combination and in a complementary manner was stronger, more meaningful, and appeared more sustainable. The achievement of a poverty focus becomes easier when it is done with *poor men and women* in response to their *demand* and with their *participation*, with *partners* who target poorer farm households, and when the partner organizations are willing to continue and expand the impact through establishing effective *communication* strategies, and strong *linkages and networks* with other important actors. A competitive approach enriched the system as it encouraged partners to be innovative. The overall culture of the values-based approach nurtured a learning environment. The approach was underpinned strongly with capacity building that was guided by principles of facilitation. The need for such capacity building was recognised. The strong presence of a values-based management approach was mentioned by partners, research managers, and reviewers. It was recognised that because of the practice of a values-based research management approach, the PETRRA innovations that emerged from across the subprojects showed clear evidence of impact on resource-poor farmers. The more important aspects that were appreciated were the approach, the learning environment, and the way the whole environment was managed and facilitated. The management style empowered partners to experiment with their own ideas. The values, the capacity development approach, and the management approach as a whole contributed to the success and the sustainability of PETRRA beyond the lifetime of the project. What has been learned from this example of values-based development management is that it is entirely feasible to make agricultural research and development projects and programmes that are more pro-poor impact-oriented. It is too important to be forgotten or relegated to agency filing cabinets.

While most projects and programmes in the field of agricultural research and development fail to reach the poor, PETRRA seemed to be a success. What made it a success? Is there a single answer? No. Perhaps, it was a success because it did not stop asking the question, even to itself. Perhaps, it was the leadership or the facilitation. Perhaps, it was the synergy; all actors involved in the process happened to be respectful of each other, never trying to undermine each other's ability or willingness in order to achieve the goal. Perhaps, all of them were vigilant in developing and guarding the values strongly. The gaps between actors continued to be reduced over time; there were fewer gaps in what they committed and what they did practically. Perhaps, it was the right historical moment in the developmental phase of Bangladesh, donors were committed to poverty-focused agricultural R&D and

they had the right partners, IRRI, BRRI, and others, all of whom were ready to comply and willing to take up the challenge. The values-based approach is now a tested experience. It is documented. Anyone can now use this experience; their experiences will assist us to understand how much of what PETRRA achieved was unique to the project and how much can be incorporated into the mainstream of development management.

Appendix 1: List of PETRRA partners interviewed

Uptake Methods projects

Name of interviewee	SP no	Title of the project	Organization the person(s) belong to
Dr M Musherraf Husain	SP 01	ARD Method of Technology Uptake	BIRRI (government agency)
Dr Jahirul Islam	SP 01	BIRRI Training for PETRRA partners	BIRRI
Dr MK Bashar	SP 02	National Seed Network	BIRRI
Not interviewed	SP 03	BRAC Uptake Method	BRAC (INGO)
Not interviewed	SP 04	Grameen Pro-poor Seed Business Model	GKF (National NGO)
Harun Ar-Rashid	SP 05	Farmer to Farmer Seed Exchange (FARMSEED) Model	AAS (National NGO)
Anwar Hossain & Mobarak Hossain Khan	SP 06	Union-federation led Uptake Model	Proshika (National NGO)
MG Neogi	SP 07	Federation-led Seed Production, Processing and Marketing Model	RDRS (Regional NGO)
Fashiur Rahman	SP 08	Private Sector-led Seed Production and Marketing Model	ABC (Private Business Enterprise)
Mostafa Nuruzzaman	SP 09	Cultural Approach for Technology Dissemination	Shushilan (local NGO in transition to become a regional NGO)
Tapash Bose and AK Azad	SP 23	Village Institutional Model for Modern Variety Seed and Cultivation Technology Dissemination	BARD (National Rural Development Academy)
Momtaz Roomy	SP 31	Poverty Approaches Through Participatory Group Approaches	Mukti-O-Nari (Local NGO)
Dr Saidul islam	SP 33	Dissemination of BIRRI Farm Machinery Among the Resource Poor Farmers and Improvement of Fine Rice Processing Technology in North West Region of Bangladesh	BIRRI
AKM Zakaria	SP 37	Learner-Centered Video Production to Enhance Women-to-Women Extension of Post-harvest Innovation	RDA (National Rural Development Academy)
Not interviewed	SP 38	Local Entrepreneurship and Network Development for Mobile Pump Dissemination in Rice Cultivation	IDE (INGO)
Not interviewed	SP 39	Women-led Extension Method for Rice and Rice Seed Drying and Storage Technology	
Gopal Chowhan	SP 40	Private Sector Led Farmer Field School Extension Method for Herbicide Use in Rice Cultivation	SAFE (National NGO)
Mahbubur Rahman			Syngenta (MNC)
MG Neogi	SP 41	Women Led Farmer Field School (FFS) for Disseminating Rice-Potato-Rice Cropping Pattern in Northern Bangladesh	RDRS (Regional NGO)
Sufia Khanam	SP 42	Development of An Appropriate	EPRC (National NGO)

Name of interviewee	SP no	Title of the project	Organization the person(s) belong to
		Uptake Method for Building Rice Post Harvest of Resource Poor Women	
Akhter Hossain Khan	SP 43	Validation of Technology Uptake Pathways for Site Specific Nutrient Management (SSNM) Technologies for Intensive Rice-Based Cropping Systems in Southwestern Part of Bangladesh	BRRRI
Harun Ar-Rashid AKM Ferdous	SP 44	Skilled Family Members Extension Approach for Rice Knowledge Adoption	AAS (National NGO)

Technology Development Projects

Name of interviewee	SP no	Title of the project	Organization the person(s) belong to
Dr MA Taher Mia Lina Diaz	SP 00	Seed Health Improvement Project	BRRRI IRRI
Akhter Hossain Khan	SP 10	Sustainable Nutrient Management in Intensive Cropping System	BRRRI
Dr MA Salam Dr Glen Gregorio	SP 13	Development and Use of High Yielding Rice Varieties of the Coastal Wetland of Bangladesh	BRRRI IRRI
Not Interviewed	SP 15	Development and Use of Hybrid Rice Technology in Bangladesh	BRRRI
Dr MA Saleque Harun Ar-Rashid AKM Ferdous	SP 17	Participatory Integrated Nutrient Management for Intensive Rice-Based Cropping, Moulvibazar	BRRRI AAS AAS
Not Interviewed	SP 18	Integrated Crop and Nutrient Management for Increasing the Productivity of the Coastal Saline Soils of Bangladesh, Satkhira	BRRRI/Shushilan
Dr GJU Ahmed ST Hossain	SP 19	Integration of Rice-cum-Duck Farming for Resource Poor Farmer Households	BRRRI
Dr M Mondal	SP 20	Development and Utilization of Coastal Water Resources for Crop Production and its Impact on the Coastal Ecosystem of Bangladesh	BRRRI
Dr MA Mazid	SP 21	Adaptation and Adoption of USG Technology for Resource Poor Farmers in the Tidal Submergence Prone Area	BRRRI
Dr MK Bashar Sukanto Sen	SP 22	Rice Diversity and Production in the Southwest of Bangladesh: Using Diversity and Local Knowledge to Create.	BRRRI BARCIK (National NGO)
Dr MA Sattar	SP 25	Integrated Crop Management (ICM) in North-west Region of Bangladesh	BRRRI
Dr Gary Jahn	SP 27	Livelihood Improvement Through	IRRI

Name of interviewee	SP no	Title of the project	Organization the person(s) belong to
Rokeya Begum Safali		Ecology (LITE)	AID-Comilla (Regional NGO)
Chashi Mannan	SP 28	Production and Marketing of Fine Aromatic and Glutinous (FAG) Rice Through Farmers Participation in North-East Region of Bangladesh	HEED Bangladesh (National NGO)
MA Salam	SP 29	Technology Development of Production, Processing and Marketing System of Aromatic Rice in North West Region of Bangladesh	APEX (National NGO)
Rokeya Begum Safali	SP 30	Ecologically-based Rodent Management for Diversified Rice-Based Cropping Systems	AID-Comilla
Dr MA Razzaque	SP 32	Farmers Participatory Research on Integrated Rice-Based Farming for Improved Livelihood for Resource-Poor Farm Households	BARC (Government Coordination of Agricultural Research Institutes)
ABS Sarker	SP 34	Validation and Delivery of the System of Rice Intensification (SRI) Methods for Increased Rice Production of the Resource Poor Farmers of Southwest Region of Bangladesh	BIRRI
Dr MA Latif	SP 35	Extension of System of Rice Intensification (SRI) Through Verification	BIRRI
Gopal Chowhan Mahbubur Rahman	SP 36	Verification and Refinement of the Rice Intensification (SRI) Project in Selected Areas of Bangladesh	SAFE (National NGO) Syngenta (MNC)

Policy Research projects

Name of Interviewee	SP No	Title of the Project	Organization the person(s) belong to
Not Interviewed	SP 11	Flood Prone Village Study Revisit	
Not Interviewed	SP 12	Access to Quality Agri-inputs by Resource Poor Farm Households	
Not Interviewed	SP 14	Rice and Livelihood of Increasing Diversifying Economy of Southwest Bangladesh	
Not Interviewed	SP 16	Arsenic in the Food Chain: Assessment of Water-Soil-Crop Systems in Target Areas of Bangladesh	
Dr Uttam Kumar Dev Dr Thelma Paris	SP 24	Dynamics of Livelihood Systems in Rural Bangladesh: Generation of Information for Facilitating Dialogues on Strategies and Policies Pertaining to Elimination of Poverty	CPD (National NGO) IRRI
Dr M Rafiqul Islam	SP 26	Pathway from Poverty: Processes of Graduation Among Resource-Poor Farm Households	BIRRI

PETRRRA Follow up projects

Name of Interviewee	SP No	Title of the Project	Organization the person(s) belong to
Dr TP Tuoung	Follow-up of SP 20	CPFWF10	IRRI
Dr Abdelbagi Ismail	Follow-up of SP 13 & 20	CPWF7	IRRI
Mofizur Rahman	Follow-up of SP 00 & PETRRRA as a whole	FoSHoL	Action Aid Bangladesh (INGO) & CARE-Bangladesh (INGO)
AKM Ferdous	Follow-up of SP 00 & PETRRRA as a whole	FoSHoL	Practical Action Bangladesh (INGO) (& AAS)

Appendix 2: Checklist for discussion with SP leaders of PETRRA

Poverty focus:

How much have you achieved poverty focus in the SP:

- What was the story in achieving poverty focus over the project period?
- How useful was this emphasis on poverty that PETRRA had put?
- In case you have not achieved much, why have you not achieved?
- Any specific story of the SP that you want to highlight as case: to highlight the a) success or b) failure?
- Are any of the lessons learned in PETRRA are still being practiced in (your or) BRRI/IRRI research programmes? How did it influence you to continue the emphasis (of poverty focus)?

Demand-led research and development:

How much have you achieved demand-led research and development in your SP?

- What was the story behind the achievement?
- How useful was this emphasis on demand-led R&D that PETRRA had put on?
- In case you have not achieved much, why is it the case?
- Any specific story of the SP that you want to highlight as case: to highlight the a) success or b) failure?
- What would be your position in terms of advocating for demand-led R&D?
- Are any of those lessons still being practiced in BRRI programmes? How did it influence your organization/BRRI/IRRI to continue the emphasis?

Participation:

How much did you achieve to successfully conduct participatory R&D in the SP you were involved in:

- What was the story behind the achievement?
- How useful was this emphasis on participation in R&D that PETRRA had pushed on?
- Any specific story of the SP that you want to highlight as case: to highlight the a) success, b) failure?
- What would be your position in terms of advocating for participatory R&D?
- Are any of the lessons learned in PETRRA still being practiced in your programmes? How did it influence your organization/BRRI/IRRI to continue the emphasis?

Partnership:

You seem to have achieved a great success on partnership in conducting R&D in your PETRRA SP:

- What was the story behind the achievement?
- How useful was this emphasis on partnership in R&D that PETRRA had pushed on?
- Any specific story of the SP that you want to highlight as case: to highlight the a) success or b) failure?
- What would be your position in terms of advocating for partnership based R&D?

- Are any of those lessons still being practiced in your programmes? How did it influence your organization/BRRI/IRRI to continue the emphasis?

Gender:

How much did you achieve in conducting gender balanced R&D in your PETRRA SP?

- What was the story behind the achievement?
- How useful was this emphasis on gender balance (emphasis in women participating in every stage) in R&D that PETRRA had put emphasis on?
- Any specific story of your SP that you want to highlight as case: to highlight the a) success or b) failure? (Note: I would be interested to know the emphasis and impact that 'only women' verses 'mixed participation of poor men and women' in R&D).;
- What would be your position in terms of giving equal importance to both men and women within the resource poor households in agricultural R&D?
- What lessons are still being practiced in your research programmes? How did it influence your organization/BRRI/IRRI to continue the emphasis?

Network and Linkage:

You seem to have achieved a great success on partnership in conducting R&D in your PETRRA SP:

- What was the story behind the achievement?
- How useful was this emphasis on Linkage and Network in R&D that PETRRA had pushed on?
- Any specific story of your SP that you want to highlight as case: to highlight the a) success or b) failure?
- What would be your position in terms of advocating for the importance of Linkage and Network in order to sustain the impact of a project in agricultural R&D?
- Are any of the lessons from the PETRRA project still being practiced in your research programmes? How did it influence your organization/BRRI/IRRI to continue the emphasis?

Communicating Results:

How important did you find Communication is, in the light of PETRRA experience, to substantiate impact of the R&D project?

- What lessons of PETRRA do you still carry over in your research programme?
- Any specific story of your SP that you want to mention as a good practice case to highlight the importance of communication?

Competitive research commissioning:

How would you assess the importance of competitive bidding system in getting quality agricultural R&D?

- Implication for individual researcher
- Implication for organization/institution

Overall assessment on PETRRA project:

Lessons:

Strengths:

Limitations:

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