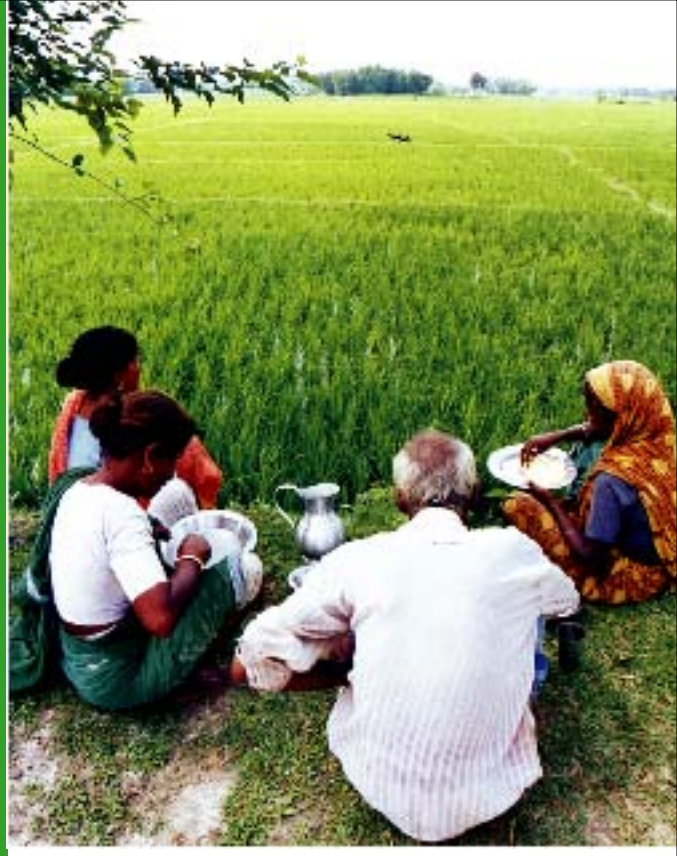
Learning and experiences of the PETRRA project, BANGLADESH



BOOK: 1/10

PETRRA overview

PETRRA – an experiment in pro-poor agricultural research

Edited by Noel P. Magor, Ahmad Salahuddin, Mamunul Haque, Tapash K. Biswas and Matt Bannerman

DFID Department for International Development

IRRI International Rice Research Institute

Bangladesh Rice Research Institute

Poverty Elimination Through Rice Research Assistance (PETRRA), 1999-2004

a project funded by DFID, managed by IRRI in close collaboration with BRRI

PETRRA – an experiment in pro-poor agricultural research

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IRRI
Bangladesh

2007

IRRI
International Rice Research Institute

The International Rice Research Institute (IRRI - www.irri.org) was established in 1960 by the Ford and Rockefeller Foundations in cooperation with the help and approval of the Government of the Philippines. Today IRRI is one of the 15 nonprofit international research centres supported by the Consultative Group on International Agricultural Research (CGIAR - www.cgiar.org).

IRRI receives support from several CGIAR members, including the World Bank, European Union, Asian Development Bank, International Fund for Agricultural Development, International development Research Centre, Rockfeller Foundation, Food and Agriculture Organisation of the United Nations, and agencies of the following countries: Australia, Austria, Belgium, Brazil, Canada, Denmark, France, Germany, India, Iran, Japan, Malaysia, Netherlands, Norway, People's Republic of China, Republic of Korea, Republic of the Philippines, Spain, Sweden, Switzerland, Thailand, United Kingdom, United States, and Vietnam.

IRRI's mission is to reduce poverty and hunger, improve the health of rice farmers and consumers, and ensure that rice production is environmentally sustainable. IRRI works closely with most rice-producing and -consuming countries and their national agricultural research and extension systems as well as farming communities and a range of international, regional, and local organisations. In partnerships with these national systems, IRRI conducts research and provide training and education for those helping rice farmers by disseminating information and proven, sustainable technologies. IRRI was responsible for managing the project in association with BRRI and was a research partner of PETRRA.

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Foreword

The Poverty Elimination Through Rice Research Assistance or PETRRA project, was generously funded by the United Kingdom Department for International Research (DFID). From 1999 to 2004, the project was managed by the International Rice Research Institute (IRRI) in close collaboration with the Bangladesh Rice Research Institute (BRRI). It was an experiment in pro-poor agricultural research.

Under PETRRA there were 45 sub-projects (SPs) commissioned for technology development, uptake methods research and policy research. There were more than 47 partner agencies representing national, international, universities, NGOs and private organisations. There was a project steering committee (PSC), chaired by the Secretary, Ministry of Agriculture (MOA) and a technical committee (TEC) chaired by the Director General of BRRI. Over the life of the project there was an annual output to purpose review (OPR) and a project completion review. For each of these there was a national-international review team. For each review there was a report of more than 100 pages and project working paper of 100-250 pages. Each sub-project submitted quarterly reports and a final completion and evaluation report. This would amount to more than 5,000 pages of documentation. Most project reports end up in an archive and may or may not influence policy! It was suggested by Margaret Quinn, the team leader for the fourth OPR, that the development of a box-kit or series of briefs would help capture learning that would then be available to be shared and to influence future policy and initiatives. We are thankful for the seed that was sown at that time.

The series of books cover overview, strategy, policy, newspaper articles, the value-based competitive grant system, communications, gender, uptake pathways, monitoring and evaluation, and briefs on each of the SPs.

We acknowledge the contribution of the members of the PSC that permitted the rich innovations of PETRRA and the members of the TEC that advised the project. The donor, DFID, encouraged the innovative processes of the project. This publication is a suitable recognition of their commitment and support. We acknowledge IRRI senior management for its strong support and BRRI for providing an institutional home. Thanks are due to each sub-project leader and their respective teams. We hope in some way that you recognise your contribution to the PETRRA experiment in pro-poor agricultural research. It is our hope that this publication helps you as you take the lessons learned forward. We thank Md. Zahurul Hoque Shahin and Khendker Mahbubul Wodud for text layout and design, Bill Hardy for editorial guidance and Rose Magor for proof reading and Gene Hettel for guidance on the creative commons license. We gratefully thank the IRRI Dhaka office for its support in bringing this publication to fruition.

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RESEARCH AND DISSEMINATION PARTNERS OF THE PETRRA PROJECTS[1]

Agricultural Advisory Society (AAS)

AAS, was formed by a group of agricultural professionals in 1989. It is registered under the Society Act for non-government organisations. It is registered under the Seed Wing, Ministry of Agriculture, Government of Bangladesh for seed production, marketing and distribution. Since its inception, AAS has implemented numerous projects with the objective to reduce the poverty of marginal and small farmers.

AAS has developed strategies for marginal and small farmers for high-yielding and high-value crop intensification. AAS is very effective in linking small NGOs and community based organisations (CBOs) to government research and extension programmes and international NGOs. Through AAS local NGOs and CBOs have been able to set-up effective demonstrations and to extend new agricultural technologies to farmers. AAS acts as a bridging organisation for technology transfer between farmers, private companies, input/output traders, the department of Agricultural Extension (DAE) and research institutions (BRRI for rice technology, BADC as a source of foundation and certified seed). AAS was a research and extension partner of PETRRA in a number of sub-projects.

Apex

Apex is a non-governmental organisation founded in 1998. Apex was initially a relief organisation for relief and rehabilitation of people affected by floods. Subsequently it registered with the Department of Social Welfare and NGO Affairs Bureau. Its principle focus is to facilitate & support social, economic, technical skill & capacity of poorer households in rural areas.. Apex specialises in agricultural development of resource poor men and women farmers with a particular focus on agro-based business. It has specialised capacity in high quality rice processing and marketing through to export. Apex was a research partner of PETRRA.

Association for the Integrated Development-Comilla (AID-Comilla)

AID-Comilla is a non-governmental organisation (NGO) working for improvement in the socio-economic well being of poor people in rural and urban areas. The organisation was founded in December 1992 with formal operations commencing in June 1995 in the rural slum areas of Comilla district. It now operates in several other sub-districts (upazila) of greater Comilla, Gazipur and Kurigram districts. AID-Comilla was a research partner of PETRRA.

Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU)

BSMRAU is a government institution that was established in 1983 as the Bangladesh College of Agricultural Sciences and subsequently developed into a complete agricultural university. It has eight departments, namely Agricultural Extension and Rural Development, Agronomy, Crop Botany, Entomology, Genetics and Plant Breeding, Horticulture, Plant Pathology, and Soil Science, that offer graduate programmes leading to M.S. and Ph.D. degrees. The teachers are actively involved in research. The activities include dissemination of the results of basic and applied research of the university to the field staff, officers of DAE, NGOs and farmers. The outreach wing organises technology training programmes for various members of the farm community. BSMRAU was a research partner of PETRRA.

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[1] The briefs of partners given here is for partners with whom sub-project Research Agreements were signed. It is not inclusive of the numerous links that a partner may have at the field level. For example, 'Rice diversity and production in south-west of Bangladesh: using local knowledge to create sustainable livelihoods in the coastal area (SP 22 01) brought together 16 small local organisations.

Bangladesh Academy for Rural Development (BARD)

BARD Comilla is a government institution that was established in 1959. It has been internationally acclaimed for its numerous innovations in rural development in Bangladesh. The Comilla Approach to rural revelopment, which is, in fact, a package of mutually supportive development models, produced lasting impact in the lives and living environment of rural households. The academy's cumulative experiences in training and and action research of more than 40 years is a wealth available to people engaged in rural development in many countries. It is located at Kotbari, Comilla district about 100 kilometers from the capital city of Dhaka. It commenced as a training institute for government officials and representatives of the local government and village organisations. The academy received a national award in 1986 for its outstanding contribution to rural development. BARD was a research partner of PETRRA.

Bangladesh Agricultural Development Corporation (BADC)

BADC is a government institution that was establishment in 1961. It was founded with the objective of bringing a breakthrough in agricultural development to pave the way for self-sufficiency in food production. It had the specific responsibility for procurement and supply of agricultural inputs, namely improved seed, chemical fertilizer and irrigation equipment, for farmers.

At present its main task is to produce and distribute quality seed for all major crops to farmers across the whole of Bangladesh. BADC was a project partner and a member of the TEC of PETRRA.

Bangladesh Agricultural Research Council (BARC)

BARC is under the Ministry of Agriculture and is the apex organisation for the national agricultural research system. It has the responsibility to strengthen national agricultural research capability through planning and integration of resources. BARC is entrusted with developing the vision and plan for national agricultural research that is based on national priorities. Based on this each research institute develops its own master plan. It has the responsibility to coordinate research and foster inter-institute collaboration, monitor and review the research programmes of NARS institutes, assist institutes to strengthen research capacity, establish system-wide operational policies and standard management procedures and assure that each institute is optimally governed. This involves cooperative activities across several ministries of the government, namely Agriculture, Forest and Environment, Fisheries and Livestock, Rural Development, Education, Industries, Commerce, Science and Technology, etc.

BARC was a member of the project steering committee and the technical committee for PETRRA and coordinated a research sub-project of PETRRA.

Bangladesh Agricultural Research Institute (BARI)

BARI is the largest multi-crop research government institution. Its research mandate covers a large number of crops, such as wheat and maize, tubers, pulses, oilseeds, vegetables, fruits, spices, flowers, etc. Its research covers variety development, soil and crop management, disease and insect management, irrigation and water management, development of farm machinery, improvement of cropping and farming system management, post-harvest handling and processing, and socio-economic studies related to production, marketing, and consumption.

The central station in Gazipur has 310 acres of experiment fields. The institute has six regional stations located at Ishurdi, Jamalpur, Jessore, Hathazari, Rahmatpur, and Akbarpur. In addition there are 24 sub-stations including three hill research stations (Khagrachari, Ramgar and Raikhali) that function under the technical guidance of the adjacent regional stations. There are six research centres of which the Tuber Crops Research Centre, the Oilseed Research Centre

and the Horticulture Research Centre are located at the central station. The Wheat Research Centre is at Dinajpur, the Pulses Research Centre is at Ishurdi, and Spices Research Centre is at Bogra. BARI was an active member of the TEC of the PETRRA project and also a research partner of PETRRA.

Bangladesh Agricultural University (BAU)

BAU was established as the East Pakistan Agricultural University in 1961. The University is 4 kms south of the Mymensingh town which is 100 km north of the capital city Dhaka. There are 6 faculties: Veterinary Science, Agriculture, Animal Husbandry, Agricultural Economics and Rural Sociology, Agricultural Engineering & Technology and Fisheries. There are 394 academic staff.

There are about 90 different research projects under the supervision of the BAU Research System (BAURES). BAU manages a pilot agriculture extension programme in 22 villages of Mymensingh Sadar thana under the direct supervision of the BAU Extension Centre (BAUEC). BAU was a research partner of PETRRA in several sub-projects.

Bangladesh Development Society (BDS)

Since 1978 the Bangladesh Development Society (BDS) is a non-governmental organisation that has worked in the five southern districts of Barisal, Jhalokati, Patuakhali, Madaripur and Gopalganj. BDS currently operates in 453 villages of 96 unions under 13 upazilas of the same five districts. For BDS, its village the organisaton of disadvantaged landless women and men into groups is the entry point for all its activities. Activities include education, health, micro-credit, safe drinking water and sanitation, networking, gender and economic development. BDS was a research partner of PETRRA.

Bangladesh Institute of Development Studies (BIDS)

BIDS or Bangladesh Unnayan Gabeshona Protishthan is a multi-disciplinary organisation that conducts policy research on development issues in the context of Bangladesh. Its mandated function is to undertake and promote development economics, demography, and other social sciences research related to planning for national development. BIDS serves as a conduit for dissemination of development information through its library, publications, website and seminar programmes. BIDS researchers also directly contribute to formulation of development policies through participation in government committees and task forces. BIDS had a nominated member of the PETRRA Project Steering Committee (PSC) and was a policy research partner of PETRRA.

Building Resources Across Communities (BRAC)

BRAC (formerly known as the Bangladesh Rural Advancement Committee), is one of the world's largest non-governmental organisations and based in Bangladesh. Established by Fazle Hasan Abed in 1972, BRAC today is present in all 64 districts of Bangladesh, over 69,000 villages and has 4.8 million group members of which 4.3 million are micro-credit borrowers. In recent years BRAC extended its development activities to Afghanistan, Sri Lanka, Tanzania, Uganda, and Sudan. The organisation is 76% self-funded through its commercial enterprises that include, micro-finance, a bank, dairy and food project and a chain of retail handicraft stores called Aarong. BRAC worked as a research partner of PETRRA and also had representation in the PSC and the TEC.

Bangladesh Rice Research Institute (BRRI)

BRRI is a major institute of the National Agricultural Research System (NARS) of Bangladesh.

The institute was established on October 1, 1970 at Gazipur, 36 km north of the capital city Dhaka. BRRI conducts research on all aspects of rice. This includes development of new varieties for different ecosystems, component technologies for improving the productivity of rice-based cropping systems, the transfer of rice production technologies through training, workshops, seminars and publications. Research on the development of varieties and production technologies is conducted at the BRRI headquarters at Gazipur and at nine regional stations situated in Comilla, Habiganj, Sonagazi, Bhanga, Barisal, Rajshahi, Rangpur, Kushtia and Khulna. The institute operates with 18 research divisions, 3 support service divisions and 8 sections, with a total manpower of 662, of whom 228 are scientists. About one third of the scientists are highly trained professionals with MS and PhD degrees. BRRI is the host institute of IRRI. The PETRRA project was implemented in close collaboration with the BRRI. The Director General of BRRI was the chair of the technical committee (TEC) and the member secretary of the project steering committee (PSC) of PETRRA. BRRI was a research partner of PETRRA.

CABI Bioscience

CABI is a not for profit, intergovernmental organisation that improves people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment. Its headquarters is in the UK. CABI's mission and direction is influenced by over 40 member countries that help guide the activities undertaken as a business. The activities encompass scientific publishing, research and communication. Its science links directly with rural communities. CABI focuses on three key scientific areas for international development; commodities- working to lower production costs and improve profits from higher quality produce through sustainable and bio diverse agricultural practices; invasive species - reducing the spread and impact of invasive species throughout the world; and knowledge for development - driving innovation by delivering knowledge from research into application within rural or disadvantaged communities. CABI was a research partner in two research sub-projects of PETRRA.

CARE Bangladesh

CARE Bangladesh is a part of CARE International, one of the world's largest private international humanitarian organisations. It enables families in poor communities to improve their lives and overcome poverty. CARE is partnering with communities, community based organisations, the government and national NGOs to identify and confront root causes of the poverty. CARE's programmes focus on agriculture, education, health, water and sanitation, nutrition, infrastructure and small enterprise development, reaching around 12 million people in 64 districts of Bangladesh. CARE was a research partner of PETRRA.

Coastal Development Partnership (CDP)

CPD was originally conceived as an information exchange and meeting place for NGOs working on the advocacy programme of the water-logging problem in the south west coastal region of Bangladesh. CDP gradually took on the function of coordinating advocacy activities in the region. From there, it was only one step forward to forming its own network of NGOs on issues considered vital for the development of the region and organising citizens' advocacy forums on similar issues. Though primarily concerned with the south west coastal region, the impact of the water policy for the Ganges and its subsequent lack in the region, CDP has found its field of activity has extended to the entire Ganges delta in Bangladesh. CDP was a research partner of PETRRA.

Centre for Policy Dialogue (CPD)

CPD was established in 1993 with support from leading civil society institutions in Bangladesh.

It is mandated by its deed of trust (DOT) to service the growing demand that originates from the emerging civil society of Bangladesh for a more participatory and accountable development process. CPD seeks to address this felt need by way of organising multi-stakeholder consultations, by conducting research on issues of critical national and regional interests, through dissemination of knowledge and information on key developmental issues and by influencing the policy making process in the country.

In the process CPD strives to bridge the gap between empirical research and policy advocacy through a sustained effort in public policy analysis. CPD endeavours to create a national environment conducive to open public discussion on important policy issues with a view to ensuring domestic ownership over the policy agenda and also building a broad-based support for such policies. CPD's civil activitism in policy-related areas is operationalised through various means which are implemented through concrete initiatives. These include: 1) knowledge generation through research and analysis, creation and management of a data and information base; 2) policy awareness raising through dialogues, networking, information dissemination and mobilising support of the civil society; 3) policy influencing, at both national, regional and international levels, by involving policymakers in the dialogue process and by contributing to the preparation of global policy documents and national policy briefs; and 4) capacity building, by way of organising policy appreciation workshops for policy-makers and other important stakeholder groups. CPD was a policy dialogue partner of PETRRA.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

CSIRO was established in 1926. It is Australia's premier research organisation and provides scientific solutions to industry, governments and communities around the world. CSIRO is the Australia's national science agency and one of the largest and most diverse research organisations in the world. CSIRO's primary responsibilities are to carry out scientific research to benefit Australian industry and the economy, and to provide environmental and social benefits to all Australians. CSIRO is accountable to the Minister for Innovation, Industry, Science and Research and is part of the Innovation, Industry, Science and Research portfolio. The CSIRO Board is responsible to the government for the overall governance, strategy and performance of the organisation. CSIRO was a research partner of PETRRA.

Debi Chowdhurani Palli Unnayan Kendra (DCPUK)

DCPUK is a non-governmental organisation working in two northern districts of Bangladesh. It has activities in about 800 villages. It has about 250000 beneficiaries, majority of whom are women. DCPUK is involved in various developmental activities to uplift the socio-economic condition of the rural poor. These include agricultural and rural development, water and sanitation, policy research and advocacy, campaigning on social issues and social and community development. DCPUK was a research and extension partner of PETRRA.

Department of Agricultural Extension (DAE)

DAE is the largest public sector agricultural extension service provider in Bangladesh. It is a core organisation under the ministry of agriculture. The overall responsibility of the department is to provide latest research results and scientific farming techniques to all categories of farmers in order to enable them to optimise use of their resources for their socio-economic development. It provides linkages between the various research institutes and farmers. The DAE provides training to farmers on different farming technologies. It also serves as a liaison agency between farmers and other organisations, both public and private, for overall socio-economic development of rural people. The Director General of DAE was a member of the PETRRA PSC and a Deputy Director was a member of the TEC. The DAE was closely involved in most PETRRA sub-projects and was in addition a specific extension partner in some.

Dhaka University (DU)

The University of Dhaka was established in 1921 with three faculties Arts, Sciences, and Law. Now with three new faculties, ten new departments, and three new institutes, forty-seven departments, eight institutes, twenty centers for advanced research, sixteen residential halls, and one hall for international students. The university is one of the leading institutions of higher education in Asia. At present, approximately 30,000 students are enrolled in this university and are taught by almost 1,300 teachers. The biotechnology department of Dhaka University was a research partner of PETRRA.

Environment and Population Research Centre (EPRC)

EPRC is a non-government research and development organisation specialized in water and sanitation and environmental research. Research and impact studies on arsenic contamination and biogas are an important part of the environmental research. Researchers of EPRC regularly participate in national and international conferences and workshops on these issues. EPRC plays an important role in organising networks on water and sanitation issues nationally and internationally. EPRC also engages in research and development on agricultural technologies. EPRC was a research partner of PETRRA.

Friends in Village Development Bangladesh (FIVDB)

FIVDB is a national NGO working directly in Sylhet division and throughout Bangladesh through an outreach network. It implements and provides assistance to partners in implementing programmes in adult basic and continuing education, primary education, early childhood care and development, health education, livelihood skills training and input and counseling support and microfinance. FIVDB works in Sylhet, Sunamganj, Maulvi Bazar, Habiganj and Brahmonbaria and implements four field programmes: Integrated Financial Services, Livelihood Enhancement Programme, Functional Literacy Programme and Child Education Programme. Mainly through NGO's and networks, FIVDB is also active in lobby and advocacy work on policy reforms. FIVDB was a research partner of PETRRA.

Grameen Krishi Foundation (GKF)

GKF was established in 1991 to continue and expand upon the work which began in 1988 as Grameen Bank's Rangpur-Dinajpur Deep Tubewell Project. GKF works with farmers in northern Bangladesh and Tangail district. From the beginning, GKF, in partnership with local farmers, was involved in crop production. This was mainly through its irrigation tube-wells. Since 1995 GKF began giving unsecured loans to poor women for agricultural production, small businesses, poultry-duck rearing, dairy rearing, purchase of spare parts for irrigation equipment, purchase of agricultural inputs, installation of sanitary latrines, land installation of hand tubewells and treadle pumps. GKF has started a programme to produce quality and high yielding variety seeds. At present GKF is producing boro rice, wheat, transplanted aman rice maize, mustard, soybean, potato, jute and vegetables seeds. GKF was a research partner of PETRRA.

HEED (Health, Education and Economic Development) Bangladesh

HEED Bangladesh is a non-governmental and non-profit, national organisation, formed in 1974, by several western partner organisations, in response to the post war needs in Bangladesh. It is working in the field of health, education, social and economic development. HEED is a national non-profit society, specializing in participatory development, emergency relief and development programmes among the disadvantaged people of Bangladesh. At present HEED Bangladesh has 22 projects, with programmes addressing health, education, social and economic development of the poor and marginalised in 85 upazilas, in 18

districts.The name of the organisation reflects an integrated approach to meeting many of the physical, mental, social, and spiritual needs the country is facing. HEED was a research partner of PETRRA.

Integrated Action Research and Development (IARD) and Bangladesh Resource Centre for Indigenous Knowledge (BARCIK)

IARD and BARCIK are two sister non-government organisations working in the field of indigenous knowledge research and committed to protecting traditional knowledge in Bangladesh. IARD and BARCIK also research indigenous understanding of wildlife conservation. Areas of research covered by these organisations include fisheries, agriculture, forest etc. They are engaged in ethnographic and anthropological research on these natural resources. They have developed a rich knowledge on local rice varieties. IARD and BARCIK frequently interact with people living in unfavorable eco-system with the purpose of understanding the usefulness of local rice varieties and exploring ways of utilizing good traits. IARD was a research partner of PETRRA.

International Development Enterprises - Bangladesh (IDE-B)

IDE-B is a country programme of IDE International, an International NGO, based in Denver, Colorado, USA. IDE-B began its work in 1984 by establishing a network to produce and market a foot-powered pump that allows small farmers to irrigate rice and vegetables and thus significantly raise their annual income. Since then, nearly 1.3 million of these low-cost, locally-designed devices have been sold to farmers, largely through the private sector. Today IDE-B is building on its past experience with the treadle pump to help Bangladesh meet its goals of reducing poverty and improving human development. The organisation focuses on intensifying and diversifying smallholder agriculture, assuring safe water and sanitation and creating markets that serve the rural poor. In all its activities, IDE-B seeks to work with other organisations, markets, and individuals in order to achieve sustainable solutions. IDE-B was a research partner of PETRRA.

International Rice Research Institute (IRRI)

IRRI was established in 1960 by the Ford and Rockefeller Foundations in cooperation with the Philippine government. IRRI's headquarters - which feature modern laboratories, training and accommodation facilities, and a 252-hectare experimental farm - lie next to the main campus of the University of the Philippines Los Baños, about 60 kilometers south of the Philippine capital, Manila. IRRI is the oldest and largest international agricultural research institute in Asia. It is an autonomous, nonprofit rice research and training organisation with staff based in 14 countries in Asia and Africa.

IRRI's mission is to reduce poverty and hunger, improve the health of rice farmers and consumers, and ensure that rice production is environmentally sustainable. IRRI works closely with most rice-producing and -consuming countries and their national agricultural research and extension systems as well as farming communities and a range of international, regional, and local organisations. IRRI conducts research in partnerships with the respective national systems. In Bangladesh, the Bangladesh Rice Research Institute (BRRI), is IRRI's prime partner and all IRRI's work is under a Memorandum of Understanding with BRRI. IRRI was responsible for managing the project in association with BRRI and was a research partner of PETRRA.

Mukti Nari-O-Shishu Unnayan Sangstha

Mukti is a woman led non-government and non-profit voluntary organisation. It was founded in 1990. Mukti is concerned with poor communities. The main activities of Mukti involve rehabilitation of distressed women, women and children welfare through health and education,

advocacy programmes and awareness building among the community and policy makers in greater Kushtia district of Bangladesh. Mukti began its agriculture programme through a PETRRA sub-project.

Natural Resourses Institute (NRI), UK

NRI is a specialised institute and school of the University of Greenwich at Medway, in the county of Kent, England. The University of Greenwich is a multi-campus university in south-east London and Kent, serving higher education needs both locally and nationally within the UK, and regionally in the European Union, and reaching out to provide research, consultancy and education services worldwide, especially through the long-established international activities of NRI in the developing world on the sustainable management of natural and human resources. NRI's reputation is founded on a long history of expertise in the development of natural resources in the developing world, and the Institute - and its predecessors - is known world-wide for this, especially in tropical and subtropical countries. The Institute currently has about 100 scientific, academic and technical staff, working in a wide range of disciplines in the natural and social sciences, assisted by about 15 managerial and administrative support staff, in a flexible team-based organisation. Current NRI staff have over 400 person-years of experience of working and living in the developing world. NRI was a research partner of PETRRA in a number of sub-projects.

Proshika

The development process of Proshika, one of the largest NGOs of Bangladesh, started in a few villages of Dhaka and Comilla districts in 1975. PROSHIKA has created 9.81 million employment/self-employment opportunities for the poor and brought over one million households out of poverty. More than a million people are now literate and through its social forestry programme nearly a billion trees have been planted. Proshika has a broad range of programme in organisation building, education and training leading to income and employment generation, health education, health infrastructure building, as well as environmental protection and regeneration. The programmes are supported by policy advocacy and research activities linking the poorest of the poor. Proshika was a member of the PSC and was a research partner of PETRRA.

RDRS Bangladesh

RDRS Bangladesh is a respected, long-established development NGO that works to empower the rural poor in northern Bangladesh. It was established over 34 years ago. In 1997, RDRS became an autonomous organisation, governed by a Board of Trustees, as the Bangladesh field programme of the Geneva-based Lutheran World Federation/Department for World Service (LWF/DWS). RDRS has maintained a concentrated geographic programme; it works in 46 contiguous upazilas (sub-districts) and operates field offices in 40 locations in north-west Bangladesh. The field headquarters of RDRS is situated in Rangpur town, including North Bengal Institute (NBI), for research and advocacy. In addition to the central co-ordination office in Rangpur and Dhaka. RDRS has 18 rural training centres. RDRS-linked Federations, operate in 307 Unions. RDRS was a member of the TEC. RDRS was involved in a number of PETRRA research and dissemination sub-projects.

Rural Development Academy (RDA), Bogra

RDA was established in 1974 at Bogra as an autonomous rural development academy under the ministry of rural development, local government and cooperative within the government of the people's republic of Bangladesh. The objectives of RDA are to offer training to the personnel of different nation building departments and agencies involved in rural development

works, conduct action research projects or pilot experimentation on different aspects of rural development and offer consultancy services to different national and international agencies as well as NGOs on various rural development issues. Agriculture is an important area of research and development in RDA. RDA was a research partner of PETRRA.

SAFE Development Group

SAFE is a non-profit organisation. This organisation was established by former multi disciplinary experienced and dedicated professionals of CARE International, Bangladesh. The overall goal of SAFE is to improve the livelihoods of the resource poor farm families and to build the capacity of local partner NGOs; farmers' associations and community based organisations (CBOs). SAFE engages in projects on intensification and diversification of farming/cropping system and promotes agri-entrepreneurial activities. It uses community based participatory action research programmes to help achieve sustainable food security. It promotes human rights and gender equity in its programming approach. SAFE works through establishing linkages between communities, private agencies, research organisations and other service providers for quality inputs supply, services and access to information. The working areas of SAFE include Comilla, Bogra, Rangpur, Rajshahi, Mymensingh, Naogaon, Jessore, Kurigram, Rajshahi, Sirajganj and Kishoreganj areas of Bangladesh. SAFE was a research partner of PETRRA.

Shushilan

Shushilan, a Bengali name signifying endeavor for a better future, is a non-government organisation set up in 1991. Shushilan's inception was born of a group of educated youth from the village of Benadona, under Kaliganj Upazila of Satkhira District. It's formation was inspired by an urge to bring about a positive change for marginalized men and women in the local area. The organisation was formed as a tool to realize the dream of a democratic society within a stable ecosystem, based on economic equity and social justice. The areas of focus are - sustainable environmental resource management, human rights and good governance, empowerment of resource-poor community especially poor women, economic development of resource-poor community and capacity building. Shushilan was a research partner of PETRRA.

Thengamara Mohila Sabuj Sangha (TMSS)

TMSS is a women-oriented leading Bangladeshi national NGO. It was established in 1964 in Bogra district. TMSS is engaged in uplifting the living condition of the most distressed poor people particularly women and children of both urban and rural areas. TMSS believes in self-help sustainable development of the targeted beneficiaries through their own efforts and resources.

It covers 1.9 million people in 12,726 villages and slums in 2007 unions in 247 upazilas under 63 districts. TMSS was a research partner of PETRRA.

UTTARAN

UTTARAN meaning 'uplift' in Bangla, was founded in 1985. The organisation grew out of a social movement in which youth, including school and college teachers, stood by women who were being oppressed by the landlords around Jator village of Satkhira district. The unity of youth strengthened as land grabbers unleashed torture and evicted these women. Since its inception UTTARAN has implemented a range of programmes to address the problems of inequality and injustice. Over the years UTTARAN has served over 25,000 rural families and covered an area of 7 upazilas in 3 districts. Uttaran was a research partner of PETRRA.

WAVE Foundation

WAVE Foundation, an NGO, was established in 1990 in the border town Darsana under Chuadanga district, which is situated in the south-western part of Bangladesh. Since its inception WAVE Foundation has worked in the field of human rights, good governance, microfinance, agriculture, water & sanitation and other development related issues. The aim of these activities is socio-economic empowerment and livelihood security for poor and marginalized people. The area of work covers 20 upazillas in 6 districts. In addition, the organisation has been implementing a governance project in partnership with other organisations in 25 upazillas in 11 districts of Bangladesh. WAVE was a dissemination partner of PETRRA.

List of PETRRA sub-projects in research categories

SP no.	SP name	Sub-project brief number
Technology SPs		
00 99	Seed health improvement project (SHIP)	10.1.1
10 00	Nutrient management for intensive rice-based cropping systems	10.1.2
13 00	Development of high yielding rice varieties for the coastal wetlands of Bangladesh	10.1.3
15 00	Development and use of hybrid rice in Bangladesh	10.1.4
17 00	Participatory integrated plant and nutrient management for intensive rice-based cropping	10.1.5
18 00	Integrated crop and nutrient management for increasing the productivity of saline soils of Bangladesh	10.1.6
19 00	Integrated rice-duck farming for resource-poor farm households	10.1.7
20 01	Development and utilization of coastal water resources for crop production and its impact on coastal ecosystem of Bangladesh	10.1.8
21 01	Adaptation and adoption of USG technology for resource-poor farmers in tidal submergence-prone area	10.1.9
22 01	Rice diversity and production in the south-west of Bangladesh: using local knowledge to create sustainable livelihoods in coastal area	10.1.10
25 01	Integrated crop management (ICM) in north-west region of Bangladesh	10.1.11
27 02	Livelihoods improvement through ecology (LITE)	10.1.12
28 02	Production and marketing of fine, aromatic and glutinous rice through farmers' participation in north-east Bangladesh	10.1.13
29 02	Technology development of a production, processing and marketing system for aromatic rice in north-west region of Bangladesh	10.1.14
30 02	Ecologically-based rodent management for diversified rice-based cropping systems in Bangladesh	10.1.15
32 02	Farmers' participatory research on integrated rice-based farming for improved livelihoods for resource-poor farm households	10.1.16
34 02	Validation and delivery of system of rice intensification (SRI): methods to increase rice production of resource-poor farmers in south-west Bangladesh	10.1.17
35 02	Extension of the system of rice intensification (SRI) through verification	10.1.18
36 02	Verification and refinement of system of rice intensification (SRI) in selected areas of Bangladesh	10.1.19
Uptake methods SPs:		
01 00	Technology identification and uptake model	10.2.1
02 00	Sustainable rice seed network	10.2.2
03 00	Strengthening resource-poor farmers' knowledge of improved agricultural practices for rice production (SP 03 00)	10.2.3
04 00	Quality rice seed marketing method	10.2.4
05 00	Strengthening the FARMSEED extension method	10.2.5
06 00	Union federation-based extension approach for dissemination of environmentally-friendly rice and rice seed production	10.2.6
07 00	Replication of federation-based sustainable approach for quality seed promotion	10.2.7
08 00	Technology uptake: pilot scheme by agri business corporation (ABC) (SP 08 00)	10.2.8
09 00	Women-led cultural extension methods	10.2.9
23 02	Village institutional approach for rice technology dissemination	10.2.10
31 02	Poverty alleviation through participatory group farming approaches	10.2.11
33 02	Dissemination of BRRI farm machinery among resource-poor farmers and improvement of fine rice processing technology in north-west region of Bangladesh	10.2.12
37 02	Learner-centred video production to enhance women-to-women extension of post-harvest innovations	10.2.13
38 02	Local entrepreneurship and network development for mobile pump dissemination	10.2.14
39 02	Women-led group extension method for rice and rice seed drying and storage technology	10.2.15
40 02	Private sector led farmer field school method for herbicide use in rice cultivation	10.2.16
41 02	Women-led farmer field schools for disseminating rice-potato-rice cropping patterns in northern Bangladesh	10.2.17
42 02	Women-led community-based extension method for rice seed cleaning and storage	10.2.18
43 02	Validation of technology uptake pathways for (SSNM) for intensive rice-based cropping systems in central-west Bangladesh	10.2.19
44 02	Whole family extension approach for rice knowledge adoption	10.2.20

continued in the next page...

List of PETRRA sub-projects in research categories (continued...):

SP no.	SP name	Sub-project brief number
Policy sub-projects		
12 00	Improving access to good quality agri-inputs	10.3.1
14 00	Rice and livelihoods in the diversifying economy of Bangladesh	10.3.2
16 00	Arsenic in food chain: assessment of arsenic in water-soil-crop systems in target areas of Bangladesh	10.3.3
24 01	Dynamics of livelihoods systems in rural Bangladesh: generation of information for facilitating dialogue on strategies and policies pertaining to the elimination of poverty	10.3.4
26 01	Pathways from poverty: household-level processes of graduation in Bangladesh	10.3.5

PETRRA summary statistics

Issues	Information
Total number of sub-projects	45
Total number of partner organisations in PETRRA sub-projects	More than 50
Number of districts that had PETRRA sub-project research activities	37
Number of upazilas that had PETRRA sub-project research activities	102
Number of villages covered by the sub-projects	533
Total number of participating farmers in the sub-projects	More than 18,000
Percentage of female participating farmers in the sub-projects	About 40%

Note: Number of districts, upazilas, villages and participating farmers does not include the participants and respondents in the policy study sub-projects.

Acronyms and abbreviations

AAS	Agricultural Advisory Society
ABC	Agri Business Corporation
AC	Anther Culture
AID-Comilla	Association for Integrated Development-Comilla
AIS	Agriculture Information Service
ANR	Agriculture and Natural Resources
APT	Analysis of Poverty Trends
ARBN	Asian Rice Biotechnology Network
ARD	Adaptive Research Division
AREC	Aromatic Rice Export Clearinghouse
ARF	Asian Rice Foundation
ARI	Agricultural Research Initiative
ASIRP	Agricultural Services Innovations and Reform Project
ASSP	Agricultural Support Services Project
ATC	Agricultural Technical Committee
BARC	Bangladesh Agricultural Research Council
BARD	Bangladesh Academy for Rural Development
BADC	Bangladesh Agricultural Development Corporation
BARI	Bangladesh Agricultural Research Institute
BASC	Business Advisory Service Centre
BAU	Bangladesh Agricultural University
BBS	Bangladesh Bureau of Statistics
BDS	Barisal Development Society
BIDS	Bangladesh Institute of Development Studies
BINA	Bangladesh Institute of Nuclear Agriculture
BJRI	Bangladesh Jute Research Institute
BoT	Board of Trustees
BPH	Brown Plant Hopper
BRAC	Bangladesh Rural Advancement Committee
BRKB	Bangladesh Rice Knowledge Bank
BREA	Bangladesh Rice Exporters Association
BRF	Bangladesh Rice Foundation
BRRI	Bangladesh Rice Research Institute
BSCIC	Bangladesh Small and Cottage Industries Corporation
BSMA	Bangladesh Seed Merchants Association
BSMRAU	Bangabandhu Sheikh Mujibur Rahman Agricultural University
BS	Breeder Seed

BS	Block Supervisor, newly re-designated as Sub-assistant Agricultural Officer of DAE
Bt	Bacillus thuringiensis
BUET	Bangladesh University of Engineering and Technology
CACP	Commission of Agricultural Costs and Prices
CAED	Centre for Agro-Ecology and Development
CAMPE	Campaign for Popular Education
CARE	Cooperative American Remittance Everywhere
CBO	Community-based Organisation
CD-ROM	Computer Disk-Read Only Memory
CGIAR	Consultative Group on International Agricultural Research
CGS	Competitive Grant System
CHT	Chittagong Hill Tracts
CI	Composite Index
CIMMYT	Centro International de Mejoramiento de Maiz y Trigo (International Maize and Wheat Improvement Centre)
CIP-UPWARD	Centro Internacional de la Papa
CIRDAP	Centre on Integrated Rural Development for Asia and the Pacific
CMS	Cytoplasmic or Cytoplasmic Genetic Male Sterility
CN	Concept Note
Concer	An international development NGO
CPD	Centre for Policy Dialogue
CSIRO	Commomwealth Scientific and Industrial Research Organisation
CSO	Chief Scientific Officer
CSP	Country Strategy Paper
CVDP	Comprehensive Village Development Programme
DAE	Department of Agricultural Extension
DD	Deputy Director
DEVCOM	A local consulting farm
DFID	Department for International Development
DUS	Distinct, Uniform and Stable
DVD	Digital Video Disk
DOLSys	Dynamics of Livelihood Systems
DCPUK	Debi Chowdhurani Palli Unnayan Kendra
DWR	Deepwater Rice
EC	European Commission
EoP	End of Project
EPRC	Environment and Population Research Centre
ERD	Economic Relations Division

FAO	Food and Agriculture Organisation of the United Nations
FAF	Focal Area Forum
FAG	Fine, Aromatic and Glutinous
FCI	Food Corporation of India
FEA	Farmer Extension Agent
FFS	Farmer Field School
FGD	Focus Group Discussion
FIDA	Forum for Information Dissemination on Agriculture
FIVDB	Friends In Village Development Bangladesh, a local NGO
FMRSP	Food Management and Research Support Project
FP	Farmers' Package (traditional way of nutrient management
FPR	Farmer Participatory Research
FS	Foundation Seed
FSR	Farming Systems Research
FSR&E	Farming Systems Research and Extension
FYM	Farm Yard Manure
GDP	Gross Domestic Product
GE	Genetically Engineered
GIS	Geographic Information System
GKF	Grameen Krishi Foundation
GM	General Manager
GMO	Genetically Modified Organism
GOB	Government of Bangladesh
GOI	Government of India
GO-NGO	Government and Non-government Organisations
GRSD	Genetic Resources and Seed Production Division
HARP	Hill Agricultural Research Project
HCI	Head Count Index
HEED	Health, Education and Economic Development
HES	Household Expenditure Survey
HIES	Household Integrated Economic Survey
HORTEX	Horticultural Export Development Foundation
HR	Hybrid Rice
HY	High-yielding
HYV	High-yielding Variety
IARD	Integrated Action Research and Development
IAT	Institute of Appropriate Technology
ICM	Integrated Crop Management

ICT	Information Communication Technology
ICNM	Integrated Crop Nutrient Management
IDE	International Development Enterprises
IDEAL	Institute of Development Education for Advancement of Landless
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IIRR	International Institute of Rural Reconstruction
INM	Integrated Nutrient Management
INRM	Integrated Natural Resources Management
In2it	A private company for web solution
IMA International	A UK-based international training and development organisation
IP	Improved Package
IPM	Integrated Pest Management
IPMO	International Programme Management Office
I-PRSP	Interim Poverty Reduction Strategy Paper
IRRI	International Rice Research Institute
IT	Information Technology
ITAD	A UK-based international consultancy agency for social development
ITDG	Intermediate Technology Development Group, presently known as Practical Action
IWFM	Institute of Water and Flood Management
IYR	International Year of Rice
JICA	Japan International Cooperation Agency
JSS	Janani Sheba Sangstha
KAP	Knowledge, Attitude and Practice
KPF	Krishi Prajukti Foundation (Agricultural Technology Foundation)
L/C	Letter of Credit
LCC	Leaf Colour Chart
LEISA	Low External Input and Sustainable Agriculture
LF	Lead Farmer
LGED	Local Government Engineering Department
LITE	Livelihood Improvement Through Ecology
LUSTRE	Landless Upbringing Social-work Therapeutic Rural Establishment
M&E	Monitoring and Evaluation
MAS	Marker Aided Selection
MCC	Mennonite Central Committee
MDG	Millennium Development Goal
MOA	Ministry of Agriculture

MOI	Ministry of Information
MOU	Memorandum of Understanding
MP	Member of Parliament
MS	Master of Science
MT	Metric Ton
MV	Modern Varieties
NAEP	New Agricultural Extension Policy
NAP	National Agriculture Policy
NARS	National Agricultural Research System
NGO	Non-governmental Organisation
NIE	New Institutional Economics
NOA	Needs and Opportunities Assessment
NRI	Natural Resources Institute, UK
NRPF	Non-resource-poor farmer
NW	North-west
ORFD	On-farm Research Division
OPR	Output to Purpose Review
OVI	Objectively Verifiable Indicator
PAR	Participatory Action Research
PDF	Post-doctoral Fellow
PDO	Project Development Officer
PETRRA	Poverty Elimination Through Rice Research Assistance
PF	Participating Farmer
PGI	Poverty Gap Index
PhD	Doctor of Philosophy
PI	Principal Investigator
PIPNM	Participatory Integrated Plant Nutrient Management
PLA	Participatory Learning and Action
PM	Project Manager
PM&E	Participatory Monitoring and Evaluation
PMU	Project Management Unit
PO	Partner Organisation
POSD	People's Organisation for Sustainable Development
PP	Project Partner
PPA	Participatory Poverty Assessment
PPB	Participatory Plant Breeding
PPF	Production Possibility Frontier
PPS	PRA Promoters Society

PRA	Participatory Rural Appraisal
PR&D	Participatory Research and Development
PROVA	People's Resources Oriented Voluntary Association
PRSP	Poverty Reduction Strategy Paper
PSC	Project Steering Committee
PSO	Principal Scientific Officer
PVS	Participatory Variety Selection
QTL	Quantitative Trace Loci
RA	Research Agreement
R&D	Research and Development
RC	Research Coordinator
RDA	Rural Development Academy, Bogra
RDRS	Rangpur Dinajpur Rural Service
RGA	Rapid Generation Advancement
RKB	Rice Knowledge Bank
RLP	Rural Livelihoods Projects
RNF	Rural Non-farm
RNRRS	Renewable Natural Resources Research Strategy
RP	Research Proposal
RPA	Rice Provisioning Ability
RPF	Resource-poor Farmer
RPRF	Resource-poor Rice Farmer
RRA	Rapid Rural Appraisal
SAFE	Sustainable Agriculture and Farming Enterprise, a local NGO
SDC	Swiss Agency for Development and Cooperation
SHIP	Seed Health Improvement Project
SL	Sustainable Livelihoods
SO	Scientific Officer
SP	Sub-project
SPGI	Squared Poverty Gap Index
SPL	Seed Pathology Laboratory
SRI	System of Rice Intensification
SSNM	Site Specific Nutrient Management
SSO	Senior Scientific Officer
Steps	Steps Towards Development
STW	Shallow Tubewell
SUB1	Submergence tolerance gene
T&V	Training and Visit system of extension

TD	Training Division
TEC	Technical Committee
TLS	Truthfully Labeled Seed
TMSS	Thengamara Mahila Sabuj Sangha
ToR	Terms of Reference
ToT	Training of Trainers
TV	Television
USHIK	United States Health Information Knowledgebase
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UP	Union Parishad
USD	United States Dollars
USG	Urea Super Granule
VBR	Value-based research
VIP	Very Important Person
WBCSD	World Business Council for Sustainable Development
WEI	Women Empowerment Index
WFP	World Food Programme
WIRFS	Women in Rice Farming Systems Network
WMD	Water Management Division
WTO	World Trade Organisatoin

GLOSSARY OF SPECIAL TERMS

Aman	Main monsoon rice season whereby crop is transplanted from July to August and harvested from November to December
Arat	Wholesale shop
Aratdar	Wholesalers
ATN Bangla	A private satellite television channel
Aus	Minor rain-fed rice season, which is important in north-east Bangladesh. Rice is transplanted in April-June and harvested from June to August. It may be direct seeded in some parts of the country
Bangladesh Betar	Government-owned radio with eight regional stations
Bashmati	Aromatic high quality rice (Long and slender grain high quality rice)
Baul songs	Mystic music, usually popular in rural Bangladesh
Beel	Seasonal or perennial water body; lowest part of a depression
Beijing	A duckling species of China
Bhojon	Local rice variety
Bhorer Kagoj	National Bangla daily newspaper
Bigha	Local unit of land measurement (1 bigha = 0.33 acre)
Biskathali (Polygonum hydropiper)	One kind of herbaceous weed having insecticidal value
Boro	Dominant irrigated winter rice season, which is transplanted during the cold months of December to early February and harvested in April to early June.
Channel-i	A private satellite television channel
Chara	Seedling
Chingri gher	Enclosed piece of land with saline water used for shrimp cultivation
Chinigura	Fine and aromatic local rice variety
Chula	Kind of stove made of clay used in rural areas
Daily Star	A national English daily newspaper
Decimal	One hundredth of an acre or 40 square metres
Dhaincha	One kind of plant ploughed back to enrich soil as green manure
Dhanadhanya	Bangla Newsletter of PETRRA
Dheki	Indigenous husking machine of rural Bangladesh
District	Second highest administrative unit of Bangladesh comprises of 5 - 12 sub-districts (upazila)
Division	The highest administrative unit of Bangladesh comprises of 10 - 12 districts
En passant	(from French) while talking about something else and without giving much information
Farm Broadcasting Unit	An Unit of Agriculture Information Service (AIS) under Ministry of Agriculture (MoA) responsible for producing agricultural programmes for Bangladesh Betar, the government-owned radio

FARMSEED	Farmer-to-farmer rice seed-production model developed by AAS
Frankenstein Food	The slang version of GMO used by its critics
Gher	Enclosed piece of land used for fish cultivation
Going public	A participatory interaction tool used for agricultural technology dissemination
Gola	Rice storage container usually made of bamboo
Gram samity	Village cooperative
Green manure	Dhaincha, a kind of plant ploughed back to enrich soil as green manure
Guti urea	Bangla of Urea Super Granule (USG)
Hartals	Public strike
Hat	Open-air market organised once or twice weekly
Haor	A vast area of low land that remains under water during the monsoon season
Interface	English Newsletter of PETRRA
Ipso facto	(from Latin, formal) Because of the fact that has been mentioned
Jaistha	The second month of the Bangla calendar corresponding to the period between the middle of May and middle of June
Jari gan	Traditional song performed by a group of singers, which includes social, religious and political subjects, as well as natural calamities, riots, violence and family planning
Kajla	Relatively course local rice variety
Kalijira	A fine and aromatic local rice verity cultivated during aman season
Kandi	A method of preparing raised seed bed for crop cultivation in the low lying tidal areas. Called Sorjon in English.
Karala (Mermordica Cherantia)	Bitter gourd, one kind of kitchen vegetable with a bitter taste
Kare	Local measurement of land (1 kare = 30 decimals)
Kataribhog	A fine and aromatic rice variety
Khaikalashi	System of leasing land
Khaki Campbell	A duckling species
Khamarbari	The office complex of Department of Agricultural Extension (DAE)
Khas	Government-owned land
Khasra	A local rice variety
Khuti	Bamboo pillar
Kine Khawa	Purchased food
Kopal	A Bangla word meaning fate
Krishikotha	Monthly agricultural magazine published in Bangla from Agriculture Information Services (AIS) under the Ministry of Agriculture (MoA)
Lal shak	Red amaranth, a kind of leafy vegetable

Lifebuoy	Brand name of a bar soap usually used by the lower and middle income people
Londoni	Bangladeshi settlers in UK
Mastans	Hoodlums
Mati-o-Manush	Agricultural programme on Bangladesh Television (BTV), the government-owned terrestrial TV station
Maund	Local unit of weight measurement (1 maund = 37.32 kg.)
Mohajons	Money lenders
Moha biggani	Big scientist
Moha shikhak	University professor
Motka	Earthen storage pot
MSAccess	A statistical computer software
Mug Dal	Mung bean, a pulse variety
Muni	Year long labourer in a household
Neem (Azadiracta indica)	A kind of medicinal plant having insecticidal value
NTV	A private satellite television channel
Parbatjira	A fine & aromatic rice variety cultivated during boro season
Pucca	Brick or concrete construction
Purdah	The seclusion of women from the public sphere. It orginates from the Hindi word parda, which can be translated as curtain and therefore is used for both women's physical veiling and symbolic separation from outsiders, men and elders
Rabi	Dry season non-rice crop (November to April)
Ratabora	A local rice variety cultivated during boro season
Relaxed reading	Written in a simple style to offer easy reading
Rhidoye Mati-o-Manush	Popular agricultural programme on Channel-i, a private satellite television channel
Rice provisioning ability	RPA is the number of month a farming household can supply itself with rice from its own or operated land. In Bangladesh and elsewhere, rural communities tend to identify this as the basic indicator of poverty and food insecurity
Sadamota	A local rice variety
Sari	Traditional and popular female attire available in the south-Asian region
SeedNet	Network of organisations under BRRI GRSD
Sonali Din	Agricultural programme on ATN Bangla, a private satellite television channel
Sorjon bed	A method of preparing raised seed bed for crop cultivation in the low lying tidal areas
SPSS	A computer software used for statistical analysis
Swarna	An Indian rice variety grown widely in the border areas of Bangladesh

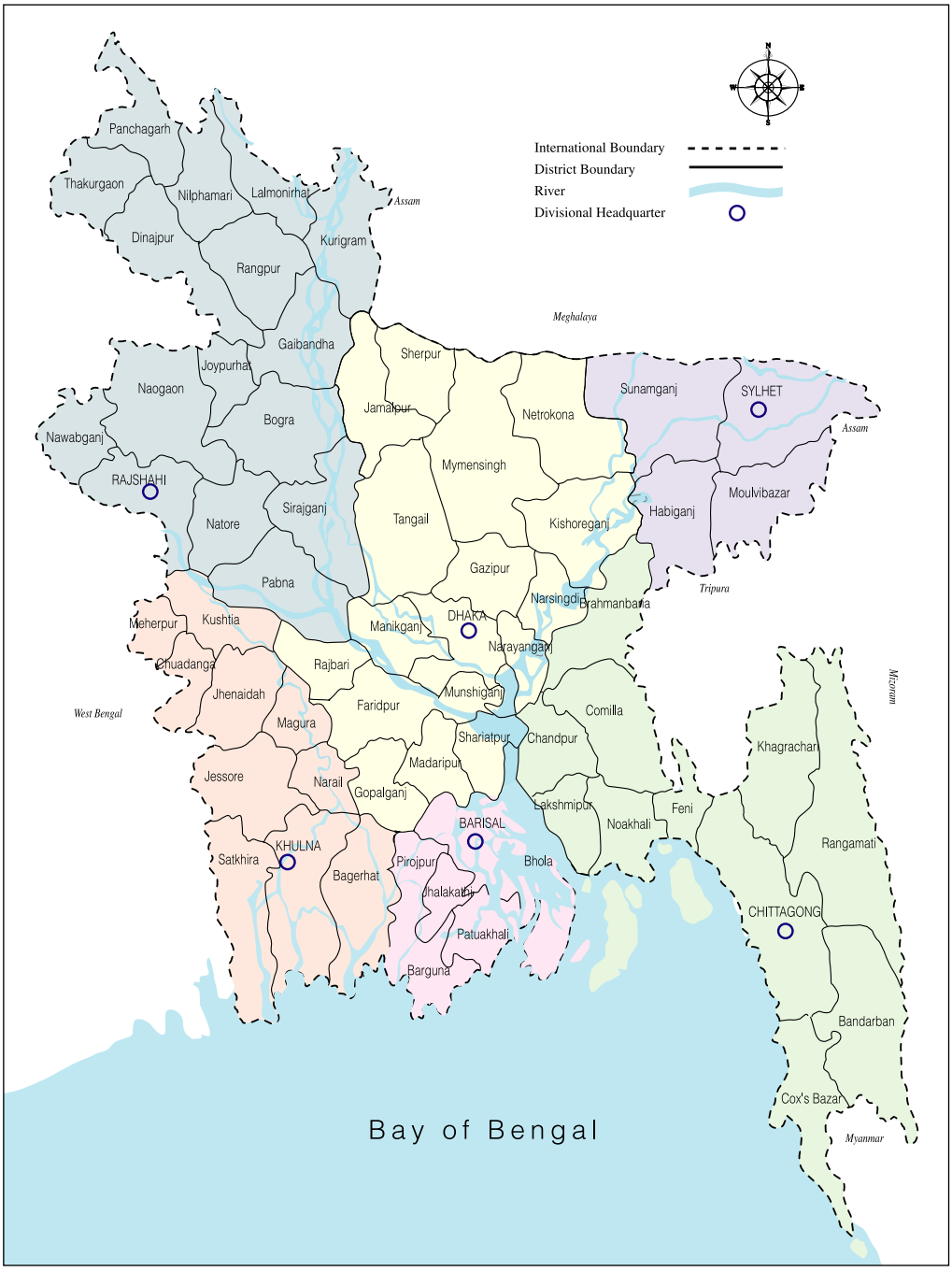
Taka	The currency in Bangladesh (US Dollar 1 = Taka 57 in 2004)
Union	Sub-division of sub-district (upazila), one union is comprises of 9 wards
Union Parishad	Lowest tier of local government
Upazila	Sub-district
Urea	Nitrogenous fertilizer
Vara	A container made of bamboo canes or mud to store paddy
Ward	The lowest level of administrative unit comprises of 1 – 3 villages

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

Map of Bangladesh



Book 1. PETRRA overview

DFID Department for International Development

IRRI International Rice Research Institute

Bangladesh Rice Research Institute

Poverty Elimination Through Rice Research Assistance (PETRRA) project brochure

REPRINT

A decade ago it seemed an impossible dream, but today Bangladesh is self-sufficient in food. Thanks to the successful introduction of new farming technologies, this nation of 130 million people, produced 38 million tons of food grains within 12 months to June 2001, including 36 million tons of unmilled rice. While population growth and receding resources will keep the maintenance of food security high on the national agenda, the new challenge facing Bangladesh today is the alleviation of poverty.

Poverty Elimination Through Rice Research Assistance (PETRRA) is a five-year, £9.5 million project, funded by the United Kingdom's Department for International Development (DFID) and managed by the Philippines-based International Rice Research Institute (IRRI), in close partnership with the Bangladesh Rice Research Institute (BRRI), the Bangladesh Ministry of Agriculture, and most importantly, the resource-poor rice farmers of Bangladesh.

Goal

PETRRA's goal is to achieve, by 2008, substantial improvements in employment, income, and food entitlement for poor farmers and consumers, as well as further gains in domestic rice production. The project aims to make a major contribution towards the goal of halving extreme poverty by 2015. This will require lifting 26 million Bangladeshis out of poverty.

PETRRA focuses on five key outputs:

- Improved production technologies for poor farmers;
- Improved capacity for demand-led research in the national agricultural research system;
- Greater recognition and broader discussion of key policy issues;
- Improved methods for the effective uptake of new technologies; and
- Piloting an effective, competitive rice research management scheme.

Philosophy

PETRRA is creating a new mechanism for interaction among the four most important stakeholders in developing rural Bangladesh: farmers, scientists, government extension officials and donor representatives. It does so by enabling demand-led, participatory research that links the best in sustainable science with independently identified priorities that emphasise environmental responsibility and gender sensitivity.

DFID Department for International Development

IRRI International Rice Research Institute

Bangladesh Rice Research Institute

Strategy

Rejected strategies	Preferred strategies
Technological focus	People focus
Top down	Partnerships
Centralised	Decentralised
Non-participatory	Participatory
Farmer focus	Resource-poor farmer focus
Gender-blind	Gender aware
Enviromentally unaware	Environmentally aware

As well as putting into practice an exciting new philosophy, PETRRA is implementing an innovative strategy – a compass rather than a road map – that focuses on the following key areas:

- **Participatory and demand-led research:** Research priorities are identified in a three-stage process of group meetings at the village, upazila (sub-district), and district level.
- **Focus on livelihood:** Productivity gains alone will boost the disposable incomes of farming families and landless rural households, thereby reducing poverty. However, to maximise these gains, the technologies will be developed with the livelihood strategies of resource-poor farmers.

- **Decentralised approach:** Decentralisation is essential for the sustainability of gains against poverty, as the voices of poor farmers are heard only at the local level. Because local partnerships are crucial, the districts around the regional stations of the BRRI will receive priority (see Map in page 3).
- **Gender sensitivity:** Female-headed households (5% of rural households) and households whose income depends on the earnings of women (20% of rural households) are generally poorer than those headed and solely supported by men. The goal of PETRRA's gender strategy is to give women equal weight in setting research priorities, participating in technology development, and evaluating their impact on rice production and income.
- **Capacity building:** Training, a vital part of the PETRRA strategy, focuses on three main areas: capacity for demand-led research through skills development, degree training, as it contributes directly to PETRRA outputs, and specialised research or short-term training overseas that contributes directly to PETRRA outputs.

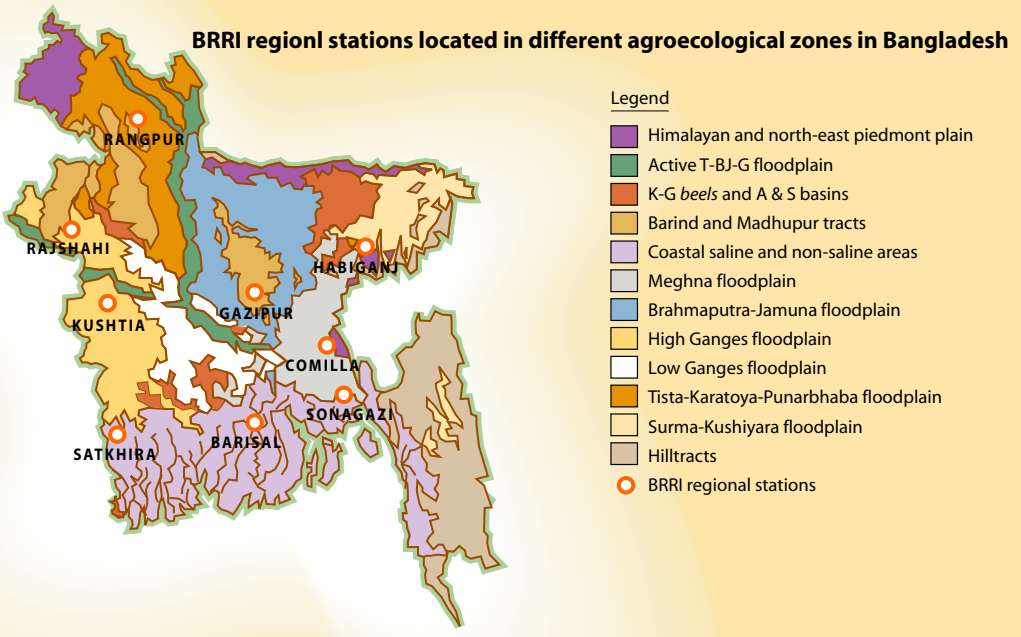
PETRRA's principal target groups are:

- Farm households who are self-sufficient in rice for three to eight months per year and own less than 0.6 hectares; and
- The extreme-poor, who consume less than 1,800 calories per day.

To increase the income and ability of these groups to buy food, it may be necessary to have as a secondary target medium-sized farmers who produce a surplus.

Priorities

PETRRA's main research priorities have been developed through extensive village-



level consultations with poor, male and female-led households. These priorities are in harmony with the Government of Bangladesh's (GOB) National Plan. By maintaining a sustainable livelihoods framework which places emphasis on uptake, policy, and impact, rather than on technology development alone.

PETRRA has located issues within three broad themes.

1. **Productivity gains** through both higher yields and reduced production costs that are economically and environmentally sustainable. These can be achieved through improvements in:
   - Water management and quality (e.g., arsenic problems);
   - Crop nutrient management;
   - Farm power and labour;
   - Integrated pest management;
   - Seed quality;
   - Varietal development for coastal-saline, irrigated, and drought-prone conditions; and
   - Development of robust, diversified farming systems that enable poor households to adapt to a changing economy.
2. **Transforming structures and processes** that shape rural livelihoods, including institutions, organisations, policies, and legislation. PETRRA can improve uptake by helping rice research become more participatory and demand-driven, by creating more effective pathways by which stakeholders can take up new technologies, and by identifying policy constraints. Key efforts include:
   - Guiding the national-level dialogue on agricultural policy;
   - Ensuring access to quality seed, fertiliser, and pesticides;

- Anticipating the impact of the World Trade Organisation (WTO) and the development of export markets;
- Building institutional capacity for demand-driven research and uptake at the local level;

- Identifying opportunities for partnerships with non-governmental organisations (NGOs) and the public and private sectors to work towards eliminating poverty;
- Understanding how farms fit into society, from the household level up to the national level; and
- Piloting improved methods for farmers to develop, assess and adopt new technologies.

3. **Focusing impact** on livelihood gains, including improvements in income, food security, household well-being, and the sustainable use of natural resources. PETRRA will contribute directly to several of these objectives by conducting research on how rural livelihood systems are changing and the effect these changes have on the policy dialogue nationally and with donors.

Implementation

PETRRA is a large-scale effort to coordinate and facilitate financing for a range of subprojects converging on the overall five-year goal. Our call for concept notes (CNs) that address identified themes and are subject to expert review ensures that the scientists we engage, both in Bangladesh and abroad, are the best suited to address the demands of poor farmers. Participating researchers must have a strong commitment to enabling partnerships and their synergies.

Also crucial to the success of PETRRA are its two key committees, the project steering committee (PSC) and the technical committee (TEC). In addition to their responsibilities listed on the next page, the committees will play a crucial role in ensuring that the lessons learned during the project are fed back to the institutions involved.

Based on the inputs of these two committees, PETRRA's implementation is proceeding as follows:

- Widespread participatory consultation with poor farm households, coupled with expert consultations (completed);
- A call for CNs, a process open to all interested universities, research institutes, NGOs, and private

companies. Submitting NGOs must have a track record of commitment to agricultural development for poor farm households. Organisations with long experience, adequate qualified professionals, and a strong reputation in a relevant area of research receive priority;

- Development of selected CNs into research proposals (RPs), with poor farm households directly involved in the research design;
- Approval, budgeting, and implementation of RPs through the TEC and project manager (PM); and
- Development of a participatory review process to ensure ongoing, critical assessment by the project's clients, particularly farmers and uptake partners at the local level.

The PSC provides strategic guidance and support in:

- Setting priorities regarding research themes and issues;
- Allocating funds to major research themes;
- Setting procedures for assessing project impact; and
- Communicating project outputs to the GOB, donors, and other stakeholders.

The committee also:

- Approves the research programme presented by the PM;
- Reviews progress and recommends changes, if needed; and
- Addresses any other issue beyond the purview of other entities within the project.

The TEC:

- Reviews and evaluates project CNs and RPs according to criteria the committee establishes by consensus; and

- Provides technical scrutiny of research programmes and makes appropriate recommendations to the PM;

The TEC also advises the PM on:

- How to interest sound researchers and institutions in PETRRA's activities;
- Potential additions to the TEC;
- Resource people who would be useful consultants for various tasks; and
- Any other technical matters as required.

The project steering committee includes

- Secretary, Ministry of Agriculture (Chairperson);
- Joint Secretary (Research), Ministry of Agriculture;
- Joint Secretary, External Resources Division (ERD), Ministry of Finance, Planning Commission;
- Joint Secretary, Ministry of Finance, Finance Division;
- Executive Chairman, Bangladesh Agricultural Research Council (BARC);
- Director general, Department of Agricultural Extension (DAE);
- Director general, Bangladesh Rice Research Institute (BRRI) (Member Secretary);
- Deputy director general (Research), International Rice Research Institute (IRRI);
- IRRI Liaison Scientist for Bangladesh;
- Senior Research Fellow, Bangladesh Institute of Development Studies (BIDS);
- President, Proshika (Bangladeshi NGO);
- Deputy Executive Director, Rural Development Programme, Bangladesh Rural Advancement Committee (BRAC) (Bangladeshi NGO);
- Managing Director, Bangladesh Seed Merchants Associations (BSMA);
- Senior Adviser (Research), Department for International Development (DFID), UK;
- Senior Natural Resources Adviser, DFID, Bangladesh;
- Project manager, PETRRA, IRRI.

The technical committee includes:

- Director general, Bangladesh Rice Research Institute (BRRI) (Chairperson);
- Director (Research), BRRI;
- Deputy Secretary (Research), Ministry of Agriculture;
- Member Director (Crops), Bangladesh Agricultural Research Council (BARC);
- Director (Research), Bangladesh Agricultural Research Institute (BARI);
- General Manager (Seed), Bangladesh Agricultural Development Corporation (BADC);
- Deputy Director (Extension), Department of Agricultural Extension (DAE);
- Social Scientist, DFID, Bangladesh;
- Managing Director, Grameen Krishi Foundation (GKF) (Bangladeshi NGO);
- Director, Economics and Environmental Services, Rangpur Dinajpur Rural Service (RDRS) (Bangladeshi NGO);
- Production Manager (Rice Seed), BRAC (Bangladeshi NGO);
- IRRI Liaison Scientist for Bangladesh;
- Member, IRRI, Los Baños;
- Project manager, PETRRA, IRRI (Member Secretary)

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PETRRA highlights

Noel P. Magor, A. Salahuddin, Tapash K. Biswas and M. Haque

Introduction

Within five years the research facilitated through the Poverty Elimination Through Rice Research Assistance (PETRRA) project resulted in the identification or development of more than 10 significant technologies, provided insights into uptake pathways and dissemination methods and provided an opportunity for policy makers to engage critical policy issues. It has been rather unique for a project to draw together the three strands of technology development, uptake methods research and policy research. An outcome was that on numerous occasions, technical scientists were sitting side by side with social scientists and development professionals from government, non-government and private sector agencies.

PETRRA was funded by the United Kingdom's Department for International Development (DFID), managed by the International Rice Research Institute (IRRI) in collaboration with the Bangladesh Rice Research Institute (BRRI) as in-country host.

A team effort made this possible. PETRRA was guided by a project steering committee (PSC) chaired by the Secretary of Agriculture (it met 7 times). The technical committee (TEC), chaired by the director general of BRRI, and comprising 15 members of both technical and social scientists from, non-governmental organisation (NGO) research and extension projects, advised the partner selection process. There were 5 calls for concept notes (CNs) with 391

submissions. There were 17 sittings of the TEC. Through this process, 45 sub-projects (SPs), with more than 47 partner agencies representing national, international, universities, NGOs, and private organisations, were commissioned. Seven hundred and twenty one scientists and development professionals were mobilised. 10% were women.

In its final season (*boro* 2004) there was work with more than 18,000 farmers, of whom about 40% were women in more than 550 villages across 37 districts and 102 upazilas.

A value-based research competitive grant system

PETRRA operated with openness to learning by doing. It encouraged praxis both at the management level and within the commissioned research.

The value base reflected the following:

Demand-led

Dialogued with development officials and scientists at the national and regional

DFID Department for International Development

IRRI International Rice Research Institute

Bangladesh Rice Research Institute

levels. During 1999-2000, PETRRA completed 10 consultations at the village, upazila and levels.

Poverty Focus

The target group for PETRRA's participatory research and training were the resource-poor farm households, defined as those with up to eight months worth of rice needs met from one's own production within the year. It was expected that all SPs focus on the issue of poverty, and give feedback to guide PETRRA.

Gender equity

The message that developed over time was to include women in all activities, and not just the ones in which they have direct work involvement. There were seven SPs that focused specifically on women.

- Women-led group extension on seed drying and storage (AAS);
- Women-led group extension on rice-potato-rice cropping technologies (RDRS);
- Family approach to extension on rice and seed production (AAS);
- Farmer-to-farmer to promote seed health improvement (SHIP);
- Women-led videos on post-harvest (CABI and RDA);
- Photograph-supported group discussions on seed drying (AAS);
- Women-led cultural extension on rice and seed production (Shushilan).

This was in addition to engagement with women in all SPs. Over the project period, inclusion of women increased from 10% to 41%.

A comment from a woman who was also a member of the union parishad in Comilla reflects the general feedback by women to receiving training: *"Amar khub bhalo lagchhe"* (I feel very good).

Participation

The project promoted farmer participatory approach to research. Farmers were engaged as research partners from initial problem identification to technology development and validation.

Partnership

PETRRA gave priority to projects that mobilised skills from a number of partners – government institutions, NGOs and the private sector. The partnership brought together skills and experiences of diverse institutions synergistically. End users were involved in SPs from the beginning. This was reflected in joint initiatives between NGOs and BRRI or IRRI.

Competitive

The SPs were commissioned following a competitive and transparent process. This value helped identify the best people to address the problem at hand. It recognised the research/development arena as changing over time and that the traditional approaches to designing a project may miss important players. Open advertising to submit research proposals (RPs) uncovered some unexpected innovative ideas. In addition, it allowed the best performers to have the opportunity to obtain resources for addressing a problem.

Flexibility

The arrangement of PETRRA enabled the government and the NGO organisations to work together. For BRRI, this greatly enhanced its ability to work at the village level. For NGOs, it gave them an opportunity to participate in rice research and development activities.

Linking science (technical and social and organisational) to priority issues

Within SPs there are examples of advanced science linked to farmer participation.

Linking uptake and technology development

This linkage reduced time for technology to reach farmers as there was a built in system for local dissemination.

Communicating results to key users

Communication took on a more business like approach in the last year, and in retrospect should have received higher priority earlier.

Commitment to capacity building that supports the principles of PETRRA

The project supported capacity building at several levels. Within the sub-projects, young scientists or development professionals could be nominated to complete a higher study providing the thesis output contributed to the sub-project agreed output. As capacity needs concerning pro-poor research practice emerged the project management unit (PMU) organised relevant short term training courses. This was coupled with action and reflection by sub-project team members with the PMU or external expertise (for example on gender or poverty focus).

An attitude of mutual learning

All activities were reviewed critically to integrate learning.

Such a set of values does not find its outworking in SP practice by chance. The traditional training of scientists is not conducive to the development of awareness of the above principles. PETRRA committed itself to providing an enabling environment for these practices to flourish within the SPs. It takes time for the values listed to take root and their practice was more evident in some SPs than others.

Emerging technologies for dissemination

Seed health improvement (SP 00 99)

The Seed Health Improvement SP has shown that clean seeds increase rice yield by 10%. Seed germination was increased by 20% through airtight containers. Seed rate can be reduced by 35% through the use of good seeds. This technology was validated with 14,000 farmers, men and women in 52 upazilas under 16 districts. The impact is reflected in a story from one of the women research partners:

"Four years back my own production from land could meet five months' need of rice. The rest would come from borrowing or help. Now, both my husband and I are working hard and get 100 maunds of rice from the same amount of land on which we received 50 maunds before".

The Rural Development Academy, Bogra developed communications materials to facilitate extension through the Department of Agricultural Extension (DAE), local government organisations and NGOs.

BRRI established a molecular laboratory that was fully functional with trained staff for finger printing rice pathogens and

assisting epidemiology studies of endemic pathogens.

This five-year SP was led by IRRI with BRRI as a national lead agency with BRAC, Proshika, CARE, GKF, RDA, WAVE and BRRI managing field sites across seven regions. CABI International, UK and Bangladesh Agricultural University (BAU) Seed Pathology Laboratory (SPL) have provided technical support. There were close linkages with DAE at the field level.

Optimisation of urea fertiliser use by leaf colour chart (LCC) (SP 10 00)

Urea or nitrogen (N) fertiliser is a major cash investment for farmers. The leaf colour chart (LCC) helps a farmer know

when to apply extra nitrogen. In the *aman* season, a farmer's experiments showed savings of 30 to 40 kg. N per hectare, with no loss of yield. Indeed, in some locations the yield increased marginally due to reduced pest pressure and lodging of plants. This technology contributed to increase in farm incomes and better protection of the environments through reduced use of agrochemicals.

Grain yields, economic benefit and agronomic efficiency increased further through combined use of LCC and recommended Phosphorus (P), Potassium (K), Sulfer (S) and Zinc (Zn) fertilisers. Grain yields were increased by another 7% (279 kg. per hectare) in BR11 and 14% (523 kg. per hectare) in BRRI dhan39. The net returns increased by another Tk. 1,142 per hectare for BR11 and Tk. 2,615 per hectare for BRRI dhan39.

The reduced N use and increased agronomic efficiency of N due to the use of LCC alone along with recommended rates of P, K, S, and Zn fertilisers imply that use of the LCC could provide additional net return to the farmers, reduce the loss of fertiliser N to the surroundings and thus could improve the environment.

BRRI led this four-year SP with IRRI providing expert support. Scaling up commenced in 2003 in the Kushtia and Rangpur regions with the DAE and RDRS. Towards the end of the SP there were discussions between the DAE at *Khamarbari* and IRRI and BRRI to take the technology nationwide through the DAE existing programmes. PETRRA provided the initial training and the production of the LCC with training material.

Rice-duck (SP 19 00)

In the past, there were recommendations for rice and ducks not to be raised together. Not anymore. The rice-duck production system is a new practice for Bangladesh though not in the Asian region. In the *aman* season in Sylhet and Barisal, duck droppings reduced chemical fertiliser by Tk. 2,600 per hectare. Ducks effectively weeded the rice and controlled the insects. Paddy yields increased by one tonne per hectare raising profits by 102%.

There were also experiments with community management. Sharecroppers received all the additional incomes from ducks produced in the rice-duck system, while sharing only paddy with the landowner. Imagine thousands of hectares under such a system! An extension method was developed so that other organisations can disseminate this technology. Rice-duck is also a technology that will reduce the use of pesticides.

The technology was developed by BRRI with FIVDB in Sylhet, Sunamganj, Moulvi Bazar and BDS in Barisal. In addition, the technology was tested in 2003 with DAE in Comilla, HEED in the south-west in Khulna and MAC Bangladesh, a local NGO in Srimangal.

USG for tidal zone (Barisal) (SP 21 01)

The use of urea super granule (USG) was a new technology for the tidal submergence prone area in Barisal and the Jhalakati districts. Yield increases of 20% were shown with savings of 30% in urea application. In *aman* 2002 and *boro* 2003, 35 and 85 neighbouring farmers used USG. A business extension model was developed that links the manufacturer, dealer and farmer with M/S. Sree Guru Store at Boalia Bazar, Bakerganj, Barisal producing 0.9, 1.8 and 2.7 gm. of USG. This is distributed through 8 retailers as a part of a fertiliser chain. N loss is minimised with reduction in pollution of ground water.

This three-year SP was led by BRRI with marketing and demonstration support from IDE.

Livelihood improvement through ecology (LITE) (SP 27 02)

Spraying of pesticides in paddy cultivation is ubiquitous, and almost considered routine. Research showed that for both the *aman* season and the *boro* season there was no economic advantage for farmers to use pesticides.

This was based on measured yields from 180 farmers' field trials in the transplanted *aman* season in 2002 and another 180 field trials in *boro* 2003. It was found that use of insecticides on rice reduced profits on an average by Tk. 1,730 per hectare. For a typical farmer with 0.58 hectare, this

amounted to an average saving of Tk. 1,000 per year by not using insecticides. This represented a 16 to 25% increase in income for most resource-poor farmers. In addition, abstaining from insecticide use on rice:

- saves farmers' time and labour;
- eliminates the health risk associated with insecticide use; and
- eliminates the environmental risks of insecticide use.

There is a need for re-education of farmers on a large scale. Our fisheries industry may benefit from such re-education as the fish habitat will be protected from pesticide poisoning.

This two-year SP was led by IRRI along with BRRI as country leader, AID-Comilla and DCPUK as field level NGOs in Comilla and Rangpur areas respectively.

Improving use of coastal water resources (SP 20 01)

A major problem in irrigating *boro* rice in the coastal region is the increasing salinity of surface water during the dry season. Rainfall and river water (stored in a canal) were the main sources of water for rice cultivation. From a single crop of trasplanted *aman* of 2.0 to 2.5 tonne per hectare, farmers, through a shift in modern *aman* rice varieties and judicious use of river water (monitored for salinity), were able to achieve 5.0 and 3.0 tonne per hectare in trasplanted *aman* and *boro* seasons respectively. The farmers in the pilot canal irrigation scheme said that they had more than doubled their income. Social aspects of the management of canals were also researched. The local potential for this technology is promising.

This was a three-year SP with BRRI in the lead and HEED and Proshika as field level NGOs. Khulna University and DAE at the local level were also active partners. This research received a boost by becoming part of an international effort under the Consultative Group on International Agricultural Research (CGIAR) Challenge programme for water.

Production, processing and marketing of aromatic rice in the north-west region (SP 29 02)

Quality rice fetches a higher price. Field trials in Rajshahi, Naogaon and Dinajpur

BRRI dhan34, 37 and 38 with *chinigura*, *kataribhog* and *bashmati* were tested. BRRI dhan34 with BRRI dhan37 showed greatest promise with more than 3 tonne per hectare compared to 1.5 tonne per hectare for the local rice. Through a contractual arrangement with Raj Auto Rice Mills, a target for 125 MT, involving 205 rice-growers with 25% women, was set for the final season.

A goal of increasing milling recovery of at least 5% was set. For un-parboiled rice milling, there was an increase from 53.6%

to 65% through adjustments to local mills. This technology stands to open up new opportunities for exporting high valued aromatic and fine rice, and also to expand the domestic market.

APEX, an NGO, Mark Industries and Bangladesh Rice Exporters Association (BREA) were partners in this two-year SP.

Hybrid rice (SP 15 00)

BRRI hybrid dhan1 was released in 2001 for the Jessore and Barisal regions. Through adaptive research it was found suitable for the ecosystem in which the long duration variety BRRI dhan29 was most suited. In *boro* 2002-03, 200 frontline demonstrations were completed through the DAE, as well as 500 baseline demonstrations.

A seed production method, that is suited for small farmers, was tested and found suitable for use. In this method, a small farmer produces his own hybrid seed that can be sold to neighbours. In Barisal, the farmer reported the taste of the hybrid rice being popular with his neighbours.

This SP was led by BRRI with research partners of Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU) and BAU, seed production partners of BRAC and Bangladesh Agricultural Development Corporation (BADC) and an uptake partner of DAE. IRRI provided with expert support.

Hybrid rice technology is promising. It is in its early stages with imported hybrids, being readily accepted by farmers. More varieties are needed. Continued research, seed production and focused dissemination are required in the long term.

Integrated crop management in the north-west region (SP 25 01)

Preliminary research/extension was conducted with 60 farm families in Kurigram and 60 female farmers in Pirgonj. The integrated crop management approach showed significant benefits to farmers.

- Newly released *boro* (BRRI dhan28, 29 and 36) and trasplanted *aman*, (BRRI dhan31, 33 and 39) with BRRI recommended management, gave 1.0 to 1.5 tonne per hectare higher yield.
- Adoption of mustard-potato in the existing cropping pattern increased employment by 20% and farm income by 41%.
- Soil test based fertiliser management increased rice yields by 1.5 to 2.0 tonne per hectare.
- Use of improved earthen canal and hose pipe irrigation reduced conveyance loss (92%), irrigation time (50%) and increased command area (10%). It further decreased irrigation cost and increased farm income.
- Use of only 50% of irrigation water.

This three-year SP was led by BRRI with the NGOs RDRS and GKF as field partners.

Diversified farming systems (SP 32 02)

The above shows significant advances for rice production. However, options for farmers do not stop there. In five diverse ecosystems, (Rangpur, Barind in Rajshahi,

Noakhali, Faridpur and Barisal) five villages were selected. For each location resource-poor households showed significant improvement in their livelihoods through additional enterprises of poultry rearing, fish culture along with growing vegetables and fruit. It has been recognised that in terms of potential, Bangladesh is a garden that can be more intensively cultivated.

So, increased rice productivity coupled with diversification showed promise for improved and secure livelihoods for resource-poor farmers and low income consumers.

Promising technologies in advanced stages

Improving salinity tolerance in the coastal region (SP 13 00)

The farmer's participatory varietal selection was conducted in the *aus*, *aman* and *boro* seasons in south-east and south-west parts of Bangladesh. For *aman*, farmers identified four varieties that will be nominated in the variety release system. In *boro*, five varieties were nominated by farmers. This programme demonstrates the success of involving NGOs, farmers and extension persons in identifying and then promoting appropriate new lines.

IRRI with Dhaka University focused on closely identifying the saltol molecular marker on chromosome 1 that contributes to salinity tolerance in rice. rapid generation advancement (RGA) techniques were used at IRRI and anther culture techniques were introduced to the BRRI Biotechnology Division.

This three-year SP was coordinated by IRRI partnering with BRRI Plant Breeding and Biotechnology Divisions and Dhaka University.

Biodiversity in the south-west coastal region (SP 22 01)

Identified six sub-ecosystems for collection of germplasm. In *aman*, nine varieties were collected for varietal selection by farmers and in *aus* 10 varieties were similarly tested. This SP is expected to lead to seed production of popular local varieties along with introduced BRRI varieties.

Ecological management of rodents (SP 30 02)

The SP addressed rodent pest problems through the provision of ecologically-based rodent management tools that can be implemented by farmers in Bangladesh to reduce crop loss. New knowledge generated showed current rodent pest problems and their population dynamics in the complex ecological habitats of Bangladesh.

System of rice intensification (SRI) (SP 34-36 02)

There were three SRI SPs covering eleven areas, implemented by seven

partner organisations – Bangladesh Agricultural Research Council (BARC), SAFE, POSD, AAS, BRRI (Comilla and Rangpur), Uttaran and Syngenta Bangladesh. The study was conducted for a short period of time running for only two seasons.

Experience of 8 sites conducted by BRAC, SAFE, POSD and Syngenta Bangladesh showed that the total number of participating farmers increased by 62% during the second year and SRI acreage also significantly increased by 90% during the same period. Per hectare gross costs of production of rice under SRI was lower than that under the farmers' practise. Net return per hectare under SRI was significantly higher ranging from 35% to 73%. Results in Shatkhira (BRRI-Uttaran) were also encouraging. However, in BRRI Comilla and AAS the result was not as promising. It was recommended that further village level research be conducted and protocols be developed for effective comparison between the results.

Improved uptake methods and pathways

For improved uptake pathways and methods for rice technology dissemination, the following have emerged:

Innovations in seed systems

Seed emerged as the number one issue for farmers. The Adaptive Research Division (ARD) of BRRI developed a systematic approach for testing and validating new rice varieties directly with resource-poor farmers (both male and female).

Through this process BRRI dhan28 and BRRI dhan29 were validated as the most popular varieties for *boro*. Specific locations for *aman* varieties, BRRI dhan32 to BRRI dhan41 were identified. In addition, BRRI dhan27 for *aus* was validated in the south-east.

This four-year SP in three phases was led by BRRI with close cooperation with the DAE and with the NGO RDRS in the north-west in its final phase.

Building a rice seed network

Access to seed of new varieties was a high priority for farmers. BRRI with its partners in the regions of Bangladesh complemented BADC in building seed networks. More than fifty seed producing organisations joined the seed network within the SP period. Each received breeder seed (BS) from BRRI to multiply and then market within their given localities.

The validation of the newly released varieties with the Seed Net, clearly helped popularise BRRI dhan28 and BRRI dhan29 for the *boro* season, identified specific locations for BRRI dhan32 to BRRI dhan41 in the *aman* season, and BRRI dhan27 for the south-east region.

This was complemented with local organisations developing their own methods to effectively deliver seed to the farmer's doorstep.

- FARMSEED: Putting farmers at the heart of the seed system (AAS);
- Grameen experiments with a pro-poor seed innovation system (GKF); and
- Innovating with federations: community institutions take the lead (RDRS).

The right to access: women want more agricultural advice

As already indicated, inclusion of women emerged as a key message in PETRRA as a whole. There was a special call for concept notes for women-led extension with three SP innovations being:

- Breaking down barriers: village women spread the word (AAS);
- Family approach in agricultural extension (AAS); and
- Giving women a voice: video development for women-to-women extension (CABI, RDA, TMSS, Countrywise).

The latter is a cost effective and an interesting way to disseminate knowledge for illiterate people. Because it included presenting new knowledge in one's own language, disseminating local innovations to wider audience and breaking down adoption barriers through motivation, women were able to go on a 'virtual' cross site visit.

Strength in diversity: many new methods for reaching communities

- Village soil maps.

The participatory integrated plant nutrient management (PIPNM) helps in capacity building in soil fertility evaluation of farmers' extension service providers and researchers. The nutrient management included the following steps: farmer group formation, drawing a village map showing crop fields, classifying soil fertility grades by participating farmers, identifying nutrient management packages based on soil tests and crop history, and validation by farmers.

Other methods to emerge were:

- Going public: a quick way to share ideas with communities; and
- Picture songs.

The enterprise web (dissemination for knowledge intensive technologies with multiple actors)

- Pump it up: developing a pro-poor mobile pump market

Mobile pump uptake methods ensured mobile pump production and distribution system at local levels through development of the producer, pump mechanic, pump dealer, local partnership and demonstration of the pump efficiency at the farmer level.

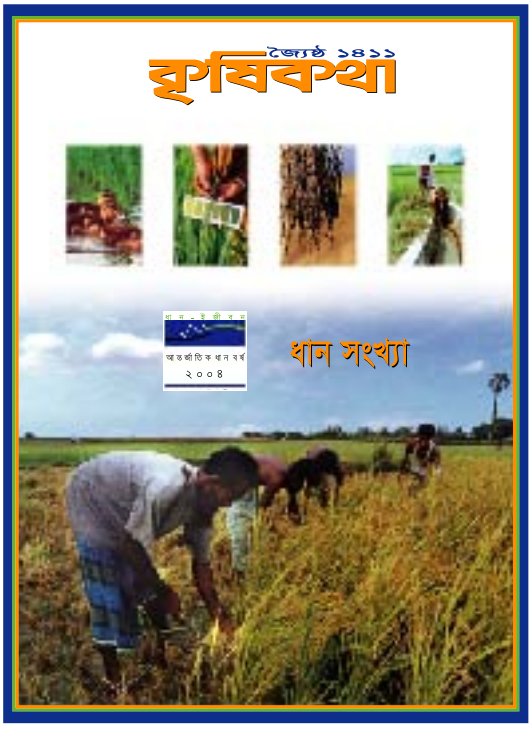
Other SP examples were:

- Integrated rice-duck farming: a new system for Bangladesh; and
- The sweet smell of success: a value chain approach for aromatic rice.

Not just new technology but more access to knowledge

Where do I get the information? In May 2004, BRRI launched the Bangladesh Rice Knowledge Bank (BRKB). All technologies developed under PETRRA were made available on the internet as simple fact sheets. This was done in close partnership with the IRRI sponsored Rice Knowledge Bank (RKB). Through this any service provider will be able to print out training lessons for their own activities.

The Agriculture Information Service (AIS) under the Ministry of Agriculture (MOA) released a special edition of *Krishikotha* on rice. It included the above mentioned technologies.



An important aspect of access to knowledge (which is a two way flow) has been the piloting of the focal area network in both the north-west and north-east. Networking amongst actors within the region and also between the centre and a region is critical for up-to-date knowledge. This supported closer links between the government and NGO service providers. In the north-west, there was a joint planning exercise for promoting the LCC.

Impact on livelihoods

PETRRA completed a number of independent studies in which farmers (male and female) talked about changes in their livelihoods.

It is best to let farmers speak for themselves, concerning the impact on their own livelihoods.

Improved food security and reduced vulnerability:

We are able to eat enough three times a day (ICM north-west).

"About 7 seasons and 4 years ago, she needed to purchase rice for 3-4 months. For the last 2 years, she does not need to do so" (Seed health).

"Rice-duck is a safety allowance for the household. If they need any cash money they can easily sell eggs or ducks" (Rice-duck).

Increased confidence and self-esteem

"Before we were not invited to the 'salish', and we were not trusted. Now people trust us enough to help out in village disputes" (ICM north-west).

Accumulation of assets

"With the profits from rice sales, he has managed to buy a cow, tin sheets for his house and hire a private tutor for his son who is studying in class 5" (Coastal water).

"We used to wear short-length 'Tatial' sari which we purchased for Tk. 60. Now we wear sari worth Tk. 200-300" (ICM north-west).

Livelihood strategies

"We are able to start small businesses like grocery shops, trading vegetables and molasses" (ICM north-west).

The above illustrations are the tip of an iceberg. Normally as researchers we do not report changes in livelihoods. That has been our downfall in under selling the importance of agriculture development in poverty reduction. Inconsistent flow of resources by government and donors into agriculture research and development (R&D) may be due to poor communication.

Commitment to sustainability

The earlier sections presented evidence that the approach to a value-based

competitive approach by PETRRA resulted in improved technologies being available to farmers and that there was an impact on their livelihoods. What about indications of sustainability?

Firstly, for sustainability the technical and farmers' training materials must be available for service providers. The launching of the BRKB, which is a joint initiative with IRRI Los Baños, was designed to ensure information availability for future use and reference.

Secondly, a special edition of *Krishikotha* was released for extension agents.

Thirdly, we needed to ask 'how are agencies responding to this? Is there evidence of commitment to the future?' In brief, the following is very clear evidence across government, non-government and donor bodies of taking the learning from PETRRA forward.

- BARC, the apex body for agriculture research and the leader of the livelihoods SP secured government fund support for expanding their programme;
- BRRI, incorporated the training on the emerging technologies into its main training programmes for extension service providers;
- The DAE, recently organised a scaling up programme for the LCC to take it nation wide. This has been achieved through joint discussions between the DAE, IRRI and BRRI;
- The Bangladesh Academy for Rural Development (BARD), introduced the learning for the 'village institutional approach for rice technology dissemination' into its ongoing Comprehensive Village Development Programme (CVDP);
- RDA Bogra used the 'women-to-women extension approach' in its training and demonstration programme;
- The NGOs RDRS, BRAC, CARE, WAVE, Proshika, GKF, APEX, AAS, HEED Bangladesh, responded positively to technology development and indicated that they are committed to scaling up the same and other technologies being developed under other SPs; and
- The European Commission (EC)-funded a food security project for small and marginal farmers which will scale up PETRRA technologies and other suitable technologies through three national NGOs.

Internationally, IRRI has taken principles from PETRRA and incorporated into concept notes for other countries (a Swiss Agency for Development and Cooperation [SDC] proposal for Nepal, Bhutan and Myanmar). Its Board of Trustees has recommenced the adoption of PETRRA values into programmes for other countries. The CGIAR Challenge Programme has awarded contracts for further research to be built on the coastal canal water management SP and the development of saline tolerant varieties for the coastal wetlands.

Policy dialogues

The SP 'dynamics of livelihood systems' (DOLSys) under the leadership of IRRI, Head of Social Sciences, provided the umbrella for policy dialogue. The dialogues have been built on insight from household surveys (a 64 village revisit study and a series of case studies in

selected villages). The Centre for Policy Dialogue (CPD), a national thinktank, arranged these through inviting policy makers and leading intellectuals for an issue presentation that was then followed by 2-3 hours of debate. CPD documented the discussion. There were seven dialogues held namely:

- Rice seed delivery system and seed policy;
- Strengthening rice research and extension linkages in Bangladesh;
- Promotion of rural non-farm economy: is Bangladesh doing enough?
- Liberalisation of the crop sector: can Bangladesh withstand regional competition?
- Rural livelihoods and poverty reduction (there were several dialogues on poverty and rural livelihoods encompassing poverty mapping and pathways from poverty);
- Biotechnology research for rice improvement: prospects, risks and benefits; and
- Women's contribution to rural economic activities: making the invisible visible.

Communications and different media channels used

PETRRA in close collaboration with BRRI and other GO-NGO partners managed its communications profile.

In 2002, PETRRA asked its partners to provide technical notes that were prepared as communication materials for a non-technical audience. It also inspired its partners to take care of dissemination aspects of the innovations from the beginning of the SPs. In February 2002, a communications strategy was prepared with the assistance of Mr. Peter Fredenburg, communications expert from IRRI. In mid 2002, PETRRA started searching for partners to take the task forward and established a contract with a communications NGO, Steps Towards Development. In September 2002, a communications fair was held at BRRI and at the same event the first copy of the English newsletter *Interface* was launched. In May 2003, a Communications Specialist was recruited.

PETRRA website

The PETRRA website (petrra.irri.org) was launched in September 2003 at the inauguration of the communication fair 2003. It was the hub of communications of the PETRRA project. Links at this site provided information about the project, its research activities, focal areas, project documents, news, events, SP approval processes and other related websites.

Newsletters

Two newsletters were published semi-annually, both in English and Bangla. The target audience of the English newsletter

Interface included policy-planners, donors, national and international NGOs. The Bangla newsletter *Dhanadhanya* targeted literate farmers and extension workers. These newsletters contained PETRRA's latest innovations and learning along with news and views on important upcoming events.

Communication fairs

PETRRA and its SPs organised communication fairs at national and regional levels. At the national level, communication fairs held in 2002 and 2003 primarily targeting policy makers, donors, GoB, media and like-minded organisations. At the regional level, the fair brought together primary and

intermediate stakeholders like PETRRA SP partners, farmers, extension workers, local government representatives, rice actors etc. PETRRA SP partners also attended different agriculture communication fairs organised by other agencies at national and regional levels.

Closing celebration

In July 2004, PETRRA had a closing celebration at Hotel Sheraton, Dhaka. This was organised to celebrate the successful closing of the five-year project and to recognise the contribution of PETRRA partners. Another issue of an English newsletter was published on this occasion. A dialogue *Agriculture technology and innovations for the poor* was held in the morning session. The Honourable Minister and state minister for agriculture, Secretary and a group of renowned personalities of different professional backgrounds took part in the discussion. In May 2004, PETRRA in collaboration with AIS of MOA with assistance from BRRI, published *Krishikotha* to mark the International Year of Rice (IYR). It was circulated to 35,000 farmers and extension workers across the country through government channels.

From time to time, the Farm Broadcasting Department of Ministry of Information (MOI) aired news on the regional channels of *Bangladesh Betar* (Radio Bangladesh) on various PETRRA innovations and activities.

Strategic use of electronic media, especially an understanding with *Channel-i*, a satellite TV channel, along with other channels, was frequent in the last one year. It helped in providing visibility of PETRRA innovations.

PETRRA had close collaboration with a pool of journalists and organisations like Forum for Information Dissemination on Agriculture (FIDA), covering agriculture in the national newspapers and electronic media. They were regularly provided with information on project related activities focusing on rice research with regard to livelihood changes.

Dr. Abdul Bayes, an eminent economist and a Professor of Jahangirnagar University, wrote a series of articles in *The Daily Star* and daily *Bhorer Kagoj*, two

national English and Bangla newspapers respectively from discussions with farmers and various partners of PETRRA SPs in the north-east, north-west and south-west of Bangladesh.

In February and March 2004, workshops were organised with researchers, materials development experts and graphic designers to develop communication materials for technology development and uptake method SPs. The target groups for these materials ware farmers and GO-NGO extension workers. In addition, the SPs, on their own initiatives, had developed a number of printed communication and farmers materials based on the need.

PETRRA encouraged researchers to publish their results in scientific journals and to present them at national and international workshops.

As part of its advocacy effort, seven policy dialogues headed by Dr. Mahabub Hossain of IRRI Social Sciences Division in collaboration with CPD were organised on issues related to poverty and agriculture.

Excellent progress was made for the development of the BRKB. In February 2004, BRKB Coordination Group headed by director research of BRRI launched the BRKB contents preparation towards giving sustainability to the innovations.

There were extensive activities by partners in terms of reports, leaflets, posters, booklets, brochures, website, newsletters, TV and radio programmes. Below are examples of articles from *The Daily Star*:

- Two federations of farmers comprised of the landless and marginal farmers have been fighting for the economic emancipation of their members with the technical assistance from PETRRA-RDRS technology uptake SP. Another example of the importance of good training that can play a vital role in improving the production hence uplifting the livelihoods of marginal farm households. (*The Daily Star, July 22, 2003*);
- Bangladesh's potential in exporting aromatic *bashmati* rice to the international market or at least substitute imports of fine and aromatic rice through domestic production (*The Daily Star, July 30, 2003*);
- The importance of infrastructure, innovations and institutions in poverty reduction especially of resource-poor farmers (*The Daily Star, August 12, 2003*);

- The socio economics and politics of shrimp culture in south region where the growth of shrimp cultivation should take place under a regime where a) access to common properties are not encroached upon; b) small farmers have the freedom to reap home the rewards from shrimp cultivation; c) productivity of agricultural land is not adversely affected and d) both economic and

non-economic costs are duly calculated to point to a sustainable development of the sector *(The Daily Star, September 2, 2003)*.

Communication briefs

The use of communication briefs that drew on the experiences from the SPs was a method used to disseminate information to policy makers.

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PETRRA – lessons learned

Noel P. Magor, A. Salahuddin, Tapash K. Biswas and R. Davies

An indicator for output 6 of the Poverty Elimination Through Assistance (PETRRA) logical framework reads, 'the strengths and weaknesses for effectiveness in the project identification, funding, and management procedures are documented for lessons learned for future research models'.

The following highlights lessons learned:

Project design and guidance

The membership of key positions on the project steering committee (PSC) and the technical committee (TEC), such as chairperson, member secretary, etc. can be vested in the names of specific individuals, or specific positions within the organisations. While the latter can mean some turnover of participants in the committee, in the case of PETRRA this cost has been worthwhile as it has been critical to government ownership of process.

Research calls

- PETRRA's second call for concept notes (CNs) in July 2000 clearly showed that if a call for CNs is made very public, via mass media versus through informed contacts, then a larger number and wider range of types of CNs will be received.
- There was no public meeting of prospective participants for any of the research calls. Such meetings may have been useful for explaining the purpose of the call (and all the associated conditions). Such a 'question and answer' type forum would have the potential to sort out any misunderstandings quicker and earlier than through one-on-one contacts with candidates. For example, there was tremendous confusion regarding what constituted research on extension methods. Despite a definition of an extension method and an evaluation sheet that scored the method, most submissions were more concerned with doing extension than research on the method.
- If each of the five completed call for research CNs and research proposals (RPs) was followed by an explicit and documented review of the call process, then the lessons from each iteration would be more readily available to others, and the rate of improvement in the process might have been greater.

Partnership

- The PETRRA project funded partnerships of organisations with complementary skills to carry out research, and focus on the needs and views of poor rice farmers. Most notably there were partnerships between a national agriculture research institution (e.g., BRRI), which has scientists skilled in agricultural research, and non-governmental organisations (NGOs), who have personnel skilled in developing and working through relationships with poor communities and often well established relationships with many such communities. Funding

DFID Department for International Development

IRRI International Rice Research Institute

Bangladesh Rice Research Institute

either on their own would not have delivered the results that were generated through the technology development sub-projects (SPs).

- If support is provided in the development stage of a research proposal for the establishment of appropriate partnerships, then there is better targeting, better dissemination of research findings and a greater likelihood of generating technologies that receive endorsement. Examples here are the 'rice-duck' sub-project (SP 19 00), the 'adaptation and adoption of USG in tidal submergence prone area' sub-project (SP 21 00), and the 'integrated crop management (ICM) in the north-west' sub-project (SP 25 01). PETRRA PMU provided the funds for facilitation between the organisations and farmers as needed for each of these SPs. These SPs displayed a high level of effective partnership and commitment to working together.

Research funding

- The original project memorandum budget did not discriminate between project management costs and capacity building costs that took place across SPs. This has meant that it has been difficult to divide costs between management and capacity building. From this perspective it was difficult for the 2003 OPR to assess whether the project management costs, at 26% of the budget, were excessive or within reasonable bounds. If the costs had been separated from the beginning, more useful information would have been available to the government and donors, interested in the financial replicability of the PETRRA model.
- Capacity building has emerged as a major need for a value-based research model. If capacity building is placed as a separate budget item at the project level, then it would be possible to build it as a specialised unit.

Logical frameworks

- PETRRA had its own logical framework, with a central focus of reviews over its five-year life. The requirement that SPs also have a logical framework at the SP level was most useful in that it helped give attention to the purpose and contributing outputs of the research. It greatly aided monitoring. If logical frameworks are to be used at two levels, such as in PETRRA, then care needs to be taken to ensure that objectives mesh properly.
- If logical framework training is provided at the beginning of the research proposal preparation stage, then it greatly contributes to quality of design and monitoring and evaluation. For the first round of RPs approved, little attention was given to the quality of the logframes. Hence, considerable time was spent at a later time for logframe revisions.

Sub-project (SP) management and design

- For SPs, the designated Principal Investigator (PI) in general should be by name and not position. In addition, the PI should be the person responsible for the day-to-day operations of the SP. The leader of a SP should not be the head of an institution or large organisation, in which it is apparent that the day-to-day management is done by another person. The appointed PI is more likely to attend more PETRRA capacity building events. As a result, the SP is likely to produce superior results.
- Care is required in larger SPs that have activities across institutions. It may be more productive to have several smaller SPs with a coordination committee.

This may allow greater initiative and competition between SPs. An example was the sub-project 'development and use of hybrid rice in Bangladesh' (SP 15 00). This was managed as a single SP with research, seed production and extension components. For seed production a follow-on-call may have drawn in private seed companies.

- The largest SP under PETRRA was the 'seed health improvement project (SHIP)' (SP 00 99). It had more than 20% of the PETRRA research funds. It was a SP that had been pre-approved by DFID and then placed under the umbrella of PETRRA. It was a researcher-managed project. It may have been worthwhile to have had a call for CNs for dissemination methods research for seed health technologies to bring a greater diversity of actors into the SP for dissemination research. There was similar potential under the 'rice-duck' SP (SP 19 00).
- Overall SPs were weak in economic analysis. It would be worthwhile including such a section in the guidelines for research proposal submission and linking this with subsequent training in the early stages of the SP implementation.
- If SPs are discouraged from making payments to farmers (in cash or kind) for their participation in field-level research and, if SPs are required to establish contracts with farmers about the terms of their involvement, then farmers' participation levels will reflect their real interest and be a more reliable signal of sustained use of the technologies being tested. For PETRRA SPs, this was not made an issue but rather was dependent on the practice of the respective implementing organisations. However, sufficient experience was generated within the SPs to make it an issue for workshop discussion.

Capacity building

- In Bangladesh, the capacity for research with a strong focus on resource-poor farmers (male and female) is weak, even amongst many NGOs. One possible approach is to delay the setting up of a competitive research funding mechanism and precede it with capacity building of the potential participants. However, the evidence from PETRRA suggests that if capacity building (around poverty focus and people's participation) is provided in parallel with the implementation of research (funded competitively), then it is possible for this focus to grow within the participants over time. Also the capacity building takes place within a practical context and can be immediately applied.
- The Alex and Halim review at the midway point of PETRRA observed that research into uptake methods requires a significantly bigger investment in capacity building compared to investment in technology development research. Many of the PIs from research institutions were experienced in the use of experimental methods for field crop science but few were able to translate this into research comparing extension methods or channels of communications. PETRRA provided considerable capacity support with a final investment in case study documentation. The advantage of this 'learning by doing approach' is that the uptake methods took place within an organisational context.
- In the early stages of SP funding, the participation of PIs in capacity building exercises was quite variable. PETRRA subsequently took a much stronger line, advising that PIs must attend workshops to which the SP members had been invited. PETRRA's experience was that attendance is essential if the issues raised in the workshops are to be

pursued within the SPs. Decision making within workshops on processes such as SP evaluation was also hampered if a PI was absent.

- For successful implementation of a research project that reflects values such as poverty focus, gender equity, participation, partnerships and communication of learning, and capacity building of the research partners is essential.

Poverty focus

- Poverty focus was not automatic for the government or the NGOs. The use of a general guideline to which partners were expected to refine their specific location, challenged them to think about their selection criteria. It is necessary to support this with continuous discussion, peer review and monitoring.
- There was often a vagueness observed in the concept note and research proposal proforma that concerned poverty focus. For example, statements like 'we will work with resource-poor farmers'. This should be considered unacceptable as the observed outcome was that the PI did not give attention to poverty focus.
- Wealth ranking allowed location specific criteria to be developed that were offered by the village households themselves.

Gender focus

- In general, partnership with NGOs helped increase women's participation, but it was not by itself a sufficient condition for ensuring equal involvement of women. HEED, a big NGO with more than 85% female clients, implemented the fine quality, aromatic and glutinous rice SP in the tribal areas of Maulvi Bazar in Sylhet, where women work alongside men in the field. Only 25% of the SP participants were women. In the first Seed Health Improvement SP review that included farmers, none of the village women participated.
- The PETRRA project established a principle of inclusion of women in all activities and expected their engagement to increase with time. The PIs responded to this as is reflected by the increase in women's participation over time from 10% to 40% over the life of the PETRRA project.
- A purposeful call for 'women-led SPs' with additional points in the evaluation of the CN and RP had a positive impact on women in management of SPs. It also resulted in new alliances between women-led NGOs and agriculture based NGOs that were not strong in women's activities.

Networks

- To assist PIs in the uptake methods research, targeting resource-poor farmers, inclusion of women, logframes and monitoring, the formation of an uptake forum proved helpful. It enabled issue based discussion. However, as Alex and Halim reported, one of the risks of such a forum is that 'over time shared learning can result in sub-projects converging towards a similar methodology.' Too much connectedness can lead to a loss of diversity, the basis for innovation.
- Value adding across partners requires being pro-active in supporting networks. An example was the north-west focal area forum that brought together actors concerned with rice in the region from farmers to extension and research institutions. The regional focal area forum focused on:
  - promoting decentralised decision making and sharing common initiatives;

– raising voices of poor farmer households (male and female) in the region;

– encouraging actors to work together; and

– ensuring up-to-date rice knowledge was available.

The success of a regional forum requires a local champion and consistency of leadership.

Communication

- Communication through print and electronic media leaflets, brochures, posters, newsletters and fairs proved to be motivational for SPs. The initial project document did not emphasise communication. The PETRRA project introduced a separate output for communication. It is recommended that communication activities start early in the life of the project.
- A project website can serve multiple purposes:
  – enabling public accountability by making the processes and products of the project transparent;
  – communicating useful technical knowledge about how to achieve specific objectives;
  – facilitating good public relations by presenting the best visibility of the project's work; and
  – delays in setting up a project website make it much more difficult to achieve the first purpose, compared to the latter. Information has to be uploaded. The older the project, the more information there is. The PETRRA website (petrra.irri.org) has done much better at presenting current news items, compared to making available older documents, such as previous output to purpose review (OPR) and project reports.
- Support for communications within the PETRRA project management unit (PMU) greatly assisted the overall communications. For example, it enabled a special edition of the Agriculture Information Service (AIS) magazine *Krishikotha* to be published, and some of the SP findings were reported in the popular agricultural television programme *Rhidoye Mati-o-Manush* of Channel-i, a private satellite channel.
- Events such as a communication fairs greatly assisted partners to develop a sense of identification with the project as a whole. It also increased the visibility of the whole project and enabled cross-learning between sub-projects. Such events added to the high levels of commitment by individual PIs and enabled goverment policy makers, such as, the Secretary, State Minister and minister for agriculture, an opportunity to gain an overview of the whole project and also to encourage the PIs.
- The writing of a two to four page brief was adopted as a means to convey key learning to policy makers on relevant issues as opposed to a lengthy report. For each policy dialogue a policy brief was published and circulated to all concerned as a follow-up. Thematic briefs such as 'Technology to Livelihoods' were also published.

Policy dialogues

- The link of policy research with a public dialogue was a new innovation for social scientists. The SP 'dynamics of livelihood systems (DOLSys)' (SP 24 01) provided the umbrella for policy dialogue. The social thinktank Centre for Policy Dialogue (CPD) managed the dialogues to which policy leaders were invited. After a presentation of research findings there was a 2-3-hour debate. The dialogues were attended by senior

government officials including ministers, state ministers and secretaries of different government ministries, academics, researchers and scientists from agriculture and development agencies, donors, NGOs and representatives from the media. There were subsequent news reports in popular daily newspapers and on television channels. Policy dialogues of this form provided a new outlet for research findings that required a policy response.

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