

Participatory Management in Irrigation Development and Environmental Management in Sri Lanka

Eng. H.P.S. Somasiri*,
B.Sc. (Eng.) M.I.E (Sri Lanka)

Keywords: agriculture, environmental management, irrigation, participatory management, Sri Lanka

Introduction

The modern participatory approaches in water resources management was first introduced to irrigated agriculture in mid 1980s. The innovative officials of the Department of Irrigation attempted to resolve such problems through farmer participation and two of the success stories were recorded from Minipe and Kimbulwana Oya schemes though there may have been many other experiments that were not published.

The participatory approaches in environmental management are also of recent origin. The International Irrigation Management Institute (now the International Water Management Institute) implemented a project titled Shared Control of Natural Resources (SCOR), with a focus on participatory management of natural resources. The results of the project were mixed; while substantial awareness about the importance of managing natural resources was created, the sustainability of the interventions were not satisfactory. Subsequent to the Asian Tsunami of 2004, the relevance of community management of resources such as coral reefs became prominent. Several interventions were made since then to involve community in the management of natural resources.

The aim of this paper is to document the evolution of participatory management in water resources and environmental management and

identify some emerging issues related to the implementation of policies.

Background to community participation in water resources management

Evolution of irrigation systems

It is believed that irrigation works had been in the country even prior to the establishment of Aryan settlements in the 5th century BC. Several theories exist about the evolution of irrigation systems. Though there could be conflicts of opinion, it can be safely concluded that small reservoirs at village level preceded the river diversions and large reservoirs.

While the large reservoirs had much state intervention, the small scale reservoirs (or village tanks) were not only managed, but were also constructed by the villagers. These reservoirs were built along the streams in the form of cascades, providing drainage water from one tank and its command area to the tank downstream. It is believed that the state intervention came later, to construct larger reservoirs (Seneviratne, 2002)

Ancient irrigation management system

The management systems evolved together with the structural development (Imbulana and Neupane, 2005). A cornerstone of the ancient management system was the active involvement of farmers in the management of irrigation systems.

There were strict rules and regulations for managing water in these irrigation systems in the past. A very effective and powerful bureaucracy appointed by the king imposed these rules and regulations, the non-compliance of which resulted in deterrent punishment and heavy fines. The Kondavatuwana inscription found in the Gal Oya

* Additional Secretary /Irrigation and Technical Services, Ministry of Agricultural Development and Agrarian Services, Sri Lanka

valley (924-935 AD), while ensuring the rights of cultivators, clearly defines their obligation with regard to water-use, and adherence to the cultivation calendar. The inscription dictates fines for violating the cultivation calendar, and over irrigation of fields.

In the ancient cascade systems, water that is used for irrigation from one tank is passed on to the next tank through a drainage line for re-use. It needed a considerable degree of coordination, inter-dependence and intensive management for the different tanks in a cascade system to operate together. The water management in these village irrigation systems was based not much on rules and regulations but on customs, traditions and rituals.

Among the other traditions of participatory nature are; the Kaiya, a communal voluntary participation in all agricultural and even other social activities, and Attama where one offers his voluntary labour to many others in their agricultural activities and in return gets the same response for him. In a year with limited water resources in the tank they collectively took a decision to practice a Bettma, when only a section of fields close to the tank is cultivated according to the shares, to conserve water. In Tattumaru system, a plot is shared among number of owners and one gets his turn only after few seasons in rotation. In Kattimaru one gets given individual plot in rotation from two or three other plots, to have equal benefits of the soil, fertility and water resources. The Kanna meetings were held before each cultivation season, where democratic decisions were taken on the date to commence land preparation, first date of water issue, the type of crop, and closure of canals etc, which were followed collectively.

The decline of ancient civilization and European colonization

The ancient hydraulic civilization reached its zenith during the 13th century and declined gradually thereafter. When the Portuguese, the first of the colonial powers, arrived in Sri Lanka in early 16th century, very few large scale irrigation systems were functioning. The Portuguese were followed by the Dutch and then Sri Lanka was ruled under the British empire. During the Dutch period, several canals for navigation and drainage

were constructed in the West, East and South-western parts of the country. However, the water resources development and management for irrigated agriculture did not receive the desired level of attention by neither the Dutch nor the Sinhalese kings. The once fertile lands in the dry zone, by and large, stayed abandoned and agriculture was confined to small scale irrigation and rain-fed cultivation. This trend continued to the British period (Imbulana and Neupane, 2005).

Until the British period, the "Rajakariya" system ensured the community participation in irrigation management. This system provided the government the right to obtain the services of the people. Although there were deficiencies in this system, the British abolished the system without an alternative acceptable to the people. The neglect of irrigation and dismantling of the self-reliant local governance system of the water structures lead to many hardships for the local population (Perera, 1955).

This situation provided a pretext for social uprising and led to the rebellion of 1848. Although this uprising was crushed by the British rulers; the problems of peasants and the peasantry started receiving better attention. It was soon understood that restoration of irrigation facilities would address many economic problems of the rural areas and address the discontent the population substantially (Imbulana and Neupane, 2005).

This led to the establishment of an exclusive department for irrigation development in 1900. The infrastructure development carried out by the Irrigation Department included reservoir construction, diversion structures, flood protection and salt-water exclusion structures (Imbulana and Neupane, 2005).

Recent developments and application of modern principles

Until mid 1980s the farmer participation in irrigation management was achieved through the cultivation meeting, held prior to the cultivation season. This was chaired by the highest ranking government officer in the irrigation scheme area (Government Agent) and was participated by all the relevant officers and farmers. At the meeting, the extent of cultivation, date of water issue, date of water closure, the canals to be maintained by farmers etc were decided on mutual consent. The

decisions taken were applicable by the law.

The deficiency of this system was that a large number of farmers gathered just twice a year, and many voices were not heard. The other problems included scarcity of water for some cultivators especially in the downstream of the system, poor resources allocation for maintenance and deteriorated physical status of infrastructure. The reforms of mid 1980s were aimed to address the problems of this system and to involve the farmers more meaningfully in the management.

Since 1978 a gradual change has been taking place in the management of major and medium irrigation systems. This is a change from Government management to "participatory irrigation system management". In 1978, irrigation officers enlisted the help of various persons to organize and motivate farmers to undertake needed repairs to the Minipe irrigation system in the Central Province. A key innovation was the joint Project Committee consisted of Irrigation Department officers and representatives of the farmers. In 1981, the Agrarian Research and Training Institute began organizing farmers so they would contribute labour to the rehabilitation under the Gal Oya Left Bank System. From this experience came a process for organizing farmers, a model of how farmers should be organized, and strong evidence that organized farmers can solve many water distribution problems.

In 1984, the government introduced O&M fee collection (direct financing), which was started with promising results, but did not last more than four years. This was seen as an attempt to privatize the irrigation systems, and it became a political issue, and then a failure. This demanded an alternative policy for the sustainable and efficient management of irrigation infrastructure and water resources. In the late 1980s, the government introduced the participatory irrigation management (PIM) policy, in which management of these irrigation systems were shared between the farmers and the agency. It is a strategy of cost reduction transferring powers and rights to user groups. The policy emphasizes the change in the role of farmers from passive recipient of irrigation benefits to active partners in the management process sharing responsibility with the agency staff (Aheeyar, 2003).

Learning from these isolated experiences

coupled with international experience especially from Philippines the Gal Oya Irrigation Rehabilitation Project funded by USAID undertook a participatory approach for rehabilitation of irrigation infrastructure. This necessitated the state to form Farmer Organizations (FO) as a prerequisite for implementation of infrastructure rehabilitation program (Samarasinghe, 2003).

Incorporation of this activity in Gal Oya project helped to develop the local talent in the field of Institutional Development. Irrigation Management Division (IMD) was formed in 1984 under the Ministry in charge of the subject of Irrigation to formally adopt the participatory procedure for irrigation management in a selected number of major irrigation projects. On successful launching of the program over the years the government commenced a program to hand over tertiary irrigation systems (Distributory and Field Canals) in Major Irrigation Systems to FOs in late 1980s under the USAID funded Irrigation Systems Management Project (ISMP) implemented by IMD. The same program was also extended to major irrigation projects outside the ISMP during the same period. This program received legal recognition since then and the Irrigation Ordinance was also amended to strengthen this process in 1994. Although such changes have taken place in the institutional structure of farming community the state remains to be the dominant actor in allocation of financial, land and water resources. Such allocation mechanisms thus remain to be administratively driven by the center but based on local conditions (Samarasinghe, 2003).

In 1997 the National Development Council (NDC) chaired by the Her Excellency the President of Sri Lanka proposed a program for handing over of management of irrigation systems to communities. Under this program it was proposed to provide financial assistance to the Farmer Based Organizations and transfer state owned assets in addition to providing water rights and free hold titles to beneficiaries. This program was pilot tested in Chandrikawewa and Ridi Bendi Ela Schemes under Mahaweli and Non-Mahaweli areas respectively. The positive results include the following.

- Administration of water resources, providing farming inputs and product purchases

through formal arrangements with private sector and beneficiary participation.

- Stepping into other crops in high potential areas where no cultivation was undertaken due to shortage of water thus increasing the cropping intensity, and livestock production to increase farming incomes.
- Water allocation using a transparent mechanism that helped to save much water to increase cropping intensity and crop productivity.
- Direct allocation of financial resources available for O&M from the state that prevented reallocation at different stages owing to political or administrative considerations and ensure proper utilization.
- Building confidence of farmers especially due to shortening of the administrative distance between Farmers and Water Managers and providers of Inputs and Advisory Services (Samarasinghe, 2003).

However, the project failed to provide title deeds for lands, water rights and transfer state assets as envisaged owing to the complicity of issues and lack of clarity in policy (Samarasinghe, 2003).

There were corresponding changes to the legislation also. In 1991, the Agrarian Services Act was amended to allow the Commissioner of Agrarian Services to grant legal recognition to farmer organizations, particularly distributary channel organizations. Second in May 1994, the Irrigation Ordinance was amended to grant powers and responsibilities to legally recognized farmer organizations within major irrigation schemes. Also, the amendment provided for exempting farmer organizations from payment of irrigation fees.

With the adoption of participatory management in irrigated agriculture, the investment pattern in water resources management changed. Imbulana and Neupane (2005) identify the change of emphasis from early 1980s to management of both water and human resources as a stage of development. The primary mode of intervention adopted for water management in 1980s was the rehabilitation of irrigation infrastructure, and this was accompanied by software interventions such as irrigation scheduling, crop diversification, on-farm water use improvement etc. In

parallel, there was a substantial investment in the formation of farmer institutions. A formal structure of a farmer institution comprising different levels of hierarchy, and facilitating grass-root level representation to come up to the higher levels, was introduced under the INMAS programme in 1984.

The impact of these interventions (except those which are too early to be assessed) is mixed. On the positive side, the relationship between the officers and farmers has improved. There is a comparatively active participation by the farmers in water related decision-making processes. It has resulted into a better understanding of the operation and maintenance activities and transparency of the funds utilization has improved; although further improvements are possible (Imbulana and Neupane, 2005).

Impact of participatory management on water use for agriculture

Some irrigation systems have achieved better cropping intensities higher water use efficiencies through better water management. The examples include Kirindi Oya Scheme, Rajangane scheme and Kaltota Scheme. Volumetric water allocations are practiced in Mahaweli irrigation systems as well as schemes such as Giritale. Post-project evaluations of some irrigation rehabilitation projects, such as NWP Water Resources Development Project reveal that rehabilitation has helped to improve the equity of water distribution. Equitable water distribution, higher cropping intensities and better yields contribute to the poverty alleviation in such schemes (Imbulana & Neupane, 2005).

Problems and Factors Influencing Failure of Participatory Management

Since the implementation of modern participatory management, there had been considerable opposition to it. Opposition appeared to be directed at the transfer of power and increased cost for farmers. Turnover of irrigation management responsibilities to farmers means that powers also must be turned over. This turnover of powers can have an immediate effect; for example some staff members could be put out of work unless reemployed by the farmer organizations (Brewer, 1994). Low income from agriculture,

possibility of the loss of subsidies, and poor physical condition of the irrigation infrastructure are some of the other problems preventing effective participation.

Policy Issues related to participatory management in irrigated agriculture

The Government of Sri Lanka invested large amount of resources at various steps to develop necessary institutions and the appropriate environment for participatory management. The major objectives of the policy were increasing productivity through efficient management of irrigation water and decreasing government cost. A case study was conducted in selected irrigation schemes to Rajangana and Mee-oya major irrigation schemes and observations were made at Tabbowa, Kaudulla, Muruthawela and Dewahuwa irrigation schemes during 1995/96 (Aheeyar, 2003).

The basic findings of the study were as follows:

a. Allocation of resources for O&M by the government has been based on the decision made by a centralized financial agency, (treasury) considering the budgetary constraints, rather than actual requirements. The policy documents expect farmer participation in irrigation management to contribute 50-60% to government cost. However, it was seen that only the allocation of funds for O&M has decreased over 50% of its requirement.

b. Creation of dependency: Turnover agreement urges the necessity of self-financing O&M below DC level by FOs. However, current policies have tended to create a situation in which FOs are dependant on government financial support and catalytic actions

c. The existing investment pattern implicates that investment of FO money on improvement of infrastructure or routine maintenance work is not a major concern of any of the sample FOs.

Resources Mobilization for O&M

Methods of mobilization: There are four major methods of resource mobilization by farmers in the study schemes, in order to carry out the entrusted O&M tasks. They are namely, mobilization of labour for group works, mobilization of labour for individually allocated tasks, mobilization of time, and mobilization of cash and

materials. Mobilizations of all these items are essential for the sustainable maintenance of infrastructure (Aheeyar, 2003)

Willingness to pay: Bridging the gap in existing deficiency in resource mobilization is vital to maintain the sustainability and to prevent pre-mature deterioration of the infrastructure. During a study, an attempt was made to inquire from sample farmers how much paddy they are willing to provide to their respective FOs after each harvest in order to maintain the turned over infrastructure in a good condition. The finding indicates that farmers contribution can be higher than the current deficiency of state funds for O&M, but it is not sufficient if the government stops or drastically reduced its O&M votes for the maintenance of secondary and tertiary canal systems (Aheeyar, 2003).

The accountability of an organization to the entire membership is one of the most crucial principles for long-term viability; otherwise one cannot expect farmers to participate by providing their resources. Investigations conducted in various major irrigation schemes, such as Tabbowa, Dewahuwa, Muruthawela during the period of 1995/96 revealed that several FOs had collapsed at many instances because of abuse of funds by the leadership. The studies indicate that a substantial number of farmers are not aware about the FO financial status and procedures and not a single ordinary member was fully aware about the FO financial handlings (Aheeyar, 2003).

Participatory approaches to environmental management

The Shared Control of Natural Resources in Watersheds (SCOR) project, which was implemented from 1993 to 1999 was a community-based participatory watershed management project aimed at developing, testing and disseminating a holistic approach to integrate environmental and conservation concerns with production goals. It was funded by the United States Agency for International Development and was implemented by the International Irrigation Management Institute in collaboration with the Government of Sri Lanka.

SCOR hypothesized that the natural resources base, particularly land and water, can be conserved and their productivity could be sus-

tained if environmental and conservation concerns are incorporated into the production process. The design was built on the progress already made in Sri Lanka and elsewhere in participatory irrigation management and social forestry. The appropriateness of the approach was tested and demonstrated in two pilot watersheds in Sri Lanka (namely Huruluwewa in the North Central Province and Nilwala in the Southern Province) chosen for their different social, agricultural and environmental characteristics.

The significant policy changes that were influenced by SCOR includes:

- grant of usufructuary rights for using state reservations (such as irrigation reservations) on pilot basis in Huruluwewa and Nilwala;
- The formation of farmer companies as a function of the Department of Agrarian Services;
- decision to establish an agricultural settlement incorporating "encroachers" in upper watersheds;
- Contributing to legal recognition of watershed-based farmer organizations by the government;
- extending the mandate of the Irrigation Management Division to manage watersheds (Wijeratne, undated)

However, the SCOR project is not considered a total success. Several community based organizations such as farmer companies did not sustain. Over-ambitious agenda, difficulties to reach individual farmers and short time frame of the Project are cited as constraints (ARD inc, undated).

Environmental management in irrigation projects

The expansion of irrigation sometimes results in environmental degradation. The introduction of environmental policy and regulations resulted in several procedures to be followed before implementing irrigation projects. For example, the construction of Weli Oya Project in the Walawe river basin resulted in clearing some forests. In compensation for the loss of forest, the Irrigation Department undertook planting new forests with the active participation of beneficiaries of the project.

Conclusions

Community participation in the management of irrigation systems had been practiced in Sri Lanka from the ancient times. Until the European rule was established, there was a traditional system of managing irrigation infrastructure. However, changes to the administration system resulted in a breakdown of management. In the 1980s, modern participatory management practices were introduced.

Such methods of participatory management in irrigation are actively being practiced in Sri Lanka now. The results of participatory management are mixed. On the positive side, it has created transparency in the utilization of funds allocated for irrigated agriculture and brought the officers and beneficiary farmers close to each other. Irrigation efficiency has improved in some locations. However, state funds are still required for the maintenance of irrigation systems and sustainability of the farmer institutions without state support is questionable. It can also be seen that the adoption of formal policies in the field of participatory management is incomplete.

Similar issues exist for participatory management of environmental systems. It can be seen that economic benefits to the community can be an incentive for them to participate in the management of ecosystems. The experiments show that the state still has a role to play in the management of major irrigation systems and ecosystems.

References

- Aheeyar, M.M.M. 2003. Community participation in irrigation management: some issues for consideration. In Proceedings of the National Workshop on Water for Agriculture and Rural Development in Sri Lanka. Ministry of Irrigation and Water Management, FAO and IIID
- ARD Inc., undated. Final evaluation of the Shared Control of Natural Resources Sub-Project, Sri Lanka. ARD Inc., Burlington VT.
- Brewer, J.D., 1994. The participatory irrigation system management policy in Sri Lanka. Economic Review-September 1994. pp4-9
- Brohier, R.L. 1934. Ancient irrigation works in Ceylon. Ceylon Government Press,

Colombo. (re-published by Ministry of Mahaweli Development ,1979).

Mendis, D.L.O. (2001), Evolution and development of water and soil conservation ecosystems- from ancient dry zone forest garden to modern Jaffna market garden, Sri Lanka Pugwash Group Publication, Sri Lanka.

Samarasinghe, S.A.P. 2003. Community participation in irrigation management. In Proceedings of the National Workshop on Water for Agriculture and Rural Development in Sri Lanka. Ministry of Irrigation and Water Management, FAO and JIID

Seneviratne, A. 2002. The Springs of Sinhala Civilization. Godage International Publishers, Sri Lanka

Wijeratne, C.M. undated, (website)

Imbulana, U.S. and Neupane, B. 2005. Water,

rural poverty and development options for Sri Lanka. In proceedings of the XII World Water Congress, Water for Sustainable Development - Towards innovative solutions, CBIP, India.

SRI-LANKA: DISCUSSION

Question: Could you please elaborate on the “Bethma” system? Is it still being practiced?

Answer: Yes, this system is still practiced in the years with limited water available in the tank for cultivation. In this unique system only the section of paddy fields (command area) close to the tank is being cultivated by all the farmers in order to conserve water. Sharing the selected area proportionately to extend the paddy land area owned by them.