

NATURAL RESOURCES SYSTEMS PROGRAMME
FINAL TECHNICAL REPORT¹

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Project Title

Improved livelihoods Bihar and Eastern Uttar Pradesh

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Organisation

GY Associates Ltd, on behalf of Rothamsted Research

NRSP Production System

High Potential

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Abbreviations and Acronyms

CADA	Canal Area Development Authority
CBO	Community Based Organisation
CGIAR	Consultative group on International Agricultural research
CIAT	International Centre for Tropical Agriculture
CIMMYT	International Wheat and Maize Improvement Centre of the CGIAR
CIRRUS	Cirrus Management Services Pvt Ltd
CPSL	Centre for Promotion of Sustainable Livelihoods
DDG	Deputy Director General
DFID	UK Department for International Development
DWMR	Department of Water Management Research
EOP	End of Project
FFS	Farmer Field School
FSR	Farming Systems Research
GIS	Geographic Information System
GR	Green Revolution
HYV	High yielding, or modern, variety
ICAR	Indian Council for Agricultural Research
ILAC	Institutional learning and change
IRCER	ICAR Research Centre for the Eastern Region (formerly DWMR)
IVLP	Institute Village Linkage Programme
MFI	Micro finance institution
MPRLP	DFID Madhya Pradesh Rural Livelihoods Project
MS	Microsoft Corporation
M-UP	Maharajganj, Eastern Uttar Pradesh, project site 2.
NATP	National Agricultural Technology Project – funded by the World Bank
NAIP	National Agricultural Innovation Project – to be funded by the World Bank
NCAP	ICAR National Center for Agricultural Policy
NGO	Non Governmental Organisation
NRSP	DFID Natural Resource Systems Programme
NRM	Natural Resource Management
OFWM	On Farm Water Management
OMG	Outlet Management Group
OVI	Objectively Verifiable Indicator
PACS	DFID (India) Programme: Poorest Areas of Civil Society
PIM	Participatory Irrigation Management
PRA	Participatory Rural Appraisal

PTD	Participatory Technology Development
Pvt	Private
RPC-V	Right Parallel Channel V, Patna, Bihar, project site 1
RWC	CGIAR Rice Wheat Consortium for the Indo-Gangetic Plains
SAU	State Agricultural University
SHG	Self Help Group
SLPS	Society for promotion of sustainable livelihoods
T&V	Training and Visit agricultural extension approach
WUA	Water Users Association

1 Executive Summary

The project developed and tested the viability of a method of community motivation that supports the development of the capabilities of locally based individuals (volunteers) to facilitate the emergence of self help groups (SHG). The dialectic approach led to enhanced social capital at a community level and to the building of financial and human capital by individuals that in turn stimulated demand for agricultural services, including greater equity in knowledge exchange and pro-active participation in technology assessment and adaptation.

Through the communication of project findings and the promotion of uptake of project products by target institutions, the project sought to achieve more effective rural services and linkages with on-farm research for poor men and women. In the project area, micro-finance was secured to ensure the sustainability of the approach, beyond the life of the project. In meeting demand for agricultural services, new service providers emerged to provide local support (providing both a source of information and quality inputs and existing service providers began to recognise demand for their products, and to work with communities they had previously dismissed as having no potential customers.

Relationships between scientists and community members also changed during the life of the project. Scientists were challenged by villagers to provide information and support relevant to their needs. As the project team did not have expertise in all the areas of interest to groups, new linkages had to be established to provide necessary information.

At the development scale at which the research operated, it was not possible to meet or work individually with the large number of groups that had formed in villages. Scientists had to identify and use existing communication networks to reach people. Communication products (including field demonstrations, resource materials for group meetings and leaflets) were developed to support this effort.

Replication was successfully achieved through the promotion of uptake of lessons learnt, and products delivered by, the projects by other development projects and private sector ventures. The DFID Rural Livelihoods Project which commenced in 2004 in Madhya Pradesh has woven in a number of ideas and concepts into their draft guidelines and the project is pilot testing the dialectic approach. Both ICAR and project partners have taken forward the lessons learnt into ongoing research plans and proposals.

Cirrus Management Services Pvt. Ltd (one of the partners in the research) and Shriram Investments Ltd. (a Shriram Group company) entered into a collaborative agreement. This led to the establishment of a corporate social responsibility **business venture** for **delivery of rural livelihood services**. The venture has established a presence in five states of India, and expects to extend to at least five other states by mid 2007

Innovative research approaches were required to enable the project to move forward, the experiences are relevant to those organisations commissioning and funding development and research efforts that seek to deliver improved rural services. Further opportunities exist to promote the findings which are of relevance in the context of institutional learning and change.

2 Background

In India the Green Revolution (GR) started in the late 1960s in the north western areas of the Indo Gangetic Plains. In these areas, where irrigation is almost a pre-requisite for agriculture in both the summer (kharif) and winter (rabi) seasons due to the arid and semi-arid climate, well-developed, efficiently-functioning, large-scale surface irrigation had been in place since the mid 19th century. The GR brought modern varieties of rice and wheat that were responsive to fertiliser inputs, offering increased profitability to this existing irrigated agricultural system and made supplementary irrigation from groundwater profitable.

In the eastern areas of the Indo Gangetic Plains (including eastern Uttar Pradesh, north Bihar, Bengal, and Orissa) adoption of GR technologies has been much slower; explanations vary, but include:

- Flooding and slow drainage, together with low insolation in the kharif and lack of controlled irrigation and of readily accessible opportunities for groundwater irrigation affect cropping options and levels of production.
- Lack of roads and communication infrastructure, the poverty of its people, poor local governance.
- Issues of agrarian structure: small and fragmented holdings with prevalence of share-cropping, exploitive traders, and poor development of credit markets and persistence of usurious money lending.
- Weaknesses in the approaches used for agricultural research and for agricultural and rural development.

A number of approaches to research and agricultural and rural development emerged within the official agricultural research and non-governmental organization (NGO) community which were based on the modernisationist and top-down approaches typical of the original GR.

These include Farming Systems Research (FSR), Training and Visit (T&V) systems of agricultural extension, On-Farm Water Management (OFWM), with its associated institutions of Water Users Associations (WUA) and Command Area Development Agencies (CADA), which were dominant approaches in the 1970s through the 1990s. Assumptions and diagnosis that the lack of adoption of technologies reflected either that the technologies did not suit the target populations, or that the methods of contact and communication were biased against success led to new approaches which included Farmer Field Schools (FFS), the Institute Village Linkage Programme (IVLP), micro-finance and rural livelihoods initiatives. These approaches have not proved scalable to the development level.

More recently, the trend towards private sector involvement and attempts to incorporate development NGOs in official development interventions have encouraged further institutional innovations in pursuit of objectives of pro-poor development and growth.

This project seeks to bring these trends or strands of development activities together through the frame of rural livelihoods. The premise is that there are multiple interlocking obstacles to development from environmental, socio-economic and institutional factors, but that recently developed technological and institutional innovations can be brought to bear so that productivity and well-being will improve.

3 Purpose

This project together with R7830 was implemented in the states of Bihar and Eastern Uttar Pradesh in the districts of Patna in Bihar and Maharajganj in Eastern Uttar Pradesh. The project sites (the Right Parallel Channel V in the Sone Canal system Bihar and the Chapia Distributary of Gandak Canal system in Maharajganj District in UP, coded RPC-V & M-UP respectively) were selected as areas where i) poverty is endemic, ii) where there was not extensive previous experience of working with self help groups (SHG) and iii) opportunities were identified for improvements in agricultural production.

The project demonstrates to key stakeholders and policy actors ways in which rural services can be made accessible and relevant to the needs of poor, socially-disadvantaged women and men within rural communities. The project tests an institutional approach that can enhance social capital at a community level and build financial and human capital of individuals, thereby stimulating demand for agricultural services by the target group, including greater equity in knowledge exchange and pro-active participation in technology assessment and adaptation.

Through the communication of project findings and the promotion of uptake of project products by target institutions, the project sought to achieve more effective rural services and linkages with on-farm research for poor men and women.

In the project areas this would be reflected in a shift (or at least exploration of) new farming and agri-enterprise strategies with consequent economic (and other) livelihood benefits supported by new local arrangements for effective delivery of rural services.

Replication would be achieved through uptake of lessons learnt and products delivered by the projects. This would be achieved by of influencing research partners (and their respective organisations) as well as those organisations commissioning and funding development and research efforts that seek to deliver improved rural services.

4 Outputs

Table 1 below summarises how the outputs were achieved. In this section we report only on the results and findings achieved by project R7839.

In reading this section and comparing the table below with the (revised joint) project logframe (section 10) it can be seen that Annex B documents and sections of Annex A replace a series of position papers as the record of the project. These position papers were not completed as originally planned in light of guidance received from NRSP programme management.

Output 1. Sustainable and scaleable institutional arrangements at the community level that facilitate livelihood improvement for the poor and marginalised developed and their viability demonstrated

The outcomes anticipated relate to the establishment of a viable method for self help group formation and linkages between project primary stakeholders and service providers.

Community facilitation led to the formation of 520 self help groups (SHG) in 70 villages, of which 464 were active at the end of the project. This contrasts against the logframe target of 10 in each of the two project sites.

Data derived from the project micro-finance database show that the project reached 42% of all poor households and 37% of socially disadvantaged households in the project areas with over 40% being women's groups.

At RPC-V (25 villages) sustainability was evidenced by continued group formation post project withdrawal. At a second cluster at Patna (46 villages) groups continued to meet, but group formation did not continue post project withdrawal. At the remote M-UP site (8 larger villages) the process was not sustained to the same extent. Rates of group failure were higher than at Patna. Analysis (Annex B i and Annex A: section 6), suggests that the ability to access a revolving credit facility (project managed) and later to form linkages to external microfinance funds and the emergence of a micro-finance institution (MFI) were the crucial factors determining sustainability at Patna.

Table 1. Summary of achievement of outputs R7830 and R7839

Narrative Summary	Objectively Verifiable Indicators	What was achieved	Means of Verification
Output 1			
Sustainable and scaleable institutional arrangements at the community level that facilitate livelihood improvement for the poor and marginalised developed and their viability demonstrated	<p>By Dec 2002 explorative dialogue commenced between groups of poor people and external institutions (e.g. banks and market based organisations, Gov't agencies) for inputs, linkages, sales of produce, canal management.</p> <p>By April 04 a sustainable and scalable method for establishing community organisations (CBO) is demonstrated at RPC-V.</p> <p>By EOP a viable method for establishing SHGs is demonstrated at both project sites</p> <p>By EOP at least five linkages initiated by project primary stakeholders and service providers.</p>	<p>Community discussions supported by CIRRUS & IRCER concerning draining waterlogged area this option was not pursued.</p> <p>Efforts made to link SHGs directly to local banks enabled some SHGs to open bank accounts later through micro-finance loans.</p> <p>Landless groups begin to access information from ICAR-RCER.</p> <p>Model was established at RPC-V and a nearby project cluster (Patna 2) comprising approx 67 villages and approx 400 SHG. In RPC-V local arrangements for MFI led to an ongoing facilitation of CBO formation. At Patna 2 there was evidence that groups continued to meet.</p> <p>Method for facilitating establishment of SHGs was tested in Patna and 1 at Maharajganj (8 villages). These confirm the effectiveness of the method.</p> <ul style="list-style-type: none"> • Micro-finance institutions • With IRCER as a service provider • With input suppliers in remote markets (hybrid rice seed, vegetables and pesticides) • Local information brokers and individuals re-marketing inputs • SLPS as a provider of facilitation for group formation and microfinance • Local service providers providing contract cultivation services • New groups formed to trial provision of zero-tillage on a contract basis • Linkages (mediated by IRCER with) state level canal managers • CIPM for pest management and chick rearing 	<p>Reported in project trip reports and internal documentation</p> <p>Project records and trip reports.</p> <p>Annex B ii describes communication materials and strategy</p> <p>Annex Bi provides information on method and evidence for sustainability and assesses empowerment</p> <p>Annex B xi (independent assessment of method)</p> <p>Project micro-finance database contains group records</p> <p>Annex B i describes how the method was tested at both sites</p> <p>Annex A section 6 assess performance at Maharajganj</p> <p>Annex B i & viii</p> <p>Annex B ii, iii, iv, v, vi, vii, ix, x</p> <p>Annex B viii</p> <p>Annex B viii</p> <p>Annex B i</p> <p>Annex B ix, x. Annex A section 6</p> <p>Annex B vii, x. Annex A section 6</p> <p>Annex B xii</p> <p>Annex B ii, viii</p>

Table 1. Cont'd

Narrative Summary	Objectively Verifiable Indicators	What was achieved	Means of Verification
Output 2 Practical and more equitable options for water management demonstrated and evaluated by stakeholders including the poor and marginalised	By kharif 2003 at least 3 examples of use of rainwater and groundwater including multiple water uses of seasonally water congested areas explored by farmers with limited or no access to canal irrigation explored in RPC-V	Use of groundwater to irrigate vegetables on land outside irrigated command. Early transplanting of rice involving use of groundwater to raise seedbeds, community seedbeds emerged as an innovation to overcome need for groundwater (previously sale of seedling was regarded as socially unacceptable). Use of outlet gates to enable expansion of the irrigable area.	Annex B iv describe growth of groundwater market, Annex B viii describes new arrangements for leasing of land Annex B iv detailed account of efforts to promote early rice transplanting.
By kharif 2004 use of rainwater and groundwater including multiple uses of water by farmers with limited or no access to canal irrigation and / or inefficient water management explored in M-UP		Use of seasonally waterlogged waterbodies for aquaculture..	Annex B iii describes both emergence of institutional arrangements and extent of experimentation Annex B v describes promotion efforts and analyses plans of communities for further experimentation <i>Annex A section 6 (Experiences at Maharajganj)</i> Describes how findings from RPC-V are tested at Maharajganj and reports on findings.
By EOP evidence of project informed interaction between groups of poor people and formal institutions (e.g. panchayats, WUAs and irrigation department) for improving efficiency of water use and equity in RPC-V		Project focuses on timely establishment of wheat through promotion of zero tillage – using new model for promotion. Formation of focus groups across community engage state level agencies concerning canal management schedule, use models developed by scientists to provide scientific evidence to support concerns.	Annex B-iii describes emergence of focus groups, and revision of WUA to include outlet management groups Annex vi describes development and use of models as dialogic tool Annex B vii describes use of GIS products Annex B xii Reports state level interactions
		Formation of outlet management groups (OMGs) to better manage water flow at outlet.	Annex B iii (as above)

Table 1. Cont'd

Narrative Summary	Objectively Verifiable Indicators	What was achieved	Means of Verification
<p>Output 3</p> <p>Diversified and economically beneficial land use and crop management practices/technologies developed and tested with communities</p>	<p>By April 04 project team documented key requirements for effective use of demonstrations as part of a strategy to inform and stimulate participatory technology development, adoption and adaptation.</p>	<p>Project adopt and test strategies to 'broadcast ideas' Project team develop communication strategies for their technologies, communication maps developed. Extensive discussion within project team during project team meetings considering implications for PTD, zero tillage and deep tillage used as examples.</p>	<p>Strategy outlined in Annex B viii and annex A section 4 Annex B ix, x. <i>provide deep tillage and zero tillage (see also Annex section 6 for zero till)</i> Communication strategies for technologies reported in Annex B iii, iv, v, vi, vii, viii</p>
<p>By April 2004 processes for participatory examination and implementation of new ideas, strategies and technologies established with at least 10 groups in RPC-V.</p>	<p>Project reaches approximately 67 villages and 400 groups, all groups without exception engage in examination of new ideas, supported by project information. Some groups engage with IRCER scientists, others with CIRRUS staff to test new strategies and technologies.</p>	<p>Annexs B i & vii document process of PTD highlights implications of the pro-poor non-subsidised methods used by the project, experiences captured as case studies Annex B ii summarises technologies promoted by IRCER in response to demand assessment</p>	<p>Annex A section (<i>Experiences at Maharajganj</i>) Describes how findings from RPC-V are tested at M-UP and reports on findings.</p>
<p>By kharif 2004 processes for participatory examination and implementation of new ideas, strategies and technologies initiated with at least 10 groups in M-UP</p>	<p>Project reaches 85 groups, all groups engage in examination of new ideas for zero-tillage, supported by project information. Sufficient time is not allowed at M-UP to examine PTD outcomes</p>	<p>Project reaches 85 groups, all groups engage in examination of new ideas for zero-tillage, supported by project information. Sufficient time is not allowed at M-UP to examine PTD outcomes</p>	<p>Annex A section (<i>Experiences at Maharajganj</i>) Describes how findings from RPC-V are tested at M-UP and reports on findings.</p>

Table 1. Cont'd

Narrative Summary	Objectively Verifiable Indicators	What was achieved	Means of Verification
<p>Output 4</p> <p>Findings of project communicated to key stakeholders at local and national levels as a means to support the potential adoption of the project's process and methods in non-target sites by non-project staff</p>	<p>By Dec, 01 local TI²s and scientists contribute to the design of project methodology and identification of land and water management interventions</p> <p>By April 04 national and international stakeholders draw upon project products to :</p> <ol style="list-style-type: none"> 1. examine the prospects for SHG methodology to provide an entry point for participatory technology development and delivery of extension services 2. consider the implications, with respect to impact, of pro-poor, livelihood focussed and non-subsidised participatory <p>By July 04 State level stakeholders draw upon project products to :</p> <ol style="list-style-type: none"> 1. Examine the prospects for CBO methodology to provide an entry point for participatory technology development and delivery of extension services. 2. Consider the implications, with respect to impact, of pro-poor, livelihood focussed and non-subsidised participatory technology development. 	<p>Preparation of inception report and pre-inception workshop. (Situate in the context of NRSP history of UK and India workshops and pre-inception activities that led to this project)</p> <p>Revision of project log frame as team engaged with nature of project.</p> <p>Rice Wheat consortium table as an example of the sort of thing we could produce</p> <p>Consider others:</p> <ol style="list-style-type: none"> 1. Financial institutions (R7839), Basix support to CPSL. Shriram support to the CIRRUUS story – large scale MFI initiative seeking to cover costs within business model rather than rely on grants 2. Ministry of water resources (R7830) 3. Bangladesh Gov't <p>The CPSL and SLPS - Financing of CPSL through grants and consultancies post project, to provide training, consultancy</p> <p>State level dialogue on water using project methods for bringing people together, water balance models etc.</p>	<p>Project <i>Inception report</i> FTR text / NRSP documentation</p> <p>Jointly prepared logframe</p> <p>Annex B x timeline / innovation history describes relations</p> <p>Annex B xiv- Delhi Workshop proceedings</p> <p>Timeline tables and FTR / Annex A text</p>

Table 1. Cont'd

<p>By Sept 04 ICAR RCER team promote the lessons learnt in achieving a poverty focused, livelihoods oriented research project</p>	<p>Project Delhi workshop involves promotion by IRCER staff. Promotion is much more than papers and posters. Active promotion by staff at a number of levels.</p> <p>Involvement of Dr Sikka in DFID PACS workshop (post project) through invitation of CPSL sends important message of support.</p> <p>Preparation of research proposals that draw upon project methodologies.</p> <p>Involvement of former CIRRUS staff in new assignments with IRCER and CIMMYT (contracted by former project staff).</p> <p>Presentation by IRCER staff at World Water Week (post project).</p> <p>Joint proposal by IRCER Director and leader of R7839 for lesson learning workshop PDI40 is a promotion of project experience.</p>	<p>Annex A section 7 describes the process.</p> <p>Annex B x innovation history table provides an individual example</p> <p>Invitation list and records of workshop (available through CPSL)</p> <p>Copies of proposals submitted by IRCER</p>
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The key product developed by the project was a method which we call the *dialectic approach*², for the facilitation of micro-organisation development.

The key features of the *dialect approach* are

- Self-examination by communities as well as the external facilitator.
- Reference to external experiences and information.
- Review of available resources, capacities and opportunities.
- Challenging and repeated re-examination of assumptions held by stakeholders.
- Facilitation of the emergence and stabilisation of micro-organisations.
- Starts with and focuses on the poor and socially disadvantaged, without excluding others.
- No incentives or inputs are offered or provided.

The *dialectic approach* was supported by a number of products:

- A simple method to profile villages, developed by the project
- A simple information management system. This MS Access database had been developed prior to this project by CIRRUS.
- Customised exercises and tools that were used by field staff were developed by the project to support the activities of field staff.

We found that it was possible to initiate the dialectic approach in a non-threatening way. We coined the phrase “*unspectacular entry*” to describe this.

We found that locally recruited individuals (volunteers) who volunteered their services and then acted for a defined period as paid project staff were able to facilitate this process, greatly reducing costs whilst increasing effectiveness of the approach. Volunteers were able to operate in ways that did not create expectation within villages (in the way the presence of external visitors does) and were also able to meet in villages at times, such as evenings, when it would be unsafe for project staff to visit.

The short term nature of the project engagement of volunteers and the facilitation methods used meant that these individuals emerged as important service providers, engaging in both microfinance and agricultural support enterprises. At RPC-V the formal registration by the volunteers of their SHG as a society enabled them to directly take on management of microfinance loans.

The dialectic approach anticipates and is designed to facilitate an ever-growing and evolving network of institutions, relationships and norms which are established through iterative and dynamic processes.

Within the project area new institutional arrangements emerged in various ways: volunteer and former project staff entered into new arrangements with organizations providing funds for micro-finance.

² “*dialectic*: the art or practice of logical discussion as employed in investigating the truth of a theory or opinion ... ” Webster’s Dictionary (1994). pp 397 and 731.

New dialogues and relationships emerged with existing service providers that led to new tillage services being provided on a commercial basis and involvement by service provider in participatory technology (PTD) activities. New service providers emerged from within communities as summarized in Table 1, and in the project annexes referenced in the table.

Output 2. Practical and more equitable options for water management demonstrated and evaluated by stakeholders including the poor and marginalised

This output is reported by project R7830, see also Annex B i for examples of local arrangements that emerged in Babhanlai village.

Output 3. Diversified and economically beneficial land use and crop management practices/technologies developed and tested with communities.

The project developed a PTD model that was compatible with the dialectic process described above and which offered the prospect of being operable at a development scale. Using the dialectic approach our PTD model avoids the need for typical prioritization phases, through participatory rural appraisal (PRA) or similar approaches, the need for incentivisation (subsidy of interventions) and social investments to accelerate the process. The cost effectiveness of the dialect approach means that this is not a drain on resources.

Thus the reach of the PTD model is at least the same (and possibly greater in RPC-V) as the dialectic approach as all groups are encouraged to consider new livelihood options and potential strategies. The PTD approach reached over 400 groups at Patna (compared to the 10 specified in the logframe) and 80 groups in Maharajganj.

Having adopted such a non-deterministic approach to initiate livelihood analysis by groups the key innovation of the PTD model was to develop ways to bring ideas to the attention of communities, both through strategic demonstrations and the use of messages and communication products.

This approach situated scientists as service providers, delivering relevant information (using appropriate communication methods) to communities in response to demand identified through the dialectic process and other interactions and then providing further inputs through in a consultancy-type role in response to demand.

The emergence of PTD within communities is an outcome of the dialectic approach and can be seen as evidence of empowerment (PTD outcomes are summarized in Annex Bi: Table 5). As outlined above (Table 1) at M-UP the project focused on the promotion of zero tillage and sufficient time was not allowed for the emergence of non-determined PTD outcomes.

Over the duration of the project the IRCER team recognized that field demonstration of technologies was a resource intensive, but often very effective, way of raising awareness of new ideas (Annex B x). The experience led to a shift in the mode of operation, with the emphasis of such activities encompassing soliciting feedback on the technology, both through participatory evaluation as well as more formal surveys.

Further, we also saw that as a particular PTD experience gained momentum, for example in the case of using purchased vegetable seed and hybrid varieties, the development on new institutional arrangements and linkages (indicated) under output 1. Table 1 relates the various materials in Annex B to specific technologies and Annex B viii and Annex A: section 4 provides a further analysis of the PTD model.

Output 4. Findings of project communicated to key stakeholders at local and national levels as a means to support the potential adoption of the project's process and methods in non-target sites by non-project staff

The success of the project's communication strategy is reflected in the level of interest and demand generated for project products (outlined further in the contribution of outputs section) and the level of engagement with project findings.

The project developed and maintained a productive (and synergistic) relationship with the CGIAR Rice Wheat Consortium for the Indo Gangetic Plains (RWC), the level of interest is shown by the fact that, project field staff members were invited to Nepal to share experiences (funded by the RWC), DFID Bangladesh funded a team of National staff to visit the project sites. Discussion of experiences and lessons learnt fed into the activities of these individuals.

During our National Dehli workshop the projects were able to achieve strong interest reflected in the level of participation by individuals at their own cost (including travel from outside Delhi); also a group of virtual participants expressed interest in receiving materials (Annex B: xiv)

Representatives of our key communication stakeholders attended our workshop, with participation by senior Government staff in working group sessions (rather than participation solely in the public official opening ceremony). These can be taken as measures that reflect a level of engagement with project findings.

Through their involvement in the MPRLP, senior CIRRUS staff were responsible for sharing experiences with the Indian Government and DFID that led to lessons learnt being incorporated in the guidelines of the MPRLP and pilot testing of the *dialectic process* in 10 villages.

Key lessons were that the role of advocates are important to achieving engagement with project findings, that the briefing and support of this network could not be achieved by following a mechanistic model. Rather individuals at all levels in the project had to be empowered and encouraged to promote the findings as seemed appropriate.

Thus a key role that the project played was to help the team to visualise the communication activities as part of the research / project process rather than as a separate exercise of dissemination.

5 Research Activities

In this section research activities undertaken are summarised.

Output 1. Sustainable and scaleable institutional arrangements

Facilitation of expanded interaction of communities with multiple agencies that might be able to support livelihood involvement, especially bank linkages for credit

Initial activities focused at project RPC-V. It should be noted that the starting point for the development of these institutional arrangements was not explicitly related to soil or crops or water management, rather the more universal issues of micro-credit and micro-enterprise.

Rather than use a mechanistic time-consuming analysis of the livelihood characteristics of a particular village prior to SHG formation, the project sought to test methods that would be less resource-intensive and more effective. The following key ideas were at the same time being tested:

1. That informal interactions and survey could be used to establish a village profile.
2. That based on this profile and informal interactions, local volunteers who could facilitate village development activities could be identified.
3. That local volunteers, rather than external professionals offered an effective way to reach the poor within communities and would lead to a more cost effective process for community development.

The process developed which is described in Annex A of this report as the *dialectic process*, was supported by a series of exercises and responses to “frequently asked questions” and other exercises which are documented in an unedited form in Annex B xiii

Analysis of loan profiles were also used as tools within the project team to raise awareness of the demand (evident in loan utilization profiles) of the poor and socially disadvantaged for opportunities in agriculture. How this translated in to PTD and PIM activities is addressed in outputs 2 and 3

Testing and improving the scalability and sustainability of CIRRUS approaches

Having established the *dialectic process* as an effective method for community development, a key challenge that faced the project was facilitating linkages to private sector sources of credit. The project made available a small fund for revolving credit (Rs 50,000) as a loan from CIRRUS that was repaid during the life of the project. This enabled two models for achieving linkages with service providers to be tested:

- 1) Use of revolving funds to open accounts with the existing local banking sector and
- 2) using revolving funds, together with records of micro-finance activities to attract external organizations with interest in micro-credit.

Concerns were raised that the extremely successful group formation and therefore the apparently low costs reflected the particular skill and capabilities of individual CIRRUS team member (Sunil Chaudhary). To test this leaders and facilitators with different levels of experience were identified within CIRRUS.

We then established a number of satellites or clusters around RPC-V. In these areas there was both a high level of awareness of SHGs within communities, and CIRRUS staff had access to Sunil Chaudhary.

In the second test CIRRUS staff were deployed to the second project site a Maharajganj, which was remote to the project team base in Patna.

Verify that the model for community support and rural microfinance as an entry point for PTD can be justified even when the customer is very poor and loans are very near current bank prime lending rates.

In order to ensure that the project reached its target constituency, it was necessary to understand who the poor are. To do this we developed a simple method to profile villages prior to project entry. The method used was based on well-being or wealth ranking methods as typically used in PRA projects. During initial meetings and informal visits to a each hamlet/tola participants were asked the following:

- How many households are there in their tola/hamlet?
- How many social groups (caste) are there?
- How many households in each of the social groups?
- How many households of these social groups are poor?
- What are the sub categories of poor or all the poor are same?
- Then the same for none poor.

The process was repeated 2 or 3 times within the hamlet to enable triangulation of responses.

This process typically generated five relative categories: Very poor, poor, on line (self Sufficient) surplus, wealthy. In project reports the term poor refers to both the poor and very poor together unless otherwise mentioned.

A second important group emerged from this assessment defined as “Socially disadvantaged people”. The term means those who belong to groups that have traditionally been subjected to exclusion in one form or another. In practice, in Bihar and Eastern Uttar Pradesh, this means ‘scheduled castes’.

Having established these categories, they were not used to identify specific project beneficiaries, rather they were used (together with other social categories) to ensure that volunteers were representative of the intended project constituency.

To test the effectiveness of the approach to determine a village profile we compared the results obtained using this relative assessment method with data available from the Government community development office.

Having established the method above the micro-finance database was structured so as to enable analysis of information on SHG activities based on the categories defined above. This enabled data relating to the financial performance and activities of the poor to be assessed both by wealth and social group.

The project had no formal requirement to document impact. However, to understand how the dialectic process led to ‘change’ as perceived by communities involved in the project an exercise was developed by the CIRRUS team and used by facilitators with groups. SHGs were asked why they did not simply disband and split the funds they had accumulated. This question was used to stimulate a discussion as to the benefits of SHG membership. Volunteers then worked to identify indicators of change.

A typical case study “Impact of SHGs in the village of Babhanlai” was also drawn up for a village where the project had facilitated community development activities (Annex B-i).

As it became clear that the *dialectic process* developed by the project offered benefits beyond typical methods used by research and development projects, it became necessary to ensure that the claims made by the project could be substantiated. To provide a somewhat independent perspective a scientist from the ICAR National centre for Agricultural Policy was contracted to undertake an assessment of the project. The purpose of this assignment was to evaluate the methods developed to work at the community level:

1. Assess the potential of the *models for SHG formation and rural microfinance*, developed by the project to free microfinance from subsidies and support from governments, donors and NGOs; while directly empowering and mainstreaming the poor. This assessment will highlight the unique elements of the work and will determine the likely scalability, and likely sustainability, of the model.
2. Assess the *level of poverty focus achieved by the project* and contrast this with project footprints typically achieved by project that use SHG and savings and credit methods.
3. Recommend areas where project methodology may be strengthened.
4. Outline the *policy lessons* and *implications* emerging from the project

The findings of this study were carried forward as part of the uptake promotion activities described under output 4 below.

Output 2. Practical and more equitable options for water management demonstrated and evaluated by stakeholders including the poor and marginalised

This output is reported by project R7830

Output 3. Diversified and economically beneficial land use and crop management practices/technologies developed and tested with communities

Analysis of land use and crop management issues from a community perspective to find answers to challenges:

Initial project activities at project RPC-V involved:

- 1) A formal survey undertaken by project R7830 (Annex B ii)
- 2) A series of transect walks and field assessments undertaken during 2001 Kharif and Rabi seasons involving research team members, and supported by CABI. These exercises focused on familiarisation and diagnosis of field problems. In Kharif 2002 this was followed by diagnosis of possible nematode problems (Annex Bii)
- 3) Demonstration of deep summer ploughing and zero tillage technologies (Annex B ix & x)
- 4) GIS mapping of the project area (Annex B vii).

The field assessment focused on introducing simple field diagnostic techniques and participatory exercises of the sort used in farmer field schools and finally demonstration of deep summer tillage prior to rice crop establishment and zero tillage.

These activities raise awareness within the team of issues that might be faced in the field whilst creating space for the community development activities implemented through CIRRUS.

Central to this output was the development of a new model for PTD. Rather than use PRA or similar methods to prioritise needs the project relied on the livelihood analysis embodied in the dialectic approach described in detail in Annex B viii.

Activities focussed on identifying demand through a non-deterministic approach (Annex B-i) and scoping visits. In summary, feed back from SHG activity analysis and from interpretation of loan profiles enabled a picture of interest to be developed. CIRRUS staff then brought these areas of demand to the attention of the project team (and other relevant service providers) and encouraged SHGs to explore possible agricultural opportunities.

The team operated in a responsive mode and sought to share information and ideas. SHGs (either individual groups or focus groups) undertook analysis of options and technologies and designed experiments or trials independent of the scientists.

At project M-UP the team sought to test the methods developed at RPC-V. This involved allowing the CIRRUS team to initiate community development activities, in advance of field activities. Scientists then drew upon issues identified through the volunteers and CIRRUS staff, confirmed through a single field reconnaissance visit.

Output 4. Findings of project communicated to key stakeholders at local and national levels as a means to support the potential adoption of the project's process and methods in non-target sites by non-project staff

The project was originally developed without a formal communication beyond what was required by the DFID NRSP contract documentation (RD 1). NRSP subsequently required projects to produce a more detailed communication plan in an attempt to ensure that this area of projects was not neglected. The project communication plan was submitted to NRSP in 2003. In this section the use of the terms domain V, W, X & Y refer to the promotion domains as defined by NRSP's Conceptual Impact Model.

Establishing communication objectives was an important element of the project from its commencement. The first activity was to focus discussion within the team of the importance of seeing communication as part of the research process and service provided by the researchers to communities.

Early activities involved recognising, and assessing, the existing communication mechanisms being used by the IRCER team. These included demonstration plots on the research station and in farmers' fields, as well as services provided by the research station farm workshop to demonstrate new equipment.

These activities led to a stronger awareness of the importance of this function and led to the change in design and emphasis of the preliminary field activities to be seen as demonstration activities. These are reported further under outputs 2 & 3.

As the IRCER team began to focus more strongly on supporting the *dialectic process*, the team undertook a further detailed analysis of the local communication needs for each proposed technology, in an exercise facilitated by a communications expert, team members developed a *communication map* and *matrix*

These activities maintained a primary focus on domain W. A series of leaflets were produced and distributed and further field demonstrations were undertaken to broadcast ideas. A range of communication media were subsequently used in follow up discussions within communities (from the use of model outputs, video, in field equipment evaluation, GIS maps, to simple participatory exercises).

We sought to promote our findings in three key areas:

1. The benefits of the dialectic approach as a method that delivers sustainable and scaleable institutional arrangements at the community level to facilitate livelihood improvement.
2. Opportunities for improvements in PIM through more effective linkage of on farm water management and main canal management
3. The implications for research organizations and projects of undertaking poverty focused, interdisciplinary research that explicitly seeks to deliver findings of relevance to development

Our strategy for communication in domain X was integral to the NRSP nodal strategy for uptake promotion in India. NRSP sought create a small influential constituency of advocates for the outputs and products of projects. NRSP provided support to one of the project partners MS Ashok of CIRRUS to network with, and raise awareness of project findings with stakeholders in domain X. The aim was to take a pragmatic approach, briefing key individuals, maintaining contacts and updating them as appropriate. In this way we sought to identify and stimulate a constituency of communication stakeholders.

The project built upon the networking activities of MS Ashok by preparing a series of policy briefs, working papers, posters and presentations which were used as resource materials for a consultation workshop held in Delhi in August 2004 (Annex B xiv).

Within the Indian Government, key national advocates were the Deputy Director General, NRM in ICAR Headquarters in Delhi, the Department of Agriculture and Co-operation, Ministry of Agriculture and the National Centre for Agricultural Economics and Policy Research and the Ministry of Water Resources.

DFID India was identified as a key potential user of our findings as were other donor funded programmes and projects.

In addition to these activities, we sought to encourage individuals and groups to engage with our project staff and to evaluate our experiences and data. As part of this strategy we invited an NCAP staff member, Dr Rasheed Sulaiman, to become involved in the project through a consultancy role. This not only enabled us to raise awareness of the project with NCAP but the involvement of Dr Sulaiman helped the team to examine the implications of their project experiences, for research organizations and projects of undertaking a poverty focused, interdisciplinary research that explicitly sought to deliver findings of relevance to development.

The project also promoted its finding in domain Y, primarily through opportunities to present work in International venues. However an active engagement was sought with the CGIAR Systemwide Initiative: Institutional Learning and Change.

6 Environmental assessment

6.1 What significant environmental impacts resulted from the research activities (both positive and negative)?

The project overall is unlikely to have had significant environmental impact.

6.2 What will be the potentially significant environmental impacts (both positive and negative) of widespread dissemination and application of research findings?

Improved land and water management may lead to beneficial impacts on soil quality and where inputs are used more efficiently, lower levels of pollution from non-point sources. Improved management of rice and wheat may lead to significantly reduced levels of greenhouse gas emissions.

Negative impacts can arise from the adoption of profitable vegetable, livestock and poultry activities. These activities are often associated with excessive use of inputs (as a result of the high potential financial return from their use) and associated pollution can arise.

6.3 Has there been evidence during the project's life of what is described in Section 6.2 and how were these impacts detected and monitored?

No effort was made to detect or monitor impacts

6.4 What follow up action, if any, is recommended?

The reduced emissions of greenhouse gases that are achieved through improved management of rice and wheat can be monetized through C emissions trading.

It is recommended that NRSP consider the potential that such an income stream derived from C emissions trading could be used to support the implementation of development activities such as those piloted by this project.

7 Contribution of Outputs

In the following section we provide an assessment of achievement of purpose level OVIs. The OVIs are provided for ease of reference and achievement is summarised below (Table 2). This table also provides a reference to relevant project materials.

By EOP there is a shift in project target areas to new farming and agri-enterprise strategies and primary stakeholders in project target areas report consequent economic (and other) livelihood benefits. (The benefits would also be positive overall from the point of view of gender and social equity.)

and

By 2005 primary stakeholders begin to pay for finance, inputs and services at actual or close to market rates, for access to finance, input, supply and information

Over 5,000 people have benefited directly through their membership of SHGs formed as a consequence of facilitation of community development activities by the project. A significant proportion of these groups (30%) are women's groups and membership of SHGs is dominated by those who classify themselves as poor or socially disadvantaged (using the method for characterization described in Annex B i).

The groups report many livelihood benefits, which have been derived from access to micro-credit with no constraints as to the purpose for which loans were used. Significant new agricultural strategies and livelihood strategies are being explored. Considering farming and agri-enterprise strategies specifically, emphasis amongst the poor and socially disadvantaged has been the production of high value crops on marginal (tubewell irrigated) land leased from land owners, multiple uses of water including aquaculture and poultry.

Numerous examples of experimentation and testing of new strategies have emerged (as captured in Table 2). These activities and the services procured in establishing the activities were undertaken without subsidy, other than that implicit in the support for project staff provided the project. Ex-post review of the project is required to establish the sustainability and impact. Annex B i tables X-Y provide a tentative framework that could be used to analyse the outcomes.

By EOP there is evidence of new local arrangements being implemented for effective delivery of rural services

In the project areas new arrangements have emerged. The IRCER have positioned themselves more effectively as a service provider. They have developed new communication methods and materials, that enable them to interact with poor and socially disadvantaged for the first time.

Local service providers that meet the demand expressed through SHGs for agricultural inputs, credit and information have emerged. New relationships with existing wholesalers and merchants have been developed, including risk sharing arrangements when testing hybrid rice varieties.

Project volunteers, formed an NGO (SLPS) for the purpose of administering micro-finance services, and project staff have provided services to groups and other organisations on a contractual basis through CPSL. In April 2005, over 1 year post project field closure, it seems that the activities of CPSL and SLPS may be subsumed by a new venture being undertaken by CIRRUS that in the former project area.

Table 2: Summary of achievement of project purpose by R7830 & R7839

Narrative Summary	Objectively Verifiable Indicators	What was achieved	Means of Verification
Purpose			
New knowledge of strategies for the implementation of local arrangements that enable rural men and women, specifically including the poor, to improve their livelihoods	By EOP there is a shift in project target areas to new farming and agri-enterprise strategies and primary stakeholders in project target areas report consequent economic (and other) livelihood benefits. (The benefits could also be positive overall from the point of view of gender and social equity)	<p>At Patna (RPC-5) Optimization of rice transplanting time led to increases in production of rice-wheat and conjunctive use of water in some canal command.</p> <p>11 farmers purchased pumpsets enabling them to make conjunctive use of groundwater. A 250% increase in ground water market during periods non-availability of canal water. By Kharif 2002, an improved method of rice production was used in 821 ha across all 20 villages of RPC-V. By EOP this has spread to 178 villages of seven distributaries of Some command</p> <p>At Patna credit funds used to pioneer both land purchase and land-leasing arrangements that encouraged landless, poor and socially disadvantaged to invest in strategies to increase agricultural production (for both rice and vegetable production.) for both food security and sale to local markets</p>	Annex B iv
			Annex B i & vii describe outcomes. Records of CPSL on loan use and follow up interviews and potential for surveys of project area
		At Patna project strategy to encourage and support PTD in non-deterministic ways led exploration of new agricultural strategies and options	Annex B i & iii summarises outcomes. Records of CPSL on loan use and follow up interviews and potential for surveys of project area
		At Maharaiganj members of SHG are using Zero till machines for income generation through hiring the machines to other needy formers.	Annex B x and Annex A (section 7) describe experiences of uptake of zero tillage.
		At Patna the potential of technologies for multiple water use was realised after demonstration and propose to further explore technology.	Annex B V describes the experience and community level surveys indicate plans of community o further pursue options for multiple uses of water.

Table 2.

Cont'd

<p>By EOP there is a evidence of new local arrangements being implemented for effective delivery of rural services</p>	<p>ICAR-RCER repositioned themselves to provide technical backstopping and information to support PTD activities of SHGs</p> <p>Formation of Sustainable Livelihood Promotion Society (SLPS) and Centre for Promotion of Sustainable Livelihoods (CPSL).</p> <p>CPSL provide support services to SLPS and other NGOs and seek to establish micro-finance, consultancy and other services</p> <p>New informal arrangements in the form of OMGs ensure equitable distribution of irrigation water at RPC-V.</p> <p>Local input suppliers request to meet with SLPS groups and SHG groups, risk sharing arrangements negotiated e.g. for testing of hybrid rice seed. Service providers insist on supplying quality inputs (e.g. supplying factory sealed bottles of herbicide)</p> <p>Informal mechanism for dialogue between community and main canal managers established</p>	<p>Annex B ii describes communication materials and strategy</p> <p>Records of registration SLPS and CPSL</p> <p>Audited financial accounts of CPSL state sources of income post EOP.</p> <p>Contract between CPSL and DFID PACS programme post EOP</p> <p>Contracts established for provision of micro-finance services available through CPSL & SLPS</p> <p>Annex B iii</p> <p>Annex B viii</p> <p>Potential for follow up Interviews with SLPS and SHG</p> <p>Annex B xii and records of meetings facilitated by ICAR-RCER</p>
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Table 2.

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<p>By 2005, ICAR research strategies draw upon findings of project R7830 and R7839 (In reporting against this OVI we also include examples of uptake of project national and international stakeholders)</p>	<p>ICAR-RCER developed new project proposals which were submitted to CGIAR Challenge Programme on Water and Food on livelihood improvement in flood prone areas based on community mobilisation based on the strategies developed under R7839/R7830. DDG ICAR NRM recognises the importance of the project and challenges participants at project workshop at project's Delhi workshop in August 2004 to find ways to validate the findings. ICAR-RCER and GYA work together to organise a workshop (Co-sponsored by DFID NRSP and ICAR NRM division) to examine the implications of adopting institutional arrangements such as those tested by this project Requests from NAIP project manager that project be used as an example or case study in resource materials to be produced by the for ICAR National Agricultural Innovations Project ICAR National Centre for Agricultural Economics and Policy (NCAP) identify the project as representing an important example of a project that tested new institutional arrangements DFID Madhya Pradesh Rural Livelihoods Project draws upon project experience both in developing project guidelines and by pilot testing method in a number of districts Post EoP, Sriram Foundation and CIRRUS Pvt Ltd decide to draw on lessons learnt in developing a joint venture to promote approach to 10 States Rice Wheat Consortium draw on experiences of project in working in a non-deterministic way with groups Ministry of Water Resources draw on project findings</p>	<p>Draft project proposals and institutional reports of ICAR-RCER Annex B xiv Proposal to DFID NRSP funded as PD 140 Workshop products ICAR policy brief Materials documenting case study to be made available through the ICAR NAIP project office Proposal to DFID NRSP to produce an NCAP policy brief, to be distributed using the NCAP network Records of DFID MPRLP project Records of Sriram Foundation and CIRRUS Pvt Ltd Annex A section ?? documents interactions between project and RWC Annex B iii</p>
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Table 2. **Cont'd**

<p>By 2005 primary stakeholders begin to pay for finance, inputs and service at actual or close to market rates, for access to finance, input, supply and information</p>	<p>Local SHGs pay SLPS for provision of services (and SLPS in turn pay to use database services provided by CPSL).</p>	<p>CPSL end of year accounts post project, available with CPSL</p>
<p>Local SHGs and other groups engage in PTD activities at full cost for inputs</p>	<p>Microfinance services provided on a commercial basis</p>	<p>Annex B viii and Records of micro-finance contract available with CPSL</p>
<p>SLPS volunteers provide informal services re-marketing quality agricultural inputs and supporting information</p>	<p>SLPS volunteers provide informal services re-marketing quality agricultural inputs and supporting information</p>	<p>Annex B viii Potential for follow up Interviews with SLPS and SHG</p>

New arrangements for water management, both within the existing WUA association and in their relationships with other community members and State officials involve in main canal management have developed (reported by R7830).

At the State level, CPSL undertook on its own initiative to promote and distribute materials based on the guidelines developed to support the dialectic process; over 200 copies have been sold. Sunil Chaudhary of CPSL was invited by the Water Resource department, Government of Bihar to join the state level committee for participatory Irrigation Management.

The project has also achieved significant impact in Domain X. The dialectic process is being trialled by the Gov't of Madhya Pradesh in 10 villages through the DFID India supported Madhya Pradesh Rural Livelihoods Project (MPRLP). Project findings and lessons learnt have also been incorporated in the guidelines used throughout the MPRLP project.

Concepts and lessons learnt were integrated and applied to a single new corporate social responsibility business venture for delivery of rural livelihood services. Cirrus Management Services Pvt. Ltd (a partner in R7839) and Shriram Investments Ltd entered into a collaboration agreement for the purpose. The venture has established a presence in five states of India during 2004 and expects to extend to at least five other states by mid 2007. Services delivered include micro-finance (credit, to be followed by savings, investment and insurance) and urban market outlets for rural producers (to be followed by technical and business advisory services for micro-enterprises in agricultural and other sectors relevant to rural communities).

By 2005, ICAR research strategies draw upon findings of project R7830 & R7839

IRCER has already drawn upon the findings of this project in the design of research projects that have been submitted both to ICAR and donors for funding. However it there is a significant risk that erosion of this learning will occur with time. To achieve sustained change it is necessary to influence ICAR at a national level.

At a national level there is recognition of the need for organisational and institutional change within ICAR in order to meet the future demands that it will face. Projects R7839 and 7830 are recognised by the ICAR NRM directorate as testing a new model for research. During the National workshop, discussions focused on how to draw upon lessons from these projects and others could be drawn upon as ICAR moves towards this period of change.

Staff of the Indian Government are currently working with staff from the World Bank to develop the National Agricultural Innovation Project (NAIP) this project will follow on from the National Agricultural Technology Project (NATP). With a clear focus on change within ICAR, the NAIP is in a position to draw upon the experience of R7830 and R7839.

The ICAR National Centre for Agricultural Policy is a key player in this process of change. Dr.Mruthyunjaya the former director of NCAP will head the NATP project during the transition to the NAIP. Dr Mruthyunjaya has already been briefed on the findings of projects R7830 & R7839 by Dr Rasheed Sulaiman of NCAP, and has expressed interest in the projects. Dr Sulaiman has indicated (to the project leader of R7839) that the opportunity exists to bring out the lessons from this project in a user friendly policy focused format highlighting the findings and implications with respect to institutional innovations and partnerships.

The opportunity also exists to inform a wider international audience through the systemwide initiative of the CGIAR on Institutional Learning and Change (ILAC). ILAC are seeking to develop case studies, based on pilot projects across the Institutes and partners of the CGIAR and elsewhere. Dr Sulaiman is involved directly in ILAC and John Gaunt has briefed Dr Boru Douthwaite, International Centre for Tropical Agriculture (CIAT) who is involved in ILAC on the project and shared project materials with him. Dr Douthwaite has proposed the project be taken by ILAC as a case study.

Building upon these opportunities we proposed to further promote the uptake of the project findings in national and international arenas (domain X and Y). NRSP subsequently funded a Project PD 140 involving the analysis of R7830 / 17839, together with a number of other case studies, to develop policy focused project analysis and briefing materials used to further support dialogue directly with the World Bank, both in India and Washington as well as producing resource materials for research practitioners.

In domain Y we anticipate a publication of our findings in an appropriate arena will draw upon the materials proposed above.

8 Publications and other communication materials

8.1 Books and book chapters

Gaunt J.L., S.K. White, J.R. Best, A.J. Sutherland, P. Norrish, E.J.Z. Robinson, Z. Hossain and R.J. Palmer-Jones.. 2003. *The Researcher-Farmer Interface in the Rice-Wheat Systems: Moving from Agricultural Productivity to Livelihoods*. In Ladha J.K., Hill J.E., Duxbury J.M., Gupta R.K. and Buresh R.J. (editors). *Improving the Productivity and Sustainability of Rice-Wheat Systems: Issues and Impacts*. ASA special publication No 65, Madison, Wisconsin, USA 211-231.

8.2 Journal articles

8.2.1 Peer reviewed and published

None

8.2.2 Pending publication (in press)

None

8.2.3 Drafted

None

8.3 Institutional Report Series

Khan A.R., Singh S.S., Prasad L.K., Prasad S.S. Singh S.R. and Gaunt J.L. 2002. On-farm tillage trials for rice-wheat cropping system in Indo-Gangetic plains of eastern India. International centre for Theoretical Physics (UNESCO & IAEA). Trieste, Italy. IC/IR/2002/5 : 1-20

8.4 Symposium, conference and workshop papers and posters

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Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004. *Sustainable and scalable institutional arrangements at the community level that facilitate livelihood improvement*. Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. 10pp.

Gaunt, J.L., Kumar, R. Chaudhary, S. Khan, K. Khan, A.R. Prasad, L.K. Singh, S.S. Murphy, S. 2004. *New approaches to participatory technology development*. Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. 11pp.

Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004 *Policy management: the relevance of R7830 and R7839 at different levels* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004 *Needed: Community-level institutional infrastructure; independent, networked micro-organisations* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004 *Some tips for PLU* (*People Like Us)* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004 *Information management at the micro-level - with and for communities* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004 *Farmers and farming* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004 *Networked micro-organisations* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004 *Micro-credit, the life-blood* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

Ashok, M.S., Mishra V.K., Subramanyam D.S. 2004 *Wider implications: Random thoughts* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

Choudhary, S., Singh, S.S., Khan, A.R., Kumar, R., Prasad, L.K., Kumar Mishra, V., Chandra, N. and Gaunt, J.L. 2004 *Routes to participatory technology development* Details of workshop/conference. ICAR RCER and Rothamsted Research. Poster 1 pp.

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Choudhary S. 2004 *Strengthening the sustainability and sclability of the project process* Realising Potential: Livelihoods, Poverty, and Governance. New Delhi, New Delhi. August 03-04, 2004. ICAR RCER and Rothamsted Research. Poster 1 pp.

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Gaunt, J.L. 2001. The researcher-farmer interface in the rice-wheat systems: Moving on from agricultural productivity to livelihoods. Oral presentation at Annual Meetings of ASA-CSSA-SSSA, Charlotte, N. Carolina , 21-25 October 2001.

8.5 Newsletter articles

None

8.6 Academic theses

None

8.7 Extension leaflets, brochures, policy briefs and posters

Gaunt, J.L. 2004. *New approaches to participatory development.* ICAR RCER and Rothamsted Research 2..

Ashok, M.S. 2004. *Sustainable and scaleable institutional arrangements at the community level that facilitate livelihood improvement: Policy implications for institutions and governance.* ICAR RCER and Rothamsted Research 4 pp.

8.8 Media presentations (videos, web sites, TV, radio, interviews etc)

None

8.9 Manuals and guidelines

None

8.10 Reports and data records

8.10.1 Project technical reports including project internal workshop papers and proceedings

Gaunt J.L. 2005 *A new model for Participatory Technology Development* Rothamsted Research Ltd 15 pp.

Gaunt J.L. 2005 *An account of the Dialectic Approach developed by DFID NRSP project R7839* Rothamsted Research Ltd 31 pp.

- Chaudhary, S. 2004.** *An Examination of the self help group process* Cirrus Pvt Ltd 55 pp.
- Sulaiman, R. 2004.** *An Evaluation of the self help group process an project approach of R7830& R7839* Rothamsted Research 25 pp.
- Subrahmanyam, D.S. Sikka, A.K. and Gaunt, J.L. 2004.** *Proceedings of R7830/7839 Joint Project Workshop* ICAR RCER, Patna, India 51 pp.
- Khan, K. 2004.** *Impact of self help groups* Cirrus Pvt Ltd 12 pp.
- Kumar, R. Mishra, V.K. and Khan, K. 2004.** *Analysis of the performance of field based technology demonstrations, both in terms of technical performance, reach and suitability to target groups* Cirrus Pvt Ltd 13 pp.
- Kumar, R. Mishra, V.K. and Khan, K. 2004.** *Routes of Participation* Cirrus Pvt Ltd 33 pp.
- Chaudhary, S. 2004.** *Manual for self help group formation* Cirrus Pvt Ltd 80 pp
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- Subrahmanyam, D.S. Sikka, A.K. and Gaunt, J.L. April 2003.** *Proceedings of R7830/7839 Joint Project Workshop* ICAR RCER 51 pp.
- Bridge, J. 2003.** *Nematology Field Visit to Investigate Plant Parasitic Nematodes of Rice in Bihar State, India* CABI, Bioscience, UK 17 pp.
- Gaunt, J.L. 2003.** *Projects R7839 & 7830 TRIP REPORT, 13 – 20th Oct 2003* Rothamsted Research 9 pp + Annexes
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- Subrahmanyam, D.S. 2002.** *Proceeding of R7830/7839 project workshop, Part 1 & 2. Patna, 6-13 December 2002* ICAR RCER 47 pp
- Best, J.R. 2002.** *Report by John Best on visit to Patna, December 6-13th 2002* Rothamsted Research
- Subrahmanyam D.S. 2002** *Report of visit by Drs Sikka, Subramanyam and Gautam to Rothamsted, 9-12 September 2002* ICAR RCER. 5 pp.
- Subrahmanyam, D.S. 2002** *Report of the meeting of Farmers (Members of SHG interested for seed production) Scientists, and CMS team held on 19th June 02.* ICAR RCER
- Singh, S.R. and Gaunt, J.L. 2001.** *Project inception report (R7830 and R7839)* Rothamsted Research 41 pp + Appendices

8.10.2 Scoping studies

None

8.10.3 Datasets

- Ashok, M.S., Chaudhary, S., 2004.** *Bihar 1.* CIRRUS. MS Access.
- Ashok, M.S., Chaudhary, S., 2004.** *Bihar 2.* CIRRUS. MS Access.
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10 Project logframe

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Goal			
Strategies to provide specific groups of the poor with better access to knowledge that can enhance their decisions on management of natural capital developed and promoted.	<p>By 2002, constraints to the delivery of rural services important for the improvement of livelihoods of the poor identified</p> <p>By 2003, new strategies validated for optimizing sustained returns to the management of farm land, water, inorganic and organic inputs and genetic resources</p> <p>By 2005, integrated natural resources management strategies adopted by target institutions in at least two target countries that include cost efficient delivery systems for provision of agricultural services (<i>inter alia</i> marketing, input supply, mechanization, storage, financing)</p>		
Purpose			
New knowledge of strategies for the implementation of local arrangements that enable rural men and women, specifically including the poor, to improve their livelihoods through agriculturally based activities demonstrated and promoted to key stakeholders with interest in rural service delivery.	By EOP there is a shift in project target areas to new farming and agri-enterprise strategies and primary stakeholders in project target areas report consequent economic (and other) livelihood benefits. (The benefits would also be positive overall from the point of view of gender and social equity.)	Project generated summaries of livelihood impacts and credit data demonstrate impact	Sufficient resources are mobilised within groups or links with credit providers can be established
	By EOP there is evidence of new local arrangements being implemented for effective delivery of rural services	Project summaries record the arrangements that are established and identify external means for verification	Official approval is forthcoming for proposed arrangements
	By 2005, ICAR research strategies draw upon findings of project R7830 & R7839	ICAR reports, project correspondence, design of new research projects	<p>ICAR strategy continues to focus on delivery of livelihood benefits to rural poor.</p> <p>ICAR engage with Indian Gov't policy for reform of Ag extension</p>
	By 2005 primary stakeholders begin to pay for finance, inputs and services at actual or close to market rates, for access to finance, input, supply and information.	Project documents that summarise and analyse SHG credit database and group record.	Unfavourable Gov't policy or political development in project target areas do not prevent / limit activities of service providers

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Output 1			
1. Sustainable and scaleable institutional arrangements at the community level that facilitate livelihood improvement for the poor and marginalised developed and their viability demonstrated	By Dec 2002 explorative dialogue commenced between groups of poor people and external institutions (e.g. banks and market based organisations, Gov't agencies) for inputs, linkages, sales of produce, canal management.	Position Paper 7 (<i>Project communication Plan</i>) Position Paper 2 (<i>An examination of the self help group process</i>)	None
	By April 04 a sustainable and scalable method for establishing community organisations (CBO) is demonstrated at site 1.	Position Paper 2 (<i>An examination of the self help group process</i>) examines its effectiveness: <ul style="list-style-type: none"> ➤ at reaching specific groups of the poor ➤ as an entry point for participatory technology development ➤ as a mechanism for service delivery. Scalability of model and describe criteria and strategy to.	SHGs do not disintegrate owing to factors beyond the possibility of remedy by the project
	By EOP a viable method for establishing SHGs is demonstrated at both project sites	Position Paper 3 (<i>Guidelines for formation of SHGs</i>) Position Paper 9 (<i>Experiences at Maharajganj</i>) describes how methods developed at site 1 are tested at site 2 and reports on findings. Position Paper 8 (<i>The Impact and sustainability of project methods and interventions</i>) Position Paper 2 (<i>An examination of the self help group process</i>)	
	By EOP at least five linkages initiated by project primary stakeholders and service providers.	Position Paper 8 (<i>An assessment of the Impact and sustainability of project methods and interventions</i>) reports on linkages initiated over the life of the project and assesses their durability	Unfavourable Gov't policy or political development in project target areas do not prevent / limit activities of service providers

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Output 2			
<p>2. Practical and more equitable options for water management demonstrated and evaluated by stakeholders including the poor and marginalised</p>	<p>By kharif 2003 at least 3 examples of use of rainwater and groundwater including multiple water uses of seasonally water congested areas explored by farmers with limited or no access to canal irrigation explored in site 1</p>	<p>Position Paper 4 (Exploring options for better water use at RPC-V) describes interventions undertaken and the role of communication products (leaflets, other written material, GIS products, posters and field demonstration) as an entry point for participatory research</p>	<p>SHG process enables poor and marginalised sufficient social capital to engage with other community organisations (e.g WUA and Panchayats) to overcome constraints at the command level.</p> <p>SHGs capable enough to collectively remove the constraints within resources they are able to mobilise</p>
	<p>By kharif 2004 use of rainwater and groundwater including multiple uses of water by farmers with limited or no access to canal irrigation and / or inefficient water management explored in site 2</p>	<p>Position Paper 9 (Experiences at Maharajganj) Describes how findings from RPC-V are tested at Maharajganj and reports on findings.</p>	<p>SHG capable enough to collectively remove the constraints within resources they are able to mobilise</p>
	<p>By EOP evidence of project informed interaction between groups of poor people and formal institutions (e.g. panchayats, WUAs and irrigation department) for improving efficiency of water use and equity in Site 1</p>	<p>Position Paper 8 (The Impact and sustainability of project methods and interventions) describes the process used to initiate explorative dialogue between groups of poor people and formal institutions and examines the role of project communication products in supporting this dialogue.</p>	<p>Community based organisations (WUAs, SHGs etc.) are unable to work together due to factors beyond the possibility of remedy by the project.</p> <p>Ministry of Water Resources (Gov't Bihar) co-operates in main canal systems studies and operation</p>

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Output 3			
3. Diversified and economically beneficial land use and crop management practices/technologies developed and tested with communities	By April 04 project team document key requirements for effective use of demonstrations as part of a strategy to inform and stimulate participatory technology development, adoption and adaptation.	Position Paper 5 (<i>Delivery of technologies</i>) Analysis of the performance of field based technology demonstrations, both in terms of technical performance, reach and suitability to target groups.	None
	By April 2004 processes for participatory examination and implementation of new ideas, strategies and technologies established with at least 10 groups in site 1.	Position Paper 6 (<i>Routes of participation</i>) documents process of participatory technology development highlights implications of the pro-poor non-subsidised methods used by the project, experiences captured as case studies	SHG capable enough to collectively remove the constraints within resources they are able to mobilise
	By kharif 2004 processes for participatory examination and implementation of new ideas, strategies and technologies initiated with at least 10 groups in site 2	Position Paper 9 (<i>Experiences at Maharajanj</i>) Describes how findings from RPC-V are tested at Maharajanj and reports on findings.	SHG capable enough to collectively remove the constraints within resources they are able to mobilise

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Output 4			
4. Findings of project communicated to key stakeholders at local and national levels as a means to support the potential adoption of the project's process and methods in non-target sites by non-project staff	By Dec, 01 local TI ² s and scientists contribute to the design of project methodology and identification of land and water management interventions	Position Paper 1 (<i>Inception report</i>)	Covered by assumptions at milestone level
	By April 04 national and international stakeholders draw upon project products to : <ol style="list-style-type: none"> 1. examine the prospects for CBO methodology to provide an entry point for participatory technology development and delivery of extension services 2. consider the implications, with respect to impact, of pro-poor, livelihood focussed and non-subsidised participatory technology development 3. consider the implications, of project findings for land and water management at both distributory and main canal. 	Position Paper 10 - Delhi Workshop proceedings	
	By July 04 State level stakeholder draw upon project products to : <ol style="list-style-type: none"> 1. examine the prospects for CBO methodology to provide an entry point for participatory technology development and delivery of extension services 2. consider the implications, with respect to impact, of pro-poor, livelihood focussed and non-subsidised participatory technology development 3. consider the implications, of project findings for land and water management at both distributory and main canal. 	Position Paper 11 – Report of State level workshop	
	By Sept 04 ICAR RCER team promote the lessons learnt in achieving a poverty focused, livelihoods oriented research project	Position Paper 8 (<i>The Impact and sustainability of project methods and interventions</i>) describes the process used to initiate explorative dialogue between groups of poor people and formal institutions ICAR Annual reports	

Activities Output 1– June 03 onwards	Milestones	Important Assumptions
1.1 Facilitation of expanded interaction of communities with multiple agencies that might be able to support livelihood improvement, especially bank linkages for credit	1.1.2 Dec 2003 at site 2 SHG and village level initiatives to explore independent linkages and support in markets established.	For all: Project is able to deploy resources as agreed That all project partners are able to deliver agreed inputs That natural disaster, political or other conflicts do not affect implementation of the project
	1.1.3 March 2004 methods tested by the project to improve credit flow and to establish linkages to banks and others that provide credit documented.	
1.2 Testing and improving the scalability and sustainability of Cirrus approaches	1.2.1 Dec 2003 Complete withdrawal of project support for facilitation of SHG formation Site 1	
	1.2.2 Dec 2003 Sustainable local arrangement in place to enable provision of support to SHGs and formation of new SHGs beyond the life of project and in new locations	
	1.2.3 Mar 2004 Documentation of methodology used to form SHGs and discussion of strategies for scaling and sustainability (Position Paper 3 Guidelines for formation of SHGs) available for distribution / publication	
	1.2.4 By July 04 Withdrawal of support for facilitation of SHG formation in site 2	
	1.2.5 By Aug 04 Rate of formation and performance of SHGs in some 50 to 100 villages outside site 1 and 2 documented	
1.3 Verify that <i>model for community support and rural microfinance</i> , as an entry point for PTD can be justified even when the <i>customer is very poor</i> and loans are at very <i>low rates of interest</i> (very near current bank prime lending rates).	1.3.1 By Feb 04 Policy implications of project findings for both provision of credit and rural service identified by project with support from by Rasheed Sulaiman, ICAR National Centre for Agricultural Policy (NCAP) (Position Paper 2: An examination of the self help group process)	
	1.3.2 By July 04 analysis of SHG data and findings from 'most significant change' used to document t the Impact of project methods and interventions. (Position Paper 8: The Impact and sustainability of project methods and interventions)	

Activities Output 2– June 03 onwards	Milestones	Important Assumptions
2.1 Use of project communication products to raise awareness in communities to possible water management related interventions	2.1.1 By Dec 2003 Preparation and implementation of 2 nd round of technology communication products following review (leaflets, messages, in field demonstration etc).	
	2.1.2 By April 2004 Performance and utility of 1 st round of technology communication products. (leaflets, messages, in field demonstration etc) and the effectiveness of the strategy to reach intended audience in project target area evaluated.	
2.2 Achieving interaction between groups of poor people and formal institutions (e.g. panchayats, WUAs and irrigation department) for improving efficiency of water use and equity	2.2.1 By Dec 03 Working Paper describes participatory processes developed in exploring water management options and lessons learnt.	
	2.2.2 Jan 2004 Implementation of appropriate communication strategy at site 2 (includes use of full range of tools, leaflets, demonstration exposure visits etc)	
	2.2.3 Feb 2004 CIRBUS/ IRCER build upon analysis (2.2.1) and draw upon products (2.1.3 & 2.2.4) to facilitate development of focus groups in site 2 that draw together interested primary stakeholders from WUAs, SHGs and other CBOs	
	2.2.4 Mar 2004 Development of linked GIS and Water balance model completed and model is being used to inform stakeholder dialogue at Site 1	
	2.2.5 Mar 2004 Working paper describes the experiences with material compiled to inform National and Stake level stakeholders of the importance of appropriate main canal management if on farm water management is to be achieved at the output level through participatory processes	
	2.2.6 July 2004 Analysis and documentation of findings of in field demonstrations, interventions and participatory technology innovations at site 1. Including modification of outlet gates and the nature and direction of ongoing dialogues and interaction with communities. Contributes to Paper 4 (<i>Exploring options for better water use at RPC-V</i>)	
	2.2.7 July 2004 analysis of SHG, WUA, OMG data and findings from 'most significant change' used to document the Impact of project methods and interventions. (contributes to Position Paper 8: <i>The Impact and sustainability of project methods and interventions</i>)	

Activities Output 3– June 03 onwards	Milestones	Important Assumptions
3.1 Analysis of land use and crop management issues from a community perspective and to find answers to challenges	3.1.1 Dec 2003 working papers describing the demonstration strategy, technical performance and findings of participatory evaluation	
	3.1.2 March 2003 the nature and direction of ongoing dialogues and interaction with communities in light of field experience analysed and effectiveness of communication strategy reviewed contributes to Position Paper 5 (Delivery of technologies)	
	3.1.3 Oct 2003 2 nd round of technology communication products implemented for Rabi at sites 1 & 2 following discussions. (leaflets, messages, in field demonstration etc)	
	3.1.4 Jan 2004 Project team evaluate characteristics of model for participatory research, developed by project highlighting advantages of model for operation at a development scale. Contributes to position Paper 6 (Routes of Participation)	
	3.1.5 April 2004 case studies document experiences of participatory technology development Highlighting examples (such as experience with deep tillage, zero tillage, early transplanting, seed, nematodes, tubewells, land rental rather than sharecropping, diversification, potatoes, fish production etc.). Contributes Position Paper 6 (Routes of participation)	
	3.1.6 Aug 2004 Cost benefit analysis by team of PTD methods developed by project and compared with established approaches. Contributes to Position Paper 9 (Experiences at Maharajanj)	
3.2 Testing of participatory technology development model at Maharajanj	3.2.1 Oct 2003 Criteria for testing scalability of participatory technology development approaches at Maharajanj defined (includes us of full range of tools, leaflets, demonstration exposure visits etc)	
	3.2.2 Aug 2004 Cost benefit analysis by team of PTD methods developed by project and compared with established approaches (link to 3.1.4).	
	3.2.3 Nov 2004 Documentation of how findings from site 1 were tested at Maharajanj (and elsewhere) completed Position Paper 9 (Experiences at Maharajanj)	

Activities Output 4– June 03 onwards	Milestones	Important Assumptions
4.1 Development of Project communication strategy	4.1.1 Dec 2003 Project communication strategy prepared to NRSP Position Paper 7 (Project communication Plan)	
	4.1.2 Dec 2003 opportunities for uptake promotion activities identified and proposal/s submitted to NRSP (could be delayed to May / June but NRSP call is sooner)	
4.2 Engagement with National Stakeholders	4.2.1 Nov 2003 Document that outlines vision for workshop and plan for preparations	
	4.2.2 Jan 2004 Detailed workshop plan in place including format for sessions, strategy for facilitation, documentation etc. Roles and responsibilities agreed.	
	4.2.3 Delhi consultation workshop	
	4.2.4 May 2004 Proceedings of National stakeholder consultation workshop planned for April 2004 document response of stakeholders to key issues presented at workshop (Position Paper 10)	
	4.2.5 June 2004 limited targeted promotion products developed in response to 4.2.1 delivered to relevant stakeholders	
	4.2.6 Nov 2004 Documentation of project contacts and interaction with targets institutions and stakeholders compiled and reported in the project FTR	
4.3 Engagement with state level stakeholders	4.3.1 July 03 proceedings of State Level workshop document outcome of discussions/brainstorming sessions with external agencies such as Rajendranagar Agri. Univ., ATMAS, local service providers etc on findings of the project (Report 11)	
4.5 Reflection on lessons learnt by project	4.5.1 Sept 2004 evaluation of experiences of the project team in achieving a poverty focused, livelihoods oriented research project.	

11 Keywords

Rural services, participatory technology development, dialectic approach, micro-finance, self help groups, institutional learning, community development, agriculture, water management, rice, wheat, agricultural diversification, poverty, livelihood