

CHAPTER 14

EVOLUTION OF WATERSHED MANAGEMENT: THE SRI LANKAN EXPERIENCE

Elgoda Ranawakage Nimal Gunawardena

Department of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya, Sri Lanka

INTRODUCTION

There is evidence that sound watershed management practices existed in Sri Lanka before the colonial period, which began in the early 1800s. The central hills, from where all Sri Lanka's major rivers originate, were under natural forest cover while the valleys were under agricultural production watered by an intricate system of irrigation reservoirs and canals. The degradation of watershed resources began with the large-scale clearing of the central highlands for plantation crops in the latter part of the nineteenth century. Removal of forest cover and the associated soil erosion were the main problems identified by scientists as far back as 1873 (Government of Ceylon, 1931).

In 1927, the director of agriculture's annual report drew attention to the need to check soil erosion. A few years later, a committee on soil erosion documented the damage caused by plantation crops. The government began to address the problem by introducing the Land Development Ordinance in 1935, which aimed to prevent soil erosion and protect stream sources. A Soil Conservation Act was introduced in 1951.

Until the late 1970s, the government was primarily concerned with controlling soil erosion and relied heavily on regulatory measures to achieve this, along with some limited soil erosion control activities. Around this time it realized that this approach was failing to control soil erosion. The pressure of escalating and competing demands on the land, and the resultant degradation made it imperative to shift the focus from controlling soil erosion to the larger issue of environmental protection and management. This led to the development of more comprehensive, watershed-based action programmes.

WATERSHED MANAGEMENT PROJECTS

The late 1970s saw the first holistic, broad-based watershed management projects in Sri Lanka. The first projects were mainly sectoral based, and were owned and implemented by State institutions. Since then there has been a change over to more participatory, people-driven and implemented projects (Table 1). Another important focus of many projects has been to build up the capacity of institutions involved in watershed management.

State-owned projects

Sri Lanka's first watershed management project – the Watershed Management Project – was established in the Upper Mahaweli Watershed in the central hills of Sri Lanka in 1976. It was set up in response to the problems caused by the gradual expansion of non-plantation agriculture and the implementation of the Mahaweli Development Programme. This programme carried out multipurpose development of the country's largest river, the Mahaweli Ganga, to provide electricity from hydropower and to open up and develop irrigated land in Sri Lanka's dry zone. The Land and Water Use Division of the government's Department of Agriculture implemented this project with assistance from FAO. The main objective was to study the impacts of differing land uses on soil erosion and rainwater runoff. Since then, many watershed management projects have been undertaken in different parts of the country (Table 14.1). The United States Agency for International Development (USAID)-supported Reforestation and Watershed Management Project ran from 1980 to 1988.

The first watershed management projects were directly implemented with the State's institutions carrying out almost all planning, implementation and monitoring functions. An important part of these initial projects was developing institutional capacity by supporting the post-graduate training of high-level officials. The establishment of experimental watersheds in the Watershed Management Project provided crucial baseline information. The only involvement of local people was as labourers to carry out project works.

These interventions were unclear about who the beneficiaries were. The implementing agencies focused on achieving the project's physical targets and there was hardly any benefit monitoring or evaluation.

Integrated project

The German Agency for Technical Cooperation's (GTZ's) Upper Mahaweli Watershed Management Project took a number of new initiatives (GTZ, 1998). The setting up of user communities to run project activities was one of the project's main features. Activities included establishing sloping agricultural land technology (SALT) and promoting income generation by integrating crop and livestock farming. The project's benefits went directly to farmers. This project also tried to win the support of line agencies to coordinate its activities. The Government of the United Kingdom-funded Forestry/Land Use Mapping Project supported the GTZ project by providing with information.

The limited involvement of communities in project planning and execution and the limited spread of benefits were the major drawbacks of State-owned and integrated projects. It was realized that the State alone could not manage and protect land, water and forest resources. Subsequent projects were designed to be more people-friendly.

Projects to empower farmers

The projects launched in the early 1990s were based on working in partnership with farmers. The participation of local land users was built into watershed management projects. The need to take a more participatory approach to planning, executing and monitoring projects was

TABLE 1

Selected watershed management projects in Sri Lanka 1975 to 2003

	Project and donor	Implementer	Duration	Project activities/components/outputs
State-owned projects	Watershed Management Project (FAO/UNDP)	Department of Agriculture	1975–1981	Two experimental watersheds set up and monitored to find effect of land use on runoff and soil erosion. Staff training for M.Sc. in UK
	Reforestation and Watershed Management Project (USAID)	Forest Department	1980–1988	Established 10 000 ha of pine plantation in upper watershed areas Set up 4 micro-watersheds to find effect of pines on runoff and soil erosion Staff training for M.Sc. in USA
Participatory and institution building projects	Upper Mahaweli Watershed Project (GTZ)	Mahaweli Authority of Sri Lanka	1987–1996	Promoted sloping agricultural land technology (SALT) Promoted crop–livestock integration for income generation Farmer training Coordination with 25 other agencies
	Forestry/Land Use Mapping Project (ODA)	Mahaweli Authority of Sri Lanka	1989–1998	Developed capabilities (GIS, databases, etc.) to provide information for planning and managing watersheds Monitored sedimentation of 4 large reservoirs in upper watersheds
Integrated watershed management projects	Participatory Forestry Project (AsDB)	Forest Department	1993–2002	Empowered users State provided policy, legislation, credit and extension support Land given to farmers on long-term leases Annual and tree benefits directly to farmers
	Shared Control of Resources (SCOR) Project (USAID)	IWMI	1993–1998	Increased user control over natural resources through State–user partnerships Created farmer companies
	Swedish Co-operative Centre's Project (SCC)	Department of Co-operatives (National Cooperative Council)	1995–1997	Provided services such as soil testing, input supply and marketing to farmer groups Trained farmers Independent NGO was formed after project period to continue activities
	Environmental Action 1 Project, Pilot Land Management Project (World Bank)	Ministry of Environment	1997–2000	Micro-watersheds selected to pilot test appropriate techniques and treatments for rehabilitating degraded land through community participation Implementing agencies worked with villagers to prepare and implement micro-catchment plans
	Upper Watershed Management Project (AsDB)	Ministry of Environment	1998 on going	On- and off-farm soil conservation Forest gardens and buffer zone planting Relocating farmers from environmentally sensitive areas Giving landowners titles to their land Drafted National Policy on Watershed Management

recognized. Another important aspect was to promote the spread of benefits over a large number of people to help alleviate rural poverty.

The Asian Development Bank (AsDB)-funded Participatory Forestry Project promoted the participation of local communities in forestry development. Its objectives were to:

reduce poverty and rehabilitate environmentally degraded areas by promoting tree planting by rural communities; and
strengthen the institutional capacity of the forest department to expand its programmes for planting non-forest trees; carrying out non-farm research, extension and education; and developing the capacity of rural people to run village tree nurseries.

This project began in 1993 and took an innovative approach. It promoted participatory reforestation by setting up a cadre of volunteer motivators to motivate farmers to plant trees. It gave incentives for reforestation on private holdings and State lands and trained local people in seedling production so that they could grow trees for private sale once the project finished. The success of this project was shown by its target increasing from an initial 15 000 ha of trees planted in 1993 up to 46 000 ha in 1998, with an actual achievement at the end of 2002 of 52 782 ha (Sathurusinghe, 2003). However, it would be difficult to replicate the successes of this project in the non-forestry sector because of the greater complexity of the issues and the larger number of institutions involved.

Institution building projects

The Shared Control of Resources (SCOR) project was implemented by the International Water Management Institute (IWMI) from 1993 to 1998. It aimed to improve the productivity of land and water resources by piloting institutional mechanisms for sharing the management of watershed resources. These mechanisms included setting up resource user groups at the grassroots level. These were grouped together to form resource organizations, which were in turn grouped to form resource user councils. Farmer companies were set up to work as independent businesses. The farmer companies that emerged have continued and have mostly been successful. However, the project's mid-level institutions – its resource user groups, resource user organizations and resource user councils – have “failed” (Jinapala, Merry and Somaratna, 2000). An important lesson from this has been that the long-term sustainability and impact of new technologies and new production and conservation practices rely largely on having effective institutional arrangements.

The Swedish Cooperative Centre's project was implemented in four watersheds in two districts from 1995 to 1997. It also attempted to develop local institutional mechanisms by organizing farming communities to cooperate and take collective action (Gibbon *et al.*, 1998). A key part of the project was its intensive training programmes. An independent NGO was formed to continue the project's activities after it finished.

However, the Participatory Forestry Project's farmer companies and the Swedish project's NGOs have found it difficult to keep up their work. This has been one of the main failures in watershed management projects.

UPPER WATERSHED MANAGEMENT PROJECT

The evolution of the approach taken by watershed management projects from earlier projects to the present day is shown in Table 2. The Upper Watershed Management Project (UWMP) is being implemented by the Ministry of Environment and Forestry with the assistance of AsDB. It is taking most of the current approaches to watershed management. It began in 1999 to address forest and land degradation problems in four critical watersheds by promoting the conservation, upgrading and use of natural resources; improving farmers' economic and social conditions; and strengthening institutions.

TABLE 2
Past and present approaches of watershed management projects

Previous approach	Present approach
Unisectoral with no need for coordination	Multisectoral with much coordination
State-owned	State- and user-owned
Implemented by paid State employees	Implemented by users, NGOs and the State
Capacity building of State employees	Capacity building of beneficiaries and State employees
Beneficiaries are not clear	Beneficiaries are known
No involvement of users	Involvement of users at planning, implementation and monitoring stages
Gender concerns not included	Gender concerns included
Cost recovery is not a concern	Emphasis on income generation and cost recovery
Hierarchical governance	Distributed and market-led governance

The project's design takes into account the lessons learned from previous projects. It is promoting participatory processes for integrated watershed management (Sharma *et al.*, 1997). The project is strengthening the institutions involved in watershed management by improving knowledge and skills, introducing improved techniques for sustainable resource use, introducing novel tenure arrangements and improving coordination and linkages. The aim is to have sound institutional arrangements and technically strengthened institutions.

The training of farmers in conservation, production and entrepreneurial skills was supposed to be a major UWMP activity. It was intended to be packaged in ways that would help to develop local institutions. However, four years after the project began, this training component has yet to get going. It is hoped that the new national watershed management policy will enable the setting up of an appropriate institutional mechanism for watershed management in Sri Lanka.

NATIONAL WATERSHED MANAGEMENT POLICY

UWMP produced a penultimate draft of the National Watershed Management Policy in 2003. The project is seeking comments on it, although it is likely to be accepted without any major changes, as its drafting involved extensive consultations. Its major objectives are to:

- conserve, protect, rehabilitate, use sustainably and manage watersheds, while maintaining their environmental characteristics, with people's involvement;
- justify the continued provision of funds in the national budget for sustainable watershed management by evaluating the services provided by watersheds, and
- coordinate and monitor all activities in watershed areas, and secure a system of integrated watershed management.

To achieve these, policies have been formulated for: a) conservation and protection; b) watershed management; c) watershed management investment; and d) coordination and integrated management. The policies on coordination and integrated management include:

- coordinating the activities of all agencies at the rural, divisional, district, provincial and national levels through watershed management committees that include representatives of rural committees and officers of the government institutions;
- establishing watershed management units under chief provincial secretaries;
- eliminating policy gaps in managing natural resources in relation to watershed management in order to bring all related sectors closer to each other; and
- giving watershed management its due place in the national educational curricula.

Of these four, it will be the first coordination policy one that will provide the most challenges to take forwards.

CONCLUSIONS

Over the past three decades, watershed management projects in Sri Lanka have evolved to become much more people-friendly. One of their main failures has been their inability to set up a sound institutional mechanism to sustain project activities after a project ends. The success of watershed management crucially depends on having an effective hierarchical institutional set-up from the rural to the national level. The performance of the proposed watershed management committees remains to be seen, as this policy is against the government's overall policy of reducing government by not setting up new public institutions.

It seems it would be best to form the proposed watershed management units by restructuring existing institutions. The lack of institutional collaboration in the past has been a major weakness. The proposed integration of rural-level organizations is a great challenge for the next generation of watershed management projects in Sri Lanka.

REFERENCES

- FPU. 1994. *Status and strategies of watershed management. A supportive study for the formulation of the Watershed Development Programme*. Colombo, Forestry Planning Unit, Ministry of Agriculture, Lands and Forestry.
- Gibbon, D., Kodituwakku, A.A., Lecamwasam, A. & Girahagama, S.C. 1998. *Evaluation of the Swedish Cooperative Centre's Environment Project in Sri Lanka*. Uppasala, Sweden, Department of Rural Development Studies, Swedish University of Agricultural Sciences.
- Government of Ceylon. 1931. *Report of the Committee on Soil Erosion*. Sessional Paper No.3. Colombo, Ceylon Government Press.

- GTZ.** 1998. *Upper Mahaweli Watershed Management Project: Second progress review*. Kandy, Sri Lanka, Mahaweli Authority of Sri Lanka/GTZ
- Jinapala, K., Merry, D.J. & Somaratna, P.G.** 2000. Institutions for shared management of land and water on watersheds. In M. Samad, N.T.S. Wijesekera and S. Birch, eds. *Proceedings of the National Water Conference on Status and Future Direction of Water Research in Sri Lanka*, pp. 67–88. BMICH, Colombo, 4–6 November 1998. Colombo, IWMI.
- Sathurusinghe, A.** 2003. *An experience of a forestry project evaluation by Forest Department*. Paper presented at the Sri Lanka Evaluation Association, National Evaluation Conference: Evaluation Towards Effective Development, 9–10 January 2003. Colombo.
- Sharma, P.N., Mishra, B., Gurung, J., Dent, F.J., Achet, S.H., Escano, J., Gamage H. & Gunawardena, E.R.N.** 1997. Participatory processes for integrated watershed management. In P.N. Sharma, ed. *Participatory processes for integrated watershed management*, pp. 20–27. PWMTA-FARM Field Document No. 7. Netherlands Government/UNDP/FAO