PARTICIPATORY EXPERIENCES FOR ENHANCING LAND AND WATER PRODUCTIVITY

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ABSTRACT

This paper shares the experiences of a project having measures to facilitate the formation of land and water management strategies and institutions that are socially acceptable and broadly replicable. The paper describes the participatory process developed and adopted for exploring options for better use of water with focus on a single distributary RPC-V (Right Parallel Channel – V) of Patna Main Canal system under Sone Command through cost effective participatory mechanism, involving poor farmers, landless and share croppers. A key difference in our approach has been the identification and elaboration of possibilities of bringing improvement through dialogue with poor and marginal stakeholders empowered in relation to the larger-scale farmers who traditionally dominate the on-farm water management (OFWM) through self-help groups (SHGs). Dialogues were initiated between experts, local communities, and other key stakeholders such as the Irrigation Department. Emergence and role of Outlet Management Groups (OMGs) and Self Help Groups (SHGs) during the project period provided an interface to explore opportunities for efficient land and water management. The overwhelming response from the community has clearly demonstrated that the involvement of wider constituency of stakeholders provided good opportunities for the adoption of need based OFWM technologies, leading to more effective participatory irrigation management (PIM). Adoption of need based, low cost interventions such as raising of bund height for rainwater conservation, optimization of

Rice transplanting time, multiple water use and productive utilization of seasonally waterlogged areas, and selection of pumps for lifting ground water by the farmers using their own resources was a testimony for the success of the participatory process. Recognizing the need for establishing linkages between the OFWM and main canal system management, a broader framework between water users and canal managers is suggested. Strategies for scaling up are also discussed in the paper.

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INTRODUCTION

Numbers of innovative approaches to agricultural and rural development have emerged in recent years. Some of these have developed within the official agricultural research community having "Top to Bottom" approach, while others have been developed within non-governmental organizations (NGOs). Each has their own strengths and weaknesses. It has been observed that where official sector had competence in formal science and technology developments the NGOs have more concentrated on socio-economic front. Experiences show that peoples' participation has been identified as one of the major principles for sustainable development of the critical resources land and water. This reflects to believe that people who inhabit an environment over time are more competent to make decisions. Farming Systems Research, Training and Visit systems of agricultural research, On-Farm Water Management, and Command Area Development were some of the dominant approaches in the 1970s through the 1990s in India to enhance land and water productivity (Anonymous. 2002, Joshi. 1997). In the process it has been realized that these process lack in involving resource poor farming communities with an assumption that either the technologies did not suits to them or that the methods of contact and communication were biased against success. These diagnoses helped in offspring of new approaches which included Farmer Field Schools, Institute Village Linkage Programme (IVLP), micro-finance and rural livelihoods initiatives besides gender and environmental aspects. Further recent trends to involve private sector and NGOs in official development interventions, have opened new beginnings in inter-institutional partnership for development and growth of resource poor farmers.

The premises of this study was that there are multiple interlocking obstacles to development from environmental, socio-economic and institutional factors, but recently-developed technological and institutional innovations can be brought together in a way so that not only productivity but also livelihood of the farming community through new knowledge of land and water management practices. The idea here was that, given the high potential but low productivity of the project areas, potential economic gains from increased productivity could offer resources and incentive in institution building for irrigation and agricultural development process leading to higher productivity and improved livelihoods.

The study was designed around the 'on-farm water management' (OFWM) idiom built on the diagnosis that irrigation problems lay 'below the outlet' with typical top-end/bottom-end distribution problems leading to inefficiency and inequity in water use (Sikka et. al., 2004). As the average cost of canal water in India is less than 5% of the value of the crop it is used to produce. During 1989-90, the average revenue collected from canal water users was Rs.50/ha whereas the average cost of canal maintenance was Rs.270/ha. Low irrigation rates and increased establishment charges result in neglect of canal maintenance leading to infrastructural deterioration, unreliability, excessive water losses, social conflicts and low agricultural production. Water conflicts are common in most of the systems, leading to vandalism and disruption of the physical facilities and degradation of the system. Participatory Irrigation Management (PIM) has been proposed as a way to improve water management in canal commands (Vermilion et. al. 1995). However a slow and steady approach towards PIM in India has been recommended with a caution that it is not the panacea for all the difficulties. Under PIM

the formation of WUAs is governed by the Government of India CADA policy guidelines on Participatory Irrigation Management. In general these guidelines specify a two-tier system in the form of a WUA covering a group of outlets or a minor and a Distributary Level Committee (DLC). In Bihar there are DLCs and Village Level Committees (VLCs). Typically these committees involve and focus on the interests of land-owning farmers. Whereas, the key hypothesis of the study was that by including a wider constituency in decision making related to canal management, agricultural productivity would be improved. During the process of dialogue it was realized that interest of water users at out level are not being represented well. This required formation of some types of groups who can take responsibilities for sharing and distribution of canal water. After continuous discussions with existing WUAs and other community members it was decided to form OMGs (Outlet Management Groups) at every outlet who will not only act as a bridge between the water users and WUAs but also safeguard the interest of water users for timely availability of canal water. The awareness amongst the community resulted in formation of OMGs nearly at every outlet within six months having 5 water users as committee member. Overall under this study attempts have been taken to identify and work out ways to engage poor and marginal stakeholders and to empower them to bring improvement in land and water productivity at wider scale.

STUDY AREA

The study area falls in the eastern Indo-Gangetic plains located near Patna, Bihar, India under Sone Command. The area is hot and humid with a monsoon lasting from early June to mid October, followed by a long dry season with which is divided into winter (November-March and summer (April – June) periods. Annual rainfall is in the range of 1000 to 1200 mm, the bulk of which falls in August to September. The soils in the area are alluvium derived and vary greatly in texture from sandy to silty clay loams; lighter textured soils are characteristic of elevated areas and of the soils in the northern piedmont belt of the region. Heavier textured soils often more suited to irrigation, and yet prone to water logging, are common in low lying areas and along the major watercourses that run through the area. Surface and sub-surface drainage can be free or severely impeded; flooding is a problem in many parts of the region but the study area is partially affected.

The Sone River is an interstate river originating from the *Amarkantak* plateau in Madhya Pradesh. The Sone irrigation system was started in the mid 19th century. The Sone command is spread over five districts in South Bihar: *Rohtas, Bhjojpur, Patna, Gaya and Aurangabad*. The study area is fed by RPC (Right Parallel Channel) – V which is a distributary of Patna main Canal System under Sone command. The RPC-V was originally built to irrigate in the dry rabi season, but intensive developments were undertaken in the 1960s including a new barrage, and remodeling of the main canal system and its distributaries etc. to meet increased water demand. The culturable command area of RPC-V is around 2200 hectares covering parts of 20 villages in Naubatpur and Bikram Community Development Blocks. Many of the villages with land under RPC-V are split by the main canal with some un-irrigated higher land to the north. Given the general slope of the area to the north-east, RPC-V drains to the south-east and tail-flows drain into an ahar that runs from around Danara village in a north

easterly direction along the lower end of the CCA before debouching into a large *Ahar* nearby village Baiduli which drains immediately into the Punpun river, and then meets the river Ganges to the west of Patna city. Drainage is hampered at all stages during the monsoon and even in the rabi season low lying areas near the *Ahar* that drains RPC-V can be waterlogged; at the start of the monsoon water backs up from the drainage into the Punpun and to the low lying areas in the tail villages (Rampur and Bedauli villages) forcing earlier planting of kharif rice in these areas. The higher land along which the main canal and RPC-V run has lighter soils commanded by RPC-V have more ready access to irrigation. The low lying areas towards the *Ahar* are heavier textured but have less ready access to irrigation.

PURPOSE

The main focus of the project was to develop, field-test and demonstrate appropriate strategies of land and water management practices that would lead to improved rural livelihoods (including livelihoods of poor) and make them available for uptake to target institutions. The project focuses on the promotion of low cost technologies/practices for land and water management that have proven potential to improve productivity. It sought to develop a method for undertaking participatory technology development (PTD) that could be institutionalized and sustained as part of pro-poor rural services. This contrasts with the usual use of PTD as a micro-scale on-farm research tool (Anonymous. 2004).

INSTITUTIONAL ARRANGEMENTS UNDER THE PROJECT

The project also aimed to find an efficient and institutionally sustainable way by which research professionals can work with farmers on technologies that can improve crop productivity and, through adoption, improve the livelihoods of poor including socially disadvantaged men and women.

The group comprises of a wide range of partners in the project. But the key players were ICAR-RCER (ICAR Research Complex for Eastern Region) was formerly known as Directorate of Water Management Resources (DWMR), an Indian NGO and a group of visiting scientists of Rothemsted, University of East Anglia Silsoe Research Institute, CABI biosciences (Farmer field School methods and field diagnosis) and The International Water Management Institute. Other partners have contributed to the project mostly by way of specific managerial, consultancy and training inputs.

Scientists from ICAR mainly comprises of multidisciplinary fields such as agricultural engineering, agronomy, soil science, groundwater modelling, hydrology, statistics, as well as agricultural economics and extension, whereas the national NGO had expertise and wide experience in community micro-organisational development. The team deployed by the NGO comprises of management specialist with experience in designing, appraising and operating poverty reduction programmes. By the third year, three more persons, including an agricultural specialist had been added. Several (part time) community based facilitators had been trained and placed by end of project. Similarly, visiting scientists from U. K. also comprises of multidisciplinary team had specialization in the field of soil science, agricultural economics, social science etc.

With this wide range of project partnership the project needs to develop two institutional arenas a) firstly, that of the project initiators consisting of ICAR scientists, members of an Indian national NGO, and a varied group of international scientists and development consultants as described above, and, secondly, that of the recommendation domain or target groups of rural society in study area. These then can be intersected through interventions by the project initiators in the target areas. The interactions within the initiators and the between the local community can be conceptualised as interfaces where radically different social groups negotiate understandings and transact resources. The primary interface is between the official institutions of the project and local society whilst the interaction amongst foreign development consultants, national NGO development practitioners and ICAR scientists is another interface where understandings are not necessarily shared because the social structures of these participating groups differ radically, and what will have the appearance of a joint project must be negotiated in the course of the project.

The diversity of these interfaces does resulted many times different and sometimes contending views, amongst project partners and consultants, keeping in view broadly shared objectives of developing a project within the participatory technology development agenda with emphasis on livelihoods of the poor, and action through groups of poor people. Hence the diverse partners brought to the project very different institutional, locational and theoretical perspectives towards agricultural and irrigation research development and rural society.

While most of the project participants were concerned with issues of appropriate agricultural and irrigation technologies and institutions, and how to elaborate a project to address these issues in a participatory and pro-poor, gender and environmentally-sensitive manner, perhaps the crucial issue which framed the debates leading to plans for the project was the issue of institutional scalability especially of the self-help groups whose formation was to be facilitated. A prime virtue of the participatory interventions of the type envisaged by the project was to be their self-replicability throughout the recommendation domain. Past experience suggested that such groups when facilitated as instruments of other objectives of the project (e.g. for agricultural technology development, or irrigation participation) would have no capacity for replication or extension beyond project boundaries in time and space, and indeed were likely to have a limited life expectancy after project withdrawal, or would become dependent on continued outside support involving transfers unless a new approach is applied.

PROJECT APPROACH

Initial project negotiations during the inception phase led to a recognition that a key aspect of the approach proposed involved avoiding incentivisation. Acknowledging this, no formal commitments were made between users and motivators, beyond those associated with the initial technology demonstration activities. As was discussed above the project partners came from very different positions and in the first year or more of the project activities preceded more or less independently as follows:

- Facilitation of community development activities undertaken,
- Information collection supported by field diagnosis and GIS mapping activities,
- Validation and demonstration of the benefits of early rice transplanting in R7830.

Initially to have feel of the area, basic information were gathered throw published sources, socio-economic surveys, and informal dialogue with the community members. These activities helped in identifying constraints and problems that are specific to water management and raising awareness within the team of scientists (from all partner organisations) of the field situation. At the same time as these activities were underway, the NGO partner was involved independently to facilitate community development activities. Initially these activities were maintained as discrete activities as was required by the dialectic concept. There were however significant differences amongst the project partners who wanted to form SHGs to pursue various technical and livelihood opportunities. Interventions and negotiations between the team members resolved the differences. The vision for GIS as a tool that would facilitate interaction at various levels within the project is laid out in the project inception report keeping in view that, maps are important products to facilitate communication between different stakeholders such as team members, advisors, planners, executors, and users for strategic planning and development. Besides this a large scale demonstration and field based promotion of the benefits of early rice transplanting on rice and subsequent wheat production, practicing deep summer tillage etc. was undertaken based on previous research undertaken by ICAR scientists indicating the potential production benefits of these practices (Sikka et. al. 2004).

Whilst the parallel / independent approach continued in the field, dialogue within the project team led to an agreement to trial an approach where ideas would be 'broadcast' and that the team would respond to expressions of interest.

PARTICIPATORY PROCESS DEVELOPED FOR WATER MANAGEMENT

The participatory process comprising of five major key elements was developed (Singh et. al.).

1. Identification of technologies and broadcasting ideas,
2. Identification of interest/focus groups/members,
3. Enhancing know-how of interest/focus groups/members through group discussions supported by quality communication product (leaflets in local language),
4. Providing technical know-how on technologies to interest/focus groups/members through on-site discussions and strategic field demonstrations,
5. Slow withdrawal of experts from study area to facilitate increased interactions amongst interest/focus groups/members with other members of the community over technologies/interventions adopted for further self dissemination.

In response to information collection and field familiarisation and feedback derived from analysis of the SHG database a series of communication products (leaflets) were prepared. The purpose of these was to raise awareness of ideas and technologies. The leaflets provided basic technical know-how. Group meetings between project staff and various groups were held in different canal reaches comprising of SHGs / WUAs and even individual farmers to discuss the advantages and disadvantages of the technologies.

The technologies identified for broadcasting (in the form of leaflets) amongst the community after series of group discussions were:

- Selection of pumps for groundwater exploitation,
- Water management in rice,

Multiple water use,

- Canal water management,
- Efficient use of rainwater,
- Water management in wheat,
- Advantages of irrigation through field channels and the importance of gates on outlets,
- Optimisation of rice transplanting

Initially promotion was done through NGO volunteers using materials developed and suggestions provided by ICAR scientists considering that SHGs had proved more attractive to poorer groups and women who were often landless or sharecroppers. It was observed that many of the options and technologies, relating to canal and water management were not of immediate interest and initial response was low incase of SHGs as they are more interested in technologies/options from which they can fetch results in shorter duration and needs nominal investment. This made to realize that though the process of facilitating SHG and community development was important but involvement of other actors within the community is also important if one envisage for overall and sustainable development of land and water on the other hand ICAR-RCER staff had experience in direct communication with representatives of this group they became more actively involved in promotion.

PARTICIPATORY PROCESS REVISITED AND MODIFIED

Poor responses of SHGs led to revisit the participatory process to modify the strategies by considering the lessons learnt during previous attempt. Major undertaken were;

1. Participatory process must facilitate the involvement of wider constituency of members belonging to SHGs, WUAs, OMGs and individual members.
2. Use of leaflet as a communication product,
3. Identifying interest/focused groups/members interested in taking up the improved interventions voluntarily.
4. Undertaking few need based strategic participatory field demonstrations and providing technical know-how on member's demands.
5. Facilitating members for better interface and further linkages with other stakeholders including financial institutions.
6. No provisions for any financial assistance nor any commitment for future meetings.
7. Development of a self disseminating mechanism for transfer of technology.

Considering above and by obtaining members ideas through dialogue a participatory process was formulated which can been implemented for future course of actions. The basic concept in formulation of the process was to develop a mechanism through which involvement of wider constituency of community members at one platform can be facilitated for better interface in land and water management leading to effective participatory irrigation management (PIM).

The process was initiated with wider communities involving individual members, SHGs and WUAs in different reaches of the canal command. This facilitated a wide range of discussions between project team and group members and also among the members of different communities. Such discussions provided the much-needed sensitisation amongst members of the community that resulted in further invitations from members for the scientists/experts to visit their areas and to explain concepts and strengthen their knowledge through group meetings. This resulted in emergence of newer idea which are more implementable due to personal stakes of members, emergence of focused individual members and groups with genuine interest in adoption of improved technologies and development of a participatory process which follows the bottom-up process to be more sustainable. Based on discussions some interventions related to crop, land and water management were identified and communication product in the form of leaflets were developed for providing awareness and technical know-how to interest/focused groups/members. These products were distributed amongst the community in group meetings on their demand. As means of communication strategy few strategic participatory demonstrations were undertaken on farmer's field with very minimal inputs not more than Rs.100-150/- in case of multiple use of land and water in terms of fingerlings as members were facing difficulties to get genuine fingerlings were provided. These actions resulted in adoption of various interventions.

IMPACT OF THE PROCESS

The impact of the process has been threefold in terms of;

1. Defining working relation of facilitators/experts when working in partnership mode,
2. Ways forward to involve wider set of constituencies of community, and
3. Path forward for a cost effective sustainable people driven participatory process around land and water.

Activities undertaken most importantly resulted in;

1. Innovative ideas that led to increased agricultural production and diversification,
2. Easy implementation of ideas due to higher personal stakes of members in the outcomes,
3. Self sustaining processes due to emergence of interest/focused group/members who can play greater role in future for disseminating technologies indicating a bottom up process.
4. Increased awareness and sense of urgency to bring improvement in existing water management practices amongst members,
5. Opportunities for increased sources of income,

NEW LEARNING TO PROJECT PARTNERS

Some of the salient learning reflected was;

1. Role and need to involve wider communities in participatory processes,
2. Effective relationships and understanding within the project partners require to move forward effectively.
3. Quality dialogues, communication products in terms of leaflets and strategic participatory field demonstrations can be an effective replacement for subsidies to provide greater sustainability to participatory processes.
4. Emergence of innovative ideas through community involvement in technology identification and development has chances of wider sustainable adoption.
5. Timing of withdrawal of facilitators is a critical decision which needs to be judged properly for sustainability and up scaling of ideas broadcasted in future

CONCLUSION

Peoples' participation has been identified as one of the major principles for sustainable development of water resources. This reflects to believe that people who inhabit an environment over time are more competent to make decisions. Dynamic nature of land and water invites wide range of stakeholders having multiple interests leading to complex integration amongst them. Establishing dialogue amongst these stakeholders needs identification of appropriate processes and means through which they can be brought together for a common goal. The experiences in collaborative project and wide range of project partnership reflects that participation with community members on land and water related issues is mainly focused on two general types of situations a). set of issues focusing immediate and critical concerns leading to short-term emergencies or gains such as; irrigation needs, eradication of seasonal water logging and falling crop yields and b). concerns that provide opportunities to different stakeholders to come together for longer-term, precautionary issues. To achieve these goals the perspective should be broader which may accommodate members from wider constituency.

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