DEPARTMENT FOR INTERNATIONAL DEVELOPMENT

STRATEGY FOR RESEARCH ON RENEWABLE NATURAL RESOURCES

NATURAL RESOURCES SYSTEMS PROGRAMME

FINAL TECHNICAL REPORT

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Project title

Livelihoods improved through integrated crop management: Bihar and Uttar Pradesh

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NRSP Production System

High Potential

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1. Executive Summary

This pre-inception project was funded to develop a work programme and project memorandum documents for two linked NRSP projects. In preparing this work programme, local stakeholders and project collaborators were consulted, literature and knowledge from within India (and the region) was reviewed.

The plan proposed focuses on the implementation of a research strategy that is people-centred and which aims to assist poor farmers in improving their livelihoods through a more profitable involvement in agriculture. Central to the plan is the inclusion of those whose livelihoods depend upon agriculture and upon whom the interventions proposed by this project may have some impact this inevitable includes landless groups and women. Inclusion will be achieved by engaging appropriate existing community-based organisations in the planned research. Where necessary it is proposed to establish new groups.

Savings and credit activities are seen as important steps to enable groups to engage in anticipated research. The plan is that both projects will work through the same community based organisations. The two projects will then develop, field-test and make available techniques for land, water and crop management. The key interventions that underpin the projects are; strategies for concomitant use of rain, surface and ground waters; inexpensive new tillage alternatives; and establishment methods for timely transplanting of rice and sowing of wheat.

2. Background

The agricultural systems of the Indo-Gangetic plains produce a significant proportion of the staple grain requirements of South Asia. This project is located on the eastern plains in Bihar and eastern Uttar Pradesh where a significant gap between the potential productivity (based on estimates of agro-ecological constraints) and actual productivity of farms of the eastern plains of India has been postulated. The hypothesis upon which this project is based is that research based interventions can narrow the gap between actual and potential agricultural production and that through adoption of these interventions livelihoods of poor people can be improved.

Rice is the major crop in this area, occupying 4.6 m ha, and is followed by maize, pulses and vegetables in the kharif season (June to October). During the rabi season (November to April) wheat, potato, sugarcane, rape-seed, mustard, gram and lentil are the major crops. Rice–wheat is the dominant cropping sequence, covering an area of 2.1 m ha.

Research by the Directorate of Water Management Research (DWMR) has shown that if ground water rather than canal water is used to establish seedbeds for rice, the transplanting of the rice crop can be advanced. Given the climatic conditions of this area advancing crop planting leads to yield gains in rice. The earlier harvest allows greater opportunity post rice kharif crop or advanced sowing of wheat, which again leads to gains in yield. Further, opportunities appear to exist for improved nutrient management to reduce nutrient losses due to inappropriate timing and methods of nutrient application.

The challenge facing this pre-inception project was to define project and implementation strategies that are people-centred and that ensure poor farmers are able to contribute to development of agriculturally based interventions that will lead to an improvement of their livelihoods.

This ‘pre-inception’ project was commissioned to establish a working relationship between potential UK and Indian collaborators, who had submitted research proposals HP040 and CN062 to NRSP. Further the project sought to prioritise problems and intervention opportunities and to develop a strategic plan for linked research on Integrated Crop Management (ICM) and Integrated Water Management (IWM) in Bihar.

3. Project Purpose

This project assesses factors that contribute to poverty in northern Bihar and eastern Uttar Pradesh. The assessment identifies opportunities to improve crop management. It draws on the knowledge of stakeholders regarding technological, social and institutional constraints to explore ways to improve crop management constraints and to ameliorate livelihoods. Based on this assessment we propose a poverty focussed research strategy for linked research on ICM and IWM in Bihar and eastern Uttar Pradesh.

4. Research Activities

1. Preliminary assessment of hydrogeological, agro-ecological and livelihood constraints

Existing data and available information, concerning hydrogeological, agro-ecological and livelihood characteristics of the target area was compiled by DWMR scientists prior to a visit by Dr Richard Palmer-Jones.

The assessment of livelihood constraints involved limited field visits using resource mapping, agricultural calendars, social ranking and matrix analysis, focus group discussions, identification of livelihood indicators, household interviews etc. The methodology used is described in Appendix 5 and findings are included in Appendix 4 (section 8).

Based on this review and the project workshop we suggest technical opportunities and institutional innovations required to undertake research on ICM and IWM (Appendix 3).

2. Project development workshop

The workshop began with a fairly wide range of interests represented on the first day. It was well attended by a number of government officials and state agencies concerned with agriculture, land and water (mainly Bihar). The NGO sector (including two women focused NGOs) and farmers' organisations in the Patna Canal command area were also represented. Academic and research institutions and individuals constituted the third important group of participants. There were also representatives from the DFID Eastern India Rainfed Farming Project, with experience in freshwater fisheries, and a fertiliser-marketing agency. Overseas institutions represented included IACR Rothamsted, Silsoe Research Institute, University of East Anglia, and IWMI (Colombo). A series of short presentations on the first day provided the context for the proposed research projects.

On the 26th, 27th and 28th, a smaller group, mainly from DWMR and the overseas institutions, together with an NGO representative (some of the time) and a facilitator met, to develop an outline for the research projects.

A set of logframes was produced, followed by a tentative timeline for the land and water management project. The list of invitees and a report of the workshop is provided (Appendix 6).

An additional follow up workshop was held at DWMR (11-12th April 2000). MS Ashok was invited by Dr SR Singh of DWMR to help the DWMR project team develop their logframe at the activity level and OVIs at output level (Appendix 7).

5. Outputs

Outputs as specified in the project logframe are listed below, together with a brief description of how they were achieved.

Output 1. Working relationship between UK and Indian collaborators established

This project involved transacting the pre-inception phase of two planned projects.

The project built upon interactions between NRSP and ICAR. Dr SR Singh and colleagues at DWMR hosted a brief initial visit to Patna by John Gaunt and there were a number of subsequent discussions with Drs BR Sharma and GB Singh at ICAR in Delhi. Immediately prior to the project workshop a site visit by Dr Richard Palmer Jones and MS Ashok, enabled us to formulate final plans for the workshop jointly. The workshop was held with participation of stakeholders as reported in appendix 5. The workshop was followed by a visit to DWMR by MS Ashok where the project logframe for project R7839 was finalised. A visit to the UK enabled project memorandum documents to be finalised; this involved final elaboration of the research approaches, and clarification of links between the two proposed projects. It was recognised that the linked arrangement provided opportunities for flexibility in the implementation of the projects and flexibility in the financial arrangements – project budgets were finalised accordingly. Briefly capital expenditure, overseas travel and costs for community based group activities were retained in the IACR budget whereas other in country costs were included in the DWMR project. As consequence the balance between in country and UK costs in these proposed projects should be judged by assessing the budgets two projects together.

The outcome of the transaction was that ICAR supported the two proposals that were submitted to NRSP.

The research proposals formulated represent a new way of working for DWMR and the project collaborators. DWMR lead a project with a CGIAR Institute contracted as a research partner. Although the second project is led by a UK team member, it was agreed that the two projects will be implemented jointly.

Further, during the workshop the group recognised that in order to undertake the emerging research strategy project additional partners would be needed. As a consequence MS Ashok was invited by ICAR to join the project team. It was agreed that Catalyst Management Service would be asked to lead the group formation activities at the village level and collaborators from within the NGO community would be sought.

Beyond the immediate project collaborators, Mrs Radha Singh (a participant at the workshop) proposed that a mechanism should be developed to ensure a direct link between proposed projects and the Water Resources Department, Government of Bihar. Further links were developed with potential stakeholders upon approval of the project proposals developed. Links have been made with the DFID office in Delhi and the East India Rainfed Farming Project.

Output 2. Strategic plan for linked research on ICM and IWM in Bihar

The two project memorandum documents produced as outputs of the project are included as appendix 2 & 3.

Central to the plan for linked research was the need to develop that would lead to

implementation of strategies that are people-centred and which assist poor farmers in improving their livelihoods through better agronomic management. It was recognised that rather than follow a formulaic approach to 'participatory' research may not lead to the desired livelihood impact. To achieve this the team proposed to engage community-based organisations in the planned research (Appendix 3). The plan is to include landless groups and women whose livelihoods depend upon agriculture through the community based activities. Savings and credit activities are seen as important steps to enable groups to engage in anticipated research. Both projects will work through the same community based organisations.

The plan is that the two projects will then develop, field-test and make available techniques for land, water and crop management. The first project proposal (Appendix 2) outlines techniques identified for land and water management and the second deals with related aspects of crop and soil management. The projects focus on strategies for concomitant use of rain, surface and ground waters, management of water logged areas, and main canal operation. Further inexpensive new tillage alternatives and establishment methods for timely wheat sowing will be explored.

Output 3. Constraints and opportunities to improve livelihoods identified and means proposed to overcome them

This project sought to identify constraints and opportunities to improve livelihoods. No comprehensive account of the range of livelihoods in the project area is available, apart from basic demographic and occupational statistics. Within the terms of this project it was difficult to gain more in-depth understanding of livelihoods. In the absence of well-documented livelihoods studies two visits to the project area were conducted. The findings are summarised in Appendix 4.

Existing contacts by DWMR staff tend to be with better off members of the community. These contacts largely exclude sharecroppers and share-animal keepers. However, group interviews suggested that yields of sharecroppers are higher than yields of larger farmers because sharecropper is dependant on yield – larger farmers do not mind if crop fails as they have enough land. Sharecroppers try to make timely applications of inputs and operations.

The requirements of share-animal keeping are less clearly documented but are also likely hinge on the family labour of the share-animal keeper. Animals must be herded while grazing to guide them to suitable sources and to prevent theft, and grass and other fodder must be gathered often from commons. It was recognised that changes in timing of crop establishment with consequent potential impact on cropping intensity may impact on the livelihoods of those involved in animal keeping.

The key institutional innovation proposed by the project that a different approach must be taken than that currently used by DWMR to enable participation by all stakeholders – especially the local poor – in the proposed project. As outlined above (output 2) savings and credit activities are seen as important steps to enable groups to engage in anticipated technical innovations.

Recognising the specialised skills needed to work with community based organisations an Indian partner with expertise in such areas (MS Ashok, Catalyst Management Services) was identified as a project partner.

Another aspect of institutional innovation within the project was the recognition that in order to achieve uptake of the outputs planned for future projects it was necessary to work with NGOs and farmer's co-operatives in the project areas and to establish

partnerships with the Agricultural and Water Management Departments of the state and central government.

Output 4. Existing knowledge, that examines factors resulting in low productivity, synthesised and opportunities for technical and institutional innovations identified

Hydrogeological and agro-ecological features of the study areas of the two projects and the associated characterisation of livelihood systems including main features of livelihood constraints are documented in the synthesis of background materials (Appendix 4).

6. Contribution of Outputs

Workshop participants (DWMR and ICAR HQ staff) suggested that by providing expert support on the preparation of logframes this project has enhanced their capacity to use such tools in research planning.

During the project workshop Mrs Radha Singh(Commissioner cum Secretary, Water Resources Department, Government of Bihar) highlighted that effective communication links between the State Government's Water Resources Department and the farmers who use the waters of the Sone Command are required to achieve the benefits offered by conjunctive water use. Further, the commissioner recognised that this project (and the planned projects) could contribute directly to establishing such links.

The key outputs of this project are the two project memorandum documents for linked research on ICM and IWM submitted for funding by NRSP. Support of these projects represents the strategy for taking the work forward.

7. Publications

None

8. Internal

Listed as appendices see section 9 below

9. Appendices

Appendix 1. The final project inventory

Appendix 2. Project Memorandum R7830. Integrated management of Land and water resources for enhancing productivity in Bihar and eastern Uttar Pradesh

Appendix 3. Project Memorandum R7839. Livelihoods improved through improved crop and soil management

Appendix 4. Synthesis of background materials on environment and livelihoods

Appendix 5. Methods used in livelihoods survey (March 2000)

Appendix 6. Report of project workshop 26th – 28th March 2000

Appendix 7. Report of meeting at DWMR