Lessons and learnings from mid-term evaluation of watersheds: Experiences in God's own country' of Kerala, India

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Abstract

Management of rainfed agriculture in low or high rainfall regions necessitates equal attention. In both situations, farm households are beset with problems detrimental to agricultural productivity. In the high rainfall area of Kerala specifically in three watersheds supported by the National Watershed Development Project for Rainfed Areas (NWDPRA) launched in the early 1990s, its system of watershed management revealed insights relevant to generic sustainable management of resources. The project, which consists of improved biophysical interventions and enhanced social resources, has significantly abated the major problem of soil erosion and water run-off. In turn, these contributed to a better agricultural livelihood system to an extent. Ensuring community participation by putting into practice demand-driven activities, involving local institutions, developing their commitment and capacities, is the major insight towards the successful management of the watersheds and livelihoods of the NWDPRA project. Institutional reforms in the project like the creation of an autonomous body; the watershed committee (WC) that oversees the watershed activities with legitimate participation of the *gram panchayat* (system of self-governance at the village level); the *panchayat* president as a member of the WC provided the avenue for ensuring the cooperation of the village. The initial outcomes of the (*participatory*) monitoring and evaluation (PME) show need for strengthening capacity building in the areas of productivity enhancement initiatives, better water use strategies, maintenance of water harvesting structures and more importantly programs need to be more inclusive to benefit large number of community members. However, some areas still needing attention are inevitable due to the dynamism of the watershed system. There is the need to address issues of the social exclusion of some segments of the community and making markets work for broad based economic growth, which can then make the watershed project even more sustainable.

Keywords: community watershed, livelihood system, participatory monitoring and evaluation, social exclusion, rural households, and impact

1.0 Introduction

India does live up to its name as 'Incredible or Amazing India' because of the country's enormous natural resources. In spite of this, agricultural productivity remains low because the country is generally rainfed with most land having below 700-1000 mm of rain. Even in high rainfall areas like Kerala, agricultural productivity is linked with moisture availability and the groundwater table. About 50-60% of rainfall is received during the southwest monsoon season with the rest of the year being dry. The situation is exacerbated by poor soil structure in clay loams and strongly sloping land with moderate to high soil erosion.

Productivity of rainfed agriculture varies, which requires different technologies and policies to be addressed programmatically. Despite a number of initiatives taken independently by various institutions across a large number of regions in the country, water scarcity remains a major concern. This explains the magnitude of watershed projects implemented in the country by various departments and non-government organizations (NGOs) and commissioning of assessment studies to learn from past and on-going projects. One of these watershed programs is the National Watershed Development Project for Rainfed Areas (NWDPRA).

A synthesis of Desphande and Narayanamoorthy's (2000) and Ministry of Rural Development, Government of India (2006) findings on their appraisal of watershed programs across regions in India reveal efforts towards achieving an integrated fashion of managing the ecosystem (Table 1). Initial activities of India's watershed program which started as early as the 1930s trying to understand rainfall behavior and employing bunding as soil and conservation measure were conducted mostly in experimental stations. These experiments contributed to moisture conservation knowledge, however, the spillover was rather low because farmers had limited access to these demonstrations. The succeeding watershed programs in the 1970s- early 1980s built on activities that incorporated to a large extent improvements in natural resource management due to water harvesting and conservation

technologies. Hence, the cropping system was altered but most of the interventions used were still site specific, which explains their non-replicability and low generic adoption. Towards the later part of the 1980s, a more integrated approach was taken with the much broader objective of increasing productivity in a sustainable manner. In the early 1990s, some earlier projects were merged and this led to the NWDPRA as well as the reduction of forest cover and water table, shortage of drinking water, fuel and fodder, which is a major watershed project launched in 1991. The approach was still structure-driven since degradation continued to be a major problem. These issues were factored into the succeeding plan, which encouraged people's participation and their empowerment. Some livelihood opportunities, especially for vulnerable groups (landless, tribes, small landowners and women), were created and significant attention was paid to the generation of spillovers. The NWDPRA was conceived to have a holistic perspective in 1986-87 and was launched in four states in 1991. During 2001-02, the Government of India modified the guidelines under the name WARASA (Watershed Areas' Rainfed Agricultural Systems Approach) JANSAHBHAGITA for adoption of NWDPRA during the X^{th} plan period. Watershed-based interventions in the latest guidelines are organized around people's participation, sustainability and capacity building was used as a means to an end to achieve these two important concerns and this allowed local involvement through micro planning. The program ensured a high degree of awareness in the communities where training of local people in a range of subjects was a priority area. The substantial emphasis on building local capacity promoted participation as was shown by their involvement. This led to a more aggressive and sincere implementation of capacity building activities that now has implications for the institutionalization of such processes and their sustainability. More involvement of the local people in the leadership and respect for existing mechanisms of decision-making ensured greater participation and adoption of interventions and thus an anticipated sustainability of the improvements.

Table 1. Timeline of watershed development projects in India.

Year	Focus of Activities	Results/Remarks
Early 30s	Soil conservation in experiment station through bunding and understanding of rainfall pattern	- Impacts on soil moisture conservation were encouraging· - Spill-over was low
1970s to early 80sLate 80s	- Water harvesting and conservation technologies in rainfed areas (47 Model watersheds) - Alternate land use systems· - Development of suitable crop varieties & cultivation practices· - Began the attempt for an integrated approach	- Failure to replicate the demonstrated yield gap on farmers' field - Adoption rate was low - Technologies were site specific
1990-91	NWDPRA - 99 districts in 16 states - 4.22 million hectares· conservation and rainwater harvesting)· - Land degradation continued to be a problem - Forest cover and water table continued to reduce and drinking water, fuel and fodder remained in shortage	- Earlier on-going programs merged with NWDPRA - Approach was structure-driven (soil
2002	- Conservation of the natural resources + augmentation of food, fodder, fuel, timber and biomass· - Livelihood and employment opportunities of vulnerable groups (women, landless and tribes)· - Technology adoption & dissemination, income opportunities and resource availability	- Peoples' participation and their empowerment improved - Disparity between and among different segments of the society improved. - Better social inclusion - Livelihood opportunities improved

Sources: Swarn Lata Arya and JS Samra (2001).
Ministry of Rural Development, Government of India (2006).
Samra JS. (1997).

1.1 Objective

A mid-term evaluation (MTE), which is a regular feature of national programs, was called for by the Government of India to review the progress of the NWDPRA in three states; one of which is the state of Kerala. The national government deemed the independent evaluation by an outside institution to be important, in spite of NWDPRA's in-house regular monitoring, due to the considerable restructuring of the program through greater decentralization, more community participation and a higher degree of flexibility in choice of technology and institutional arrangements being offered. In a nutshell, NWDPRA's MTE was to determine whether the project objectives, set in terms of expected output and criteria/ indicators were being achieved. With this, the physical and financial achievements, along with clearly discernable changes in socio-economic and institutional parameters, implementation constraints and the remedial measures (including the courses/strategies to achieve the set goals) were reviewed. The most important insights needing to be drawn from the MTE were those on community organization and institutionalization (awareness building, mobilization and institutional formation), planning specifically to ensure the participatory nature of activities (linkage building, flexibility in choice of technologies, empowerment of women or promotion of equity etc), and an implementation system that is primarily geared towards proper fiscal management (participation of groups, timely release of budgets according to plan and procedures, financial power and accountability).

1.2 Approach

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), an autonomous, international and non-profit research organization undertook the review because of its strong involvement in watershed initiatives. The Center has made headway in technological breakthroughs in rainfed agricultural technology, which includes a holistic package of technology with drought tolerant varieties, improved cultural management practices, and stronger socio-economic attributes (Walker and Ryan 1990). To date, other Asian countries (China, Thailand, Philippines and Vietnam) and Africa (Rwanda) are sharing in ICRISAT's success in technological innovation in watershed management, which has its beginnings in work conducted in Andhra Pradesh, Rajasthan and Madhya Pradesh states, India. These research efforts are implemented with ample support from partners in the local governments and non-governmental agencies.

The MTE was conducted in three selected watersheds namely in Nedumpana, Kollam district, Chithalvetty, Pathanamthitta district and Kalliyoor, Thiruvananthapuram district of Kerala (Fig. 1).

An open- and self-learning approach to the evaluation of the project was adopted where the *etic* (outsider) and *emic* (insider) point of views (Harris 1968) were balanced by assimilating learnings drawn from the evaluation conducted through a household survey, field visits to various watershed interventions, record verification, and focus group discussions (FGD) with various stakeholders. Field visits to watershed interventions involved physical observations, quality assessment and measurements of infrastructure done on a random basis to compare with the officially recorded values. The FGD through a *gram sabha* (general assembly of villagers) were used to elicit the most information possible in a short time to assess the community's knowledge about the program. The primary stakeholders were made party to the MTE process so that it also became a learning experience for them rather than an evaluation by a third party. Deviating from the conventional method of doing M&E, where a more participatory approach is adopted, hastens awareness and consciousness of the strengths and weaknesses of locals people and their wider social realities, visions and perspectives (Estrella and Gaventa 1997). Proponents of participatory M&E such as Aubel (1999), Downing and Gwyther (2006) and the UNDP (2000) found that with effective stakeholder participation, especially local level implementers and communities, presented several advantages most especially in ensuring program output quality. With a guaranteed sense of ownership among the stakeholders over the M&E, these results became invaluable inputs to decision-making, promoted understanding of strategies/processes and contributed to communication that led to alliances and collaboration with more sustainable impact.

Fifty stratified households in each watershed were interviewed. Landholding, caste and gender were also considered in the selection of respondents. The FGD and

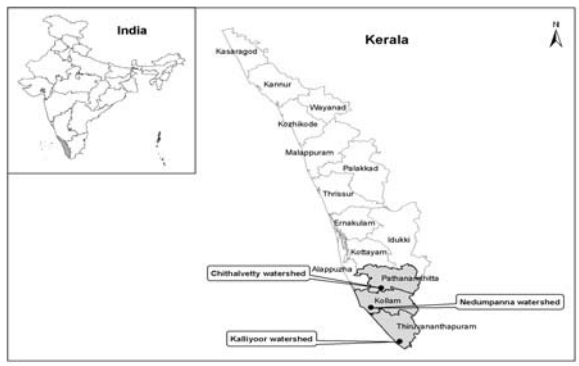

Figure 1. Map of Kerala, India showing the location of the project sites.

record verification substantiated the information collected through the household survey. To provide objectivity to the evaluation, a scale to measure performance was developed by identifying critical indicators.

2.0 Activities in the Watersheds

The three sites have similar biophysical and socio-economic situation as the selection of project sites was guided by a set of criteria. The severity of biophysical degradation and the prevailing farming system determined the nature, mix and focus of the watershed interventions.

All of the areas are considerably affected by soil erosion and water run-off due to location, in areas with moderate slopes (except for Chitalvetty watershed where most of the farms and homesteads are more extreme sloping environments of 25-40 % and the soil type, which was clay loam). The average rainfall per annum of the areas is about 2,400 millimeters of which 55% is received during the southwest monsoon. The rest of the months are marked by acute water shortages. This explains the focus on soil and water conservation interventions as the priority activity for the NWDPRA in Kerala since the ability to harvest sufficient moisture during the monsoon was used to overcome the inadequacy of water in the dry months.

Soil and water harvesting structures such as ponds and moisture conservation pits and various other related works such as earthen and stone bunds, gully plugs, ring basins and rehabilitation of wells were initial and foremost interventions aimed at maximizing retention of moisture. Capacity building in the form of farmer training on livelihood and productivity enhancement strategies as well as on self-help groups (SHGs) formation was juxtaposed with the establishment of physical interventions. These efforts put together have shown improvement in farm household productivity, individual self-esteem, community participation, and effective collective action.

3.0 Lessons learned for successful management of watersheds and livelihoods

The approach used in the implementation of NWDPRA's watershed projects attempted to incorporate the elements of wholism, integration and systems thinking. The watershed is defined as a unit where complex processes link the physical and biological resources and any change in one of them can cause effects on the other. Even if some of the interventions were implemented at a household level, the project made sure that the anticipated effects took into cognizance the entire community milieu. For instance, the construction of earthen or stone bunds is done not by and where the household cooperator decides but by the concerned stakeholders and in strategic locations where the maximum erosion can be prevented to benefit the majority of households. The NWDPRA succeeded in making institutional changes for implementing watershed improvement by making sure that the local people, clients or user demands were priority objectives. The project laid the foundation for participation and development of the local capacity to express their collective demands and to work for these goals with support from external sources until they could stand on their own feet. As described by Lightfoot (2004), empowerment of locals takes root through self-realization, self-organization and collective action. When this is realized, other contributing actors must then provide whatever support they can give without compromising the transfer of power to the local people. Experiences from other ICRISAT watershed projects revealed analogous insights where achievements best resulted from an evolving people-based approach to problem situations in soil and water management. Starting its initiatives into a very specific focus (e.g. nutrient deficiency), the watershed experiment evolved as a venue for holistic thinking. The Watershed then became the entry point for understanding and improving rural livelihoods (Prasad et al. 2005). The convergence of disciplines and institutions, where meaningful participatory approach occurred, helped to contribute to allowing 'learning to change, changing to learn, and sustaining positive insights to make a difference.' Experiences from the benchmark watersheds revealed not only the positive outcomes of increased productivity but also greater farmer confidence and trust. The strong sense of inclusion in mainstreaming the development of their own communities, taking collective actions for their problems, and enjoining only a certain degree of guidance from 'outsiders' propelled ICRISAT's watershed projects into a higher success bracket.

The MTE results show that in spite of viable technologies, adoption does not happen without some other forms of driver being present. The initiatives on watersheds, specifically the NWDPRA, have much to attribute to the virtues of sincere participation. This is seen in the practice of demand-driven activities, respect for and tapping local institutions, developing commitment and building on local capacities in participatory monitoring and evaluation (PME). These combined together have contributed to the successful management of watershed projects and to the improved livelihoods of communities.

3.1 Lessons from the practice of demand-driven interventions

The NWDPRA's entry point begins with an understanding of the hydrology of the watershed and from this the different interventions on crops, livestock, and collective action and stakeholder participation are

designed. Soil and water conservation (SWC) works are planned with respect to the integrated elements of the farm and with the utmost consideration of the potential impact of interaction on the entire community and even more remote off-site areas. The WC which implements the project made sure that SWC infrastructures were identified, built and maintained either by organized user groups (UGs), by one or two volunteer farmer leaders or by joint efforts of households.

The adoption of the various SWC measures reduced soil erosion in the three villages by 10 t/ha 1 year (from 25 to 15 t/ha) on the average. Most of the beneficiaries considered this to be significant to them. Table 2 summarizes the household survey results on the impact of resource conservation/protection and production systems in the watersheds. While the majority thought no change (NC) was registered in most of the impact indicators during the MTE period, some claimed much (MI) to slight improvement (SI) in the community's biophysical attributes due to the various forms of watershed interventions. The SWC structures, which are barely three years old, have shown some impact in reducing soil erosion and in improving water availability. However, there was variability in opinions due to the differences in resources invested and the type of interventions taken up per site. In Nedumpana, substantive improvement was reported in the reduction of soil erosion and drinking water supply. Evidence for the latter is the increase in

Table 2. Indicators of impact on resource conservation/protection and production system after the program during the current year.

	Opinion of household respondents (%)								
	Nedumpana			Chitalvetty			Kalliyoor		
Particulars	MI	SI	NC	MI	SI	NC	MI	SI	NC
Improved irrigation	7	21	72	21	21	58	21	20	59
Improved of drinking water	12	28	60	27	26	47	26	28	46
Reduced soil erosion	27	25	48	18	46	36	18	46	36
Improved fodder	5	9	86	3	3	94	3	2	95
Increased livestock assets	6	6	88	8	21	71	8	20	72
Increased area of cultivation	2	14	84	18	15	67	18	15	67
Access to improved varieties	0	20	80	8	21	71	8	20	72
Access to quality seeds	5	19	76	3	15	82	3	16	81
Access to technologies	2	18	88	13	10	77	8	10	82

Legend: MI = Much improvement. SI = Slight improvement. NC = No change.

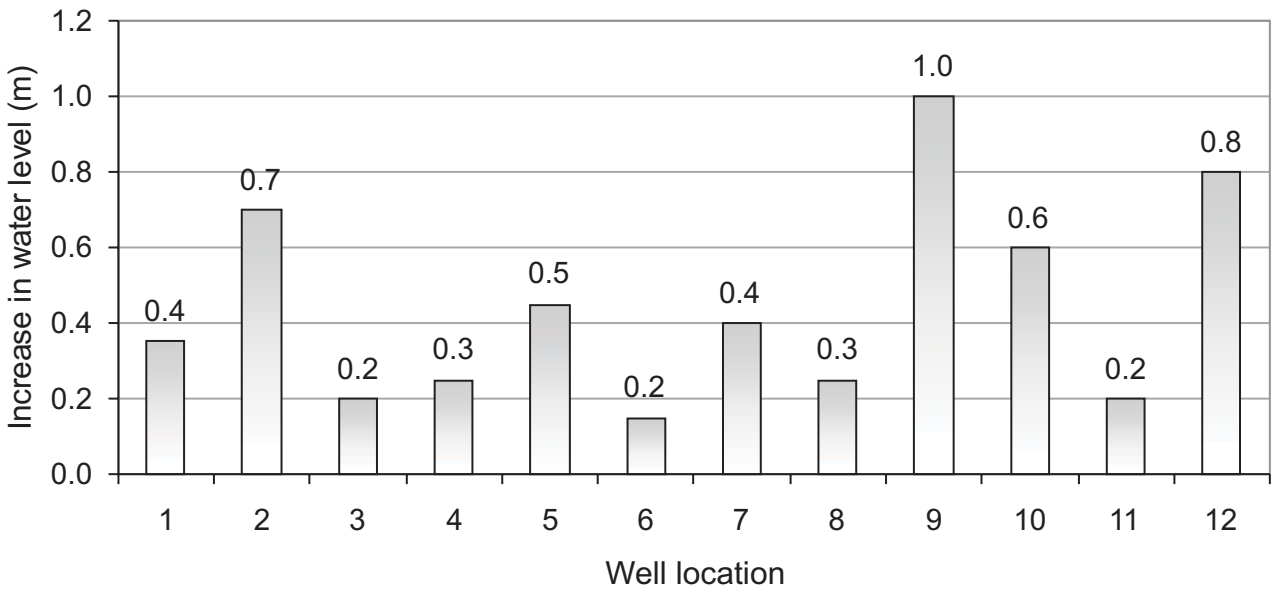

Figure 2. Increase in well water levels at Nedumpana watershed.

water level of 12 open wells in 2004 composed with that of 2003, which is in the range of 0.2 to 1.0 meters (Fig. 2).

Similarly in Chitalvetty and Kalliyoor, improved drinking water, improved irrigation potential, and reduction in soil erosion is the order in which visible improvement was recorded. Site visits and on-the spot interviews confirmed the importance of the need for protecting and managing the community's drinking water sources better. The FGDs validated the findings of the site visits since the experiments for good drinking source is an important group priority. This is one innovation in NWDPRA's participatory approach where demand-driven concerns are heeded. This suggests that a shift from the usual norm of simply supplying the community with a basket of potentially useful interventions to designing specific activities for local people's need is a feature of likely sustainability. This instills a strong sense of inclusion or ownership (Breslin 2002) in the community. A strong sense of inclusion, as part of the mantra of development projects, encourages communities to take collective action. Based on ICRISAT's experience in community watershed experiments, allowing for claims of ownership and providing limited guidance from 'outsiders' propelled these projects to success not only in India but also in other parts of South Asia. The watershed projects in these countries are good case studies for the need for consciousness-raising on the importance of an integrated approach to soil and water conservation in a range of agro-ecosystems. Similarly like ICRISAT, the NWDPRA took strides to bring improvement to the communities by adopting a framework that balances the use of the biophysical and social resource-bases. Building social capital through skills development for productivity enhancement to ensure yield and income and institutional SHG strengthening/creation, should form part of the process. This is the corollary to what Roling and van der Fliert (2000) described in their concept of 'learner-centered' discovery process where farmers participate by going through the dynamics of negotiation and self-determination.

3.2 Lessons from involving local institutions and developing commitment

Institutional support from a strong three-tier *panchayat raj* (village, intermediate as in block or *taluk* land, and district levels) framework dovetailed with guidelines to implement all activities through *panchayats* (village level system of self-governance) and was the impetus for rural household empowerment. NWDPRA's adherence to this guideline and tapping institutions starting with the district nodal agency, the PIA, and the watershed association; all of which had stakes in terms of commitment and accountability, contributed to the positive outcomes of the various interventions. In a recent report made by the Watershed Support Services and Activities Network (WASSAN) (2007), the weakest aspect of watershed projects in India is the delivery mechanism. Some provision for this was made through the PIAs, which accounts for Chitalvetty's success. However, WASSAN's assessment suggests that the project level delivery set up is very inadequate at other levels from district to state and to the national level.

The involvement of the *gram panchayat* in the management and administration of the watershed projects has insured planning for the equity of benefits. In NWDPRA's approach, the implementation of the watershed project is not given to local village governance. The rationale behind that decision is that the *gram panchayat* has so many competing responsibilities to deliver on. Instead, the WC takes the lead with the representative participation of the *panchayat* president who becomes an automatic member of the committee. Of the three watersheds, Chitalvetty's *gram panchyat* involvement is remarkable. The main reason for the success in Chitalvetty is in the involvement of the *panchayat* leader where good rapport was addressed because of the transparent backstopping of the Project Implementing Agency (PIA), specifically the Soil and Water Conservation department of the government. During the inception of activities in the village, the *panchayat* is made part of the planning exercise including the important financial allocation process. There was wider dissemination of activities soliciting the *panchayat*'s opinions to help in decisions about the infrastructure and to be developed the livelihood spin-off and employment opportunities for local people. The rapport provided a sense of inclusion and effective coordination of actors resulted became local people controlled the project. The local people are often more knowledgeable about their environment and possess rational minds that can make them good managers of projects/activities that can affect them (Pretty 2000 and Roling and van de Fliert 2000). The element of trust among local actors likewise accounts for the better functioning of the relationships (Mula and Niehof 2000). Initial reluctance towards participation is remedied by honing an intensive awareness-raising campaign to gain support in which Chitalvetty was the most successful of the three watersheds.

Another general observation by the MTE team, which is corollary to Rajendran and Masher's (2006) findings is the generally inadequate continuing maintenance of physical structures especially for those that are regarded as 'common' resources. Water harvesting structures, specifically the ponds in Kalliyoor, are used for dual purposes. There are eight ponds used as fishponds and

sources of irrigation by households. Re-using of rainwater and recharging of groundwater was effectively done by this work. Ponds would have been an excellent intervention if the households had observed sufficient maintenance especially in the water where fish were present. In one of the ponds visited, there was pollution since it has become a dumping place for household waste such as chicken entrails. The sense of personal ownership vis-à-vis common ownership of resources in this case takes a different twist. As observed by the MTE team, ownership is not simply an issue of the households having access to the pond. Further, ownership has to include the dimension of taking responsibility for health and sanitation, which most watershed projects have failed so far to inculcate into the households. The local governance is the best tool to use but to spell-out the rules of participation in maintaining common resources and having a 'critical mass' is important for ensuring awareness and adoption of innovations or information like rules and obligations. The NWDPRA's success in the dissemination and adoption of watershed interventions are similar to that of the IPM technologies done through farmer field schools. Where they draw upon a well-trained critical mass of farmers to ensure sufficient information flow (Roling and van der Fliert, 2000 and Rola, 1998).

Another concern related to the involvement of local institutions is the inculcation of commitment to ensure participation. In Kerala, the inadequacy of water for domestic and agricultural purposes in spite of the high rainfall is attributed to a low water table and the hard lateritic rock nature of the soil. To abate the difficulty of domestic water shortage among some households, NWDPRA provided the means that included both infrastructure developments (construction/rehabilitation of wells) dovetailed with social development. Well owners are made to sign an agreement with the WC to share water for drinking purposes. This was one mechanism used to instill commitments and responsibilities in being a cooperator. In most cases, the provision of labor is the farmer-beneficiaries counterpart investment and this has become the springboard for inculcating accountability and genuine participation. Collaborative management (Lubell 2004) certainly encourages consensus and cooperation among competing actors. As in any form of joint undertaking, sincere recognition for shared responsibility in spite of different incentives can minimize costly conflicts.

Experiences in the implementation of these watershed projects reveal that community participation, which is aspired to in projects will necessitate the involvement of local institutions and making sure that appropriate commitment is instilled. It also pays to build on a critical mass that then has enormous potential for up-scaling innovations. In the tenets of Participatory Technology Development, 'working with groups and communities rather than with individual farmers (NGO Programme Karnataka-Tamil Nadu Series 1 2005:94) proves to strengthen farmers' stake in the decision-making processes. NWDPRA's reformation in the implementation of watershed projects recognizes that people are not devoid of the capacity to improve. What they require is simply the provision for organization and access to required resources. Social mobilization in NWDPRA that allowed for a level playing field for all the elements in the community to participate especially for the vulnerable groups resulted in greater impact. This is the conclusion of an upscaling of a micro level initiative. In the experience of the South Asia Poverty Alleviation Programme (SAPAP), the micro level activities are demonstration exercises that can be replicated and upscaled. Micro initiatives give information on the realities that we need to learn about to influence state, national, international decision makers. To make a substantial dent in poverty alleviation and to deliver sustainable development, a pro-poor macro policy environment works best where poverty dominates. Insights from micro projects are necessary but require a suitable macro policy to permit realization of impact on the poor (UNDP 2000). Crafting livelihood (income) opportunities for resource-poor rural households as seen in these watershed projects provide engines for economic growth. In India, watershed projects are meant to target the poor. Their approach and activities have evolved to address the weaknesses of past projects. The NWDPRA's experience is a case in point.

3.3 Lessons from NWDPRA's capacity building

The needs assessment, including the training requirement at all levels, made at the initial stage of the project was beneficial in cementing popular participation. The training conducted included not only technical, managerial and livelihoods enhancement but also worked towards the integration of all these and even other actors involved in the project. The result of the training programs, most especially those on productivity enhancement, enabled improvements in household farming livelihoods (Table 3). In Nedumpana watershed, *tapioca* (cassava), banana, and paddy showed the highest increase in yield. In Chitalvetty watershed, the productivity of pepper, banana, and tapioca were the highest while in Kalliyoor, vegetables (ie, amaranth), banana and paddy were the best responding crops.

In the three community watersheds, the NWDPRA project provided the venue not only for opening the window for honing agricultural skills but also for the empowerment of vulnerable groups. Among women, for instance, the opportunity to become a member of any of the SHGs was also an avenue for income-generating activities. As (Desphande and Narayanamoorthy 2000:

9, 339) mentioned, the impact of the watershed project on landless laborers and women members is a critical element in determining positive changes in the prevailing socio-economic parameters. Moreover, a UNDP (2002) report suggests that relying too much on market structures and economic growth opportunities like productivity enhancements does not necessarily promote unity and solidarity. Activities such as education, health and reduced vulnerability to crisis situations, which often are women-led, provide a strong impetus for community organization among the poor. With the greater involvement of women in the project, the change in time at women's disposal was significant and can be seen in their substantial contribution to income generating activities. Such is the case in the watershed projects where an average of nine SHGs in each of the three community watersheds are women-managed small-scale entrepreneurial engagements. Overall, women in Kerala are active partners in short such projects. The active involvement of women in Kerala is not only because of its matriarchal culture, which they are borne into but also because of the high literacy rate in these communities, this can account for women's strong sense of belonging to a community. It can be concluded that a strong sense of inclusion in mainstreaming communities' own development, taking collective action to address their problems and

Table 3. Change in productivity of major crops in watershed area (*quintals/hectare).**

		Nedumpana		Chitalvettty		Kalliyoor	
Season	Crop	Quintal[1] ha^{-1}	%	Quintal ha^{-1}	%	Quintal ha^{-1}	%
Kharif	Paddy	2.5	7.7	5	14	8	19
	Vegetables	–	–	5	7	40	33
	Banana	8.1	10.5	15.5	17	30	19
Annual	Tapioca	12.1	5.6	17.8	9	25	13
	Coconut (no. of fruits)	80	1.4	1.7	16	1190	18
	Rubber	–	–	160	3	–	–
Perennial	Pepper	0.2	5.3	0.6	24	–	–

1. Quintal (1 quintal = 100 kilograms).

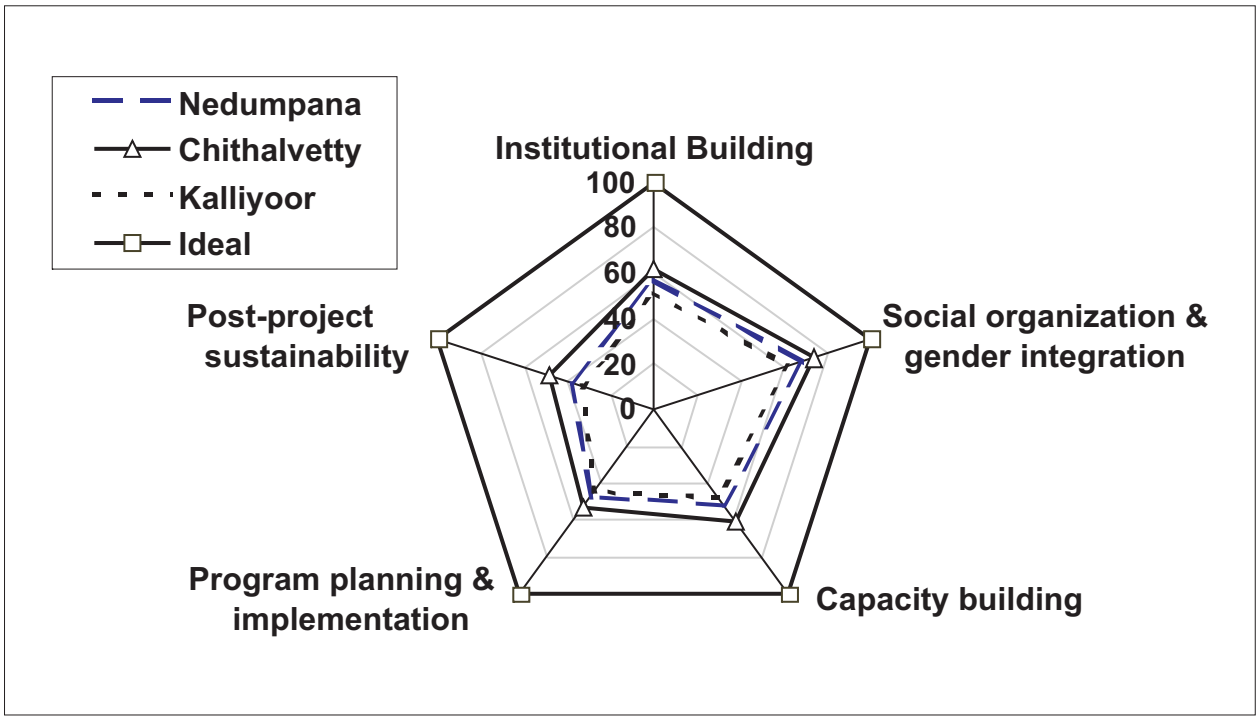

Figure 3. Performance indicators of the three (3) watersheds in Kerala, India.

constraints and soliciting a certain degree of guidance from 'outsiders' ensures commitment resulting in greater participation. The local people's enthusiasm, as evidenced by their participation, and the joint collaborations between and among organizations is a social capital benefit that can be further enhanced to advance development. For instance, collective action typified by the SHGs has become their means of impacting individuals through the relationships they build. As time passes and with sufficient basic technical support, these institutions can become the foundation of a broad power-base for carrying out community development works. Lubell's (2004) findings on farmers' participation in a partnership in a water management project reveal that participation is an important element in increasing social capital. This explains the substantial resources earmarked for building capacity to address both behavior (especially commitment) and skills.

Development assistance needs to be able to deliver improved capacity of stakeholders for self-organization. The establishment of institutions like SHGs has provided more than only the means for providing access to income. For women, SHGs have also become the mechanism .for promoting solidarity and to take on other concerns like health, sanitation, and environment.

The NWDPRA's belief in the contribution of an efficient and effective participatory monitoring and evaluation (PME) system explains the rationale for commissioning a MTE of its watershed projects with the objective of identifying areas for improvement. The result of the assessment reveals that while there are significant outcomes of the three-year old watershed initiatives, there are also challenges that can be addressed to create more impact especially in the more equitable distribution of benefits. In this, the involvement of the *gram panchayat* is indispensable.

To provide objectivity to the evaluation, a scale to measure performance was developed by identifying critical indicators. Using the web method (NGO Programme Karnataka-Tamil Nadu Series 1 2005:13), the impact of the project in the three villages was determined. Weights were given to each of the indicators (Table 4) based on their relative importance for watershed development. Each of the indicators contains specific elements, which are given corresponding weights. These indicators were grouped under five broad categories and are shown in Figure 3. The team members jointly rated each of the watersheds by discussing and critically evaluating their indicator-based performance. The cumulative ratings have been used to compare the performance of the watersheds overall. The performance of all the watersheds was only average and could be improved. Out of 100 percent, Chithalvetty received a score of 59.4 percent, the highest among the three watersheds. Nedumpana with 53.2 percent and Kalliyoor with 48.8 percent closely followed. Community organization, using a decentralized approach and design and implementation were the strengths of the watershed projects. Improvements are particularly needed in monitoring and evaluation, convergence, developing a withdrawal strategy, fund flow and utilization besides moving on with productivity enhancement and efficient water use.

The MTE team concludes that the aspect of PME in NWDPRA's watershed project is both a means and an end. As a learning system, it becomes a means to understand the links between, and among, units such as in the weak PME at watershed association level which has implications for the PME system at higher levels. Field operations are the most critical aspects of the project requiring regular checking. This becomes the responsibility of the actors who are directly on the ground ranging from the project implementing agency (PIA), the watershed development team (WDT), and the watershed committee (WC) plus the cooperation of the community local governance (*gram panchayat*) since they are the beneficiaries. As observed, the WDT provides much of the technical backstopping while the WC is the direct link to the watershed management in the community.

There is much scope for improving the quality of documentation and for systematizing the financial recording in the watershed projects as indicated in the MTE report. The use of measurement books can be improved with guidance from experienced staff such as from the soil conservation office. It is quite evident in the three micro-watersheds that WDT and WC's membership composition is dominated by the younger-age-group. They are dynamic and hardworking but they still lack the training to perform their tasks independently.

The involvement of the *gram panchayat* makes the monitoring mechanism more effective. They made sure that plans and equity benefits guidance was followed since the community's welfare is in their hands. In Chithalvetty watershed, the *gram panchayat* head was a key-factor in the smooth implementation of the various watershed improvement initiatives. The presence of a local volunteer on the team was helpful in creating awareness and disseminating information about the watershed activities. The *gram panchayat* took an active role in verifying whether the structures were completed, the specifications followed, and the costs reliably estimated. Another insight drawn from the NWDPRA's implementation is in investing in groundwork to ensure sufficient publicity and thus awareness in the community. This is a very important aspect not sufficiently exploited in the project as noted also by Satheesh and Rajesh (2004) in their assessment of the Nellaya Grama Panchayat, Trivendrum, India. It does pay to continue to encourage widespread dissemination such as by putting signboards for all the SWC works. As awareness builds,

Table 4 . Performance indicators used in measuring the performance of the NWDPRA watershed project.

Indicators	Weights
Activities during the preparatory phase	14
Adhering to the set criteria in selection of watershed/district	5
Appropriate activities taken for awareness generation & publicity at various levels	2
Organization & functioning of district level institutional structures (District Nodal Agency & District Watershed Committee)	3
Adhering to the procedures set in identification of PIA and deployment of WDT	3
Resolution from watershed community (readiness for taking up the programme)	1
Capacity building	20
Capacity building/development needs assessment for various categories of participants at various levels in the project	
- For SHGs	2
- For UGs/land owners	2
- For land less	2
- For WDT members	2
- For PIA and District officials	2
Preparation and implementation of short-term and long-term training plans-	
- For SHGs	2
- For UGs/land owners	2
- For land less	2
- For WDT members	2
- For PIA and District officials	2
Community organization	20
Entry point activities & identification of village level community organizers	2
Adhering to the set process in organization of different primary stakeholders groups	5
Organization & functioning of watershed committee & watershed secretary	5
Efforts made and existing situation of linkages of watershed institutions with *panchayat raj* institutions	2
Integration of social resource management with natural resource management – activities planned & implemented	3
Social regulation to avoid over exploitation of ground water resources	3
Conducting PRA exercises and base line survey with participation of different stakeholder groups	4
Technological options for watershed development	10
Role of primary stakeholders in choosing the watershed works	2
Involving research institutions for finding solutions to watershed problems	3
Testing & demonstrating new options for sustainable use of resources	5
Fund flow and utilization pattern	4
Fund flow mechanism to district level & release of watershed budget	1
Flexibility in reallocation of funds (at what level?)	1
Maintenance of records & funds by the community	1
Modalities of payments for watershed works	1
Convergence – specific interventions resulting from convergence	7
Line departments	2
Research organizations & universities	2
Programmes	3
Process involved in designing & implementation of strategic plan & annual action plan	5
Demand-driven approach (on application by the stakeholder groups)	1
Integration of (i) development of natural resources (ii) improved management of farm production system and (iii) improved management of non-farm based livelihoods (for landless/resource poor)	2
Equity-oriented & gender empowering action plans	2

continued

Table 4. (continued)

Indicators	Weights
Decentralized approach for preparation/sanction of designs & estimates for watershed works	2
PIA	1
Community	1
Withdrawal strategy	6
Shared understanding of the withdrawal strategy at different levels in the project	2
Initiation of activities planned in the withdrawal strategy	1
Linkages with credit institutions/KVKs/Knowledge generation centres/line departments/research organizations, etc.	2
Setting up and initiation of watershed corpus fund	1
Monitoring and evaluation	8
Formation & functioning of different management committees (watershed committee, district watershed committee, state watershed committee & national watershed committee)	2
Concurrent evaluation by internal and external agencies	1
Application of ICT tools in watershed programme	2
Regular auditing accounts	1
Social audit and wall writings	2

the conduct of needs assessment with the local people (evident in their participatory rapid appraisal reports) increased participation, which led to the identification of more partners. In turn, the strong links paved the way for good outcomes such as better financial support for the initial works (i.e. physical interventions) and training of staff and local groups. Partnership with other relevant organizations within the community can then build sustainability. Presently in NWDPRA, there is hardly any convergence or linkage between and among institutions like the agricultural university or even the Indian Council of Agricultural Research (ICAR). These sources of expertise can be tapped as partners for further productivity enhancement activities.

The conduct of meetings (regular and emergency) of major players such as the PIA, WDT, WC, SHG, etc is a good way to assess the progress of work. Proper documentation of the minutes of all these meetings was most beneficial in keeping track of decisions and progress made on the different watershed project components.

The guidelines and the approved action plans ensured better financial management of the project as well as the effective auditing of accounts. However, a very important area that needs much improvement is the systematic documentation of transactions to remove potential doubts of mismanagement. The social audit vested in the local committee besides the two external audits when fully institutionalized can be a powerful management tool to ensure the integrity of financial operations. It makes a difference to allow for transparency and accountability and to use village level institutions for these tasks, whether government or village organizations, since these are closer to the community. The UNDP's (2002:30-34) experience on working with local self-government institution as in *gram panchayat* of India and *union parishads* of Bangladesh allows for better accountability and legitimacy.

In the project cycle, PME is able to identify areas needing attention. As an end, a systematic management of information/knowledge and sharing can be a major output of PME that serves as a functional resource for the project. PME's institutionalization within the community's local governance and dynamics, where all groups are represented in discussions and decision-making (Ashok et al. 2005), can contribute to success not just for corrective measures but also for stimulating other innovations, creative thinking and sound decision-making.

4.0 Conclusion

Lessons drawn from the NWDPRA project show that with improved biophysical resources of farm households, productivity is increased and/or improved to a small extent and more emphasis on productivity enhancement initiatives is needed to benefit the individual farmers which can enhance community participation as reported earlier from ICRISAT's consortium approach (Wani et al. 2003, Sreedevi et al. 2004). Farm households increased their cultivated area, diversified into other crops and activities, and invested in collective action. Some respondents felt that the watershed projects did not really bring significant contributions. This implies some unevenness of beneficial outcomes in the community. In

two of the FGDs, many of those who participated claimed to have the same plight — no drinking water, lack of seeds, lack of knowledge about improved land, crop and water management options. In some cases, they had the opportunity to process their products but there was no market. While there were specific interventions for the landless and small landowners, as a way to address the less-endowed segment of the society, these were perhaps not sufficient. Many of those who started with their SHGs as part of the capacity building agenda especially for the landless specifically on food processing (*masala*) and product development like candle and soap making commented that they did not have market except for a few buyers within their villages. Their products lacked quality and proper packaging, which obviously cannot compete with what is commercially sold and these do not appeal to the villagers. With these, productivity enhancement is not by itself sufficient for livelihood transformation.

The intrinsic worth of micro-level interventions then gradually scaling-up and building on the capacities (both in skills and institutions) that developed resource-poor households is one of the learning insights of the NWDPRA's watershed project in Kerala. However, more comprehensive information/knowledge management to allow a functional PME has to be worked-out in the watershed project's three-tier framework. To make the on-going activities more meaningful, with respect to the community's social transformation, there is the need to address the issue of uneven impact by minimizing to the least exclusion of certain groups. To ensure sustainability, steps must be taken to ensure the health and social security for this segment of the society to allow them to be more in the productive loop.

As gleaned from the impact assessment of previous NWDPRA undertakings all over India, the strengths in one community watershed are often the weaknesses in another. The major constraint in watershed management is not actually technical but rather institutional, and that greater participation in informed decision-making through empowerment is what is needed to address this problem.

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