

CHAPTER 3

SUCSESSES AND FAILURES IN WATERSHED MANAGEMENT IN THE ASIA-PACIFIC REGION (1982 TO 2002)

Kumar Upadhyay

Food and Agriculture Organization of the United Nations (FAO)

BACKGROUND

Before 1980, watershed management was practised in only a few countries in the Asia-Pacific region. Pakistan, India, China, and the Philippines have had substantial watershed management projects since the late 1950s. Nepal, Indonesia, Thailand and Malaysia began watershed management during the mid-1960s with small-scale pilot demonstrations.

Increased awareness of the importance of watershed management was triggered by Erick Eckholm's 1976 book, *Losing ground*. It reported the dangers of the massive degradation of the upland areas of the Himalayas. Eckholm's doomsday scenario drew the attention of the world to the problems of watersheds in the Himalayas and elsewhere. The subsequent call to launch a global initiative against the degradation of upland areas received large support.

During the 1980s, a series of global, regional and national meetings were held where planners and researchers worked out strategies for managing watersheds. Governments began to manage watersheds through donor-supported programmes with demonstration, training, education and research components. At that time watershed management received unprecedented attention from the international development agencies, bilateral donors and national governments, and became one of the leading development paradigms.

The 1990s saw an expansion in watershed management initiatives across the Asia-Pacific region. These programmes became popular in national and international investment portfolios, as they often performed better than the integrated rural development projects that aimed to deliver everything from new roads to improved health care, and than the forestry projects that focused on increasing forest productivity.

Many integrated rural development projects failed to deliver lasting benefits. They lacked focus, were too complex to manage, often failed to benefit the poor and had management costs that were too high. Funds were illegitimately diverted for urban development, and lack of management controls led to political conflicts between local and national governments. As a result, donors began to limit support to them. On the other hand, watershed management projects gained credibility because they are more pro-poor, environmentally friendly, simpler to manage and rural-focused. They give more attention to the basic needs of rural communities, such as livestock, forestry, small infrastructure and microfinance.

Conventional forestry projects were widely criticized for their environmental impact and for ignoring local people's needs. Donors' priorities shifted from production forestry to environmental forestry, including watershed management. However, nowadays watershed management is also being criticized. This paper analyses its successes and failures, and identifies the weaknesses that need addressing in future projects in order to attract more donor and government support.

SUCCESSES AND FAILURES

A problem in evaluating the successes and failures of watershed management is the lack of baseline data. The paper by Tennyson in this volume documents the performance of watershed management programmes in the Asia-Pacific, using the baseline established in the report *Watershed management in Asia and the Pacific: Needs and opportunities for action* (FAO, 1986). The present paper complements Tennyson's paper by looking at the status of a few country-level projects. The analysis is based on project reports and the author's decade-long field observations in terms of the following fourteen issues – ranging from size of planning unit to sustainable funding – to reflect on successes and failures.

Planning unit: large versus small watersheds

Watershed management initiatives implemented in smaller areas have usually worked better than those spread over larger areas. Similarly, projects involving fewer administrative units and functionaries have been easier to manage. The many types of inputs needed in watershed management make it easier to manage and coordinate projects in small watersheds that are governed by a single or few local government units, such as commune people's committees in Viet Nam, groups of gewogs in Bhutan and village tracts in Myanmar.

Integrated rural development projects and large watershed management projects have found it difficult to achieve success because of the complexity of coordinating the many local governance bodies and their diverse interests. In such projects, managers have to spend too much time bringing together the many project stakeholders. This was the case in Nepal's Resource Conservation and Utilization Project. This 1980s United States Agency for International Development (USAID)-funded project covered a very large area. The project concept looked good on paper, but managers had to invest too much time bringing together the numerous project stakeholders.

Project focus: forest versus multiple-resources productivity

Watershed management is the process of guiding and organizing the use of the land and allied resources in a watershed to provide desired goods and services without harming soil and water resources. It recognizes the crucial importance of the interrelationships among land use, soil and water and between upland and downstream areas. Watershed projects implemented in the Asia-Pacific region have either focused on:

- the sustainable management of forests to improve forest productivity; or
- meeting communities' needs by working on forest management and protection, agricultural development (cropping and livestock) and small-scale hill irrigation, and by providing credit to farmers to buy agricultural inputs.

The first generation of watershed projects in the Asia-Pacific region focused on forest productivity. Because most watershed areas in the region are highly populated, many of these projects failed to win local support and achieved only limited success. The second-generation of projects were thus designed to improve the productivity of all types of watershed resources. These have received much more support from local communities and have been more successful.

Choice of project components: limited versus extensive

The region's watershed projects have included a diverse combination of components. Earlier projects concentrated on improving forest productivity to achieve watershed management goals. They worked well where population densities were low, for example in the Kinda Dam Watershed Project (Phase 1), implemented during the 1980s in Myanmar. They were relatively straightforward to implement because only one agency – the forest department – was responsible for their implementation. These kinds of projects, however, failed in more densely populated mountainous areas. The Tarbela and Mangla Dam Watershed Project in the North West Frontier Province of Pakistan had only limited success because it focused only on planting trees on degraded slopes. It did not consider other activities related to meeting the basic needs of local people.

In highly populated watersheds such as Phewa Tal and Kulekhani watersheds in central Nepal, people-centred integrated watershed management has been much more successful. These projects have focused on resource management and have components to promote field crops, home gardens, animal husbandry and veterinary care, irrigation renovation, water management, forest management, and savings and credit. The third type of projects, such as Nepal's Resource Conservation and Utilization Project (RCUP), included a wider range of activities such as formal research and education, water supply, environmental education in schools, and sometimes health and nutrition education. These have been more similar to integrated rural development projects and have often been unsuccessful because of a failure to coordinate the many project components and stakeholders.

Approaches to watershed management: flexibility versus prototype replication

FAO has classified the Asia-Pacific region's watersheds into seven types according to their biophysical setting and socio-economic situation (FAO, 1986). The same report documents the causes of watershed degradation. It says that they are largely situation-specific; meaning that there cannot be a single approach to watershed management. Several watershed management projects have failed because they have tried to transfer a successful approach in one country to another country where conditions are different. For example, the Government of Bhutan was looking for alternatives to shifting cultivation to protect its watersheds. Farmers were encouraged to stop shifting cultivation and practise sedentary agriculture. In the early 1980s, a number of farmers were encouraged to make this move by being given new land in low-lying

areas. But most could not adjust to the new setting, and moved back to their previous villages and practices. A study suggested that it would have been better to have altered the shifting cultivation practices to minimize their harmful effects on the environment (FAO, 1995).

The experience of forestry-focused projects has shown that just planting trees often does not rehabilitate degraded watersheds. Projects have been most successful where they have introduced management practices that encourage sound land use (Brooks *et al.*, 1992). Projects that have created alternative income opportunities for resident populations have been able to improve the hydrology of watersheds by reducing local people's dependence on forest products and by encouraging the natural regeneration of forests on bare hillsides. In densely populated watersheds, projects focusing on improving food security, alongside soil conservation measures, have worked better than single-pronged forestry-focused projects. Three generations of United Nations Development Programme (UNDP)-funded participatory watershed management projects designed to protect critical watersheds, including the famous Inle Lake watershed in Myanmar, and two generations of similar projects in Hoanh Bo District Quang Ninh Province in Viet Nam have been successful as they have taken this approach. Farmers are more concerned about food security than environmental conservation, and it is therefore crucial that watershed management tends to this need.

Centrally planned versus participatory projects

Many types of participatory watershed management and project implementation were tried during the 1990s. These projects have worked better than the 1980s top-down, centrally planned ones. However, the benefits brought by projects that relied overly on external expertise have often disappeared once project support has ended. RCUP's field component relied heavily on external technical inputs and collapsed after these were withdrawn, whereas the capacity building component, including in-service training and support to formal training in natural resource management, created a sustainable impact with a large pool of watershed management experts. Projects that have focused on building local capacity to institutionalize participatory methods and approaches have performed much better. The Watershed Management in Three Critical Areas Project in Myanmar and the Participatory Watershed Management Project in Hoang Bo District in Viet Nam created significant impacts in a short time as they were designed and implemented in close cooperation with project beneficiaries, using participatory management tools.

Project design: process versus product

Some projects have failed because they were poorly designed. Projects designed in a hurry with heavy external technical assistance inputs have often not given enough attention to studying stakeholders' needs and the particular characteristics of a watershed. Local land users' needs cannot be fully understood in a short time. Such projects have encountered serious difficulties. A major USAID-supported project in Nepal, which ran from the late 1970s to the early 1980s, was designed by a team of international and national experts without involving local beneficiaries. This project was not well received by beneficiaries.

Some projects have had contradictory objectives. For example, a project's first objective may be to promote the improved and faster delivery of goods and services to local people. However, the second and third objectives may call for building up the capacity of community-based extension networks and institutionalizing participatory processes. The problem is that the first objective cannot be met without laying the foundations of the second and third objectives. In this regard, the objectives of Participatory Watershed Management in Hoanh Bo District, Quang Ninh Province, Viet Nam were revised halfway through the project to give it a more realistic goal (FAO, 2002).

Project duration: short versus long duration

Most watershed management support in the Asia-Pacific region has taken the shape of three to four year-long donor-funded projects. Most of these projects have focused on involving people in planning and implementation, something that cannot be achieved in a limited period. As a result, many projects have had a limited success owing to the clash between the limited time and the need to involve local people fully. Real people's participation takes time and involves painstaking building of capacity at the grassroots level and consolidation of field activities to ensure real sustainability.

Project organization: umbrella agencies versus interagency

Most recent watershed projects have taken an integrated approach by working on developing cropping and livestock husbandry, forestry, water management and microcredit. These projects have been implemented either under one umbrella agency or through a number of agencies working together. The implementation of Participatory Watershed Management in Hoanh Bo District, Quang Ninh Province, Viet Nam was easy, and impacts were immediate because it was organized at the district level under a single command. The management of RCUP, Nepal was located at the central level with more than seven government agencies responsible for implementing the project in three districts. Field-level coordination was a big problem, and it took a long time to produce results.

In the former case, staff from different disciplines work under a single project management. In the latter case, different agencies are assigned responsibilities in their subject areas with a steering committee coordinating implementation. These two models have advantages and disadvantages. The first one has been successful where project goods and services have to be delivered in a short time to have a rapid impact on local people's livelihoods. However, these benefits are often not sustained. The second model is more appropriate where a project aims to build local capacity and institutionalize watershed management principles. The drawback of this approach is that local people often have to wait a long time to see improvements in the meeting of their basic needs.

Project location: national versus decentralized

Watershed projects work with different levels of partners. Delivery-oriented projects tend to work well where NGOs carry them out. Projects focused on institutional and organizational

reforms, resource inventories, strategic planning and human resources development work best when implemented in partnership with national-level institutions. Myanmar's Three Critical Watersheds project produced significant impacts as it was a direct-delivery project grafted on to the local institutional set-up. However, its sustainability after the project was questionable as it excluded the government's regular extension network. Bhutan's Integrated Forest Management project was grafted on to the forest department and focused on building up the capacity of government staff and local communities. As a result, the government continued to plan and implement integrated resource management projects after UNDP-FAO project inputs were withdrawn.

The delivery of technical assistance has worked best in these kinds of projects. Projects with combined objectives have been most cost-effective when they have worked in partnership with intermediate regional government agencies. A main reason for this is that technical assistance and other management costs are greatly reduced if larger projects work at provincial levels for capacity building and monitoring and evaluation, and at the district level for delivering goods and services.

Conflicts: national policies versus project priorities

Watershed management is a new concept in many Asia-Pacific countries. Only in India, China and Thailand are there adequate legal and institutional infrastructures and trained personnel. Watershed management projects demand horizontal coordination for interdisciplinary action, vertical linkages for technology transfer, and the decentralization of authority for fast decision-making. However, many Asia-Pacific countries are characterized by centralized decision-making and a failure to connect policies and procedures horizontally among different government agencies and vertically within the same agency. Lower-level officials and technicians are often not sufficiently motivated to take timely decisions. This means that project implementation often suffers from conflicts between national policies, programmes and procedures and local needs.

Technical capabilities: biophysical diagnostic expertise versus participatory skills

Watershed management is a multidisciplinary subject. Projects have worked best in countries with good technical biophysical diagnostic and socio-economic expertise. India, China, Indonesia, Pakistan, Thailand, Malaysia, Sri Lanka and Nepal have many trained personnel. Their performance in implementing watershed management projects has been better than that of countries such as Afghanistan, Myanmar, Viet Nam, the Lao People's Democratic Republic, Cambodia, Bangladesh and Bhutan, which lack trained personnel. In countries that depend on donor funding, existing capabilities to carry out biophysical analysis are deteriorating as donors shy away from funding projects that need heavy investments in equipment, supplies and technical assistance. As a result, poorer countries have to rely more on participatory problem analysis. However, issues such as causes and effects of watershed degradation, upstream-downstream linkages and interrelationships between types of vegetation and watershed hydrology cannot be fully understood from participatory information gathering alone.

Conflicts: regular institutions versus projects

Most watershed management in the Asia-Pacific region has taken a project approach. Projects tend to establish parallel organizations for the faster delivery of goods and services, extension, training of farmers and other activities. One big problem is that project extension teams encroach on the jurisdiction of government institutions. This often leads to conflicts, and hinders project delivery.

Research

Many watershed management projects have suffered owing to the lack of research infrastructure. Watersheds are systems that house a complex web of interactions between human and biophysical factors. Many preventive and curative watershed rehabilitation measures have not been based on the findings of systematic research. For example, experience has shown that planting trees is not always good for watersheds. One study in Fiji showed that water flows were reduced by up to 60 percent in grassland areas six years after they had been planted with pine trees (Brooks *et al.*, 1992). In developed countries such as the United States, best practice guidelines have been introduced for managing watersheds. However, implementing these needs a good understanding of a country's specific biophysical setting and institutional linkages, for which research and education is very important.

Sustainable funding: programme versus project approach

Most watershed projects in the region have been funded from donor assistance. This has led to watershed management being project-oriented and focused on limited project periods, a diverse approach, temporary institutional arrangements and lack of continuity and follow-up. The third phase of the Participatory Watershed Management in Hoanh Bo District, Quang Ninh Province, Viet Nam had to be wrapped up prematurely as FAO and the Government of Belgium decided against extending the project. Several other projects have been prematurely ended owing to donors' erratic funding policies. Only countries such as India, Thailand and China have funded large projects themselves. Watershed management initiatives in Nepal have survived by convincing other donors to take over after the original donor has ended its commitment.

CONCLUSIONS

The main difficulties for watershed management are caused by its interdisciplinary approach where different technical agencies have to work together. In many Asia-Pacific countries, these agencies are poorly equipped and lack trained workforce. Coordination is often lacking for planning, implementing, monitoring and evaluating watershed management. Several countries in the region have a legacy of central planning and lack the participatory skills to make programmes people-friendly. Shortage of funds is also a major hindrance. Upland areas also tend to lack political power as they usually lie far away from the centres of power. They are generally poor and are unable to mobilize internal resources. Owing to lack of sustainable funding, the consolidation and replication of watershed management is a big problem.

In spite of these difficulties, most watershed management projects and programmes have been environmentally sustainable, economically feasible and socially acceptable. Most have succeeded in stopping the degradation of critical watersheds, creating awareness about the need to sustainably use natural resources and improving the livelihoods of deprived communities and ethnic minorities. Watershed management practices are evolving, and it has yet to become a mainstream development concept. The next generation of watershed programmes should be designed to address the many constraints.

A major strength of watershed management is its recognition from all development practitioners, politicians, planners, sociologists, technical experts and beneficiaries. Watershed management has many benefits if it is properly designed and implemented. Programmes need to promote the environmentally sound, economically sustainable and socially acceptable development of upland areas. Governments need to capitalize on the credibility earned by watershed management projects over the last two decades.

RECOMMENDATIONS

The following recommendations need acting on by the next generation of watershed management programmes and projects.

Technical issues

Future watershed management programmes and projects need to:

- develop quantitative auditing models to measure the costs and benefits of strengthening upland–lowland linkages;
- improve technical skills to separate out human and natural causes of environmental change and damage;
- strengthen technical infrastructure to make better inventories and carry out data analysis, planning and the monitoring and evaluation of biophysical resources;
- document best management practices;
- improve awareness of the watershed management concept and practices among planners, developers and beneficiaries;
- better coordinate the work of technicians, development practitioners and administrators to improve relationships among watershed management practices that benefit land conservation, food security, employment, economic growth and poverty alleviation; and
- provide more training and capacity building, including carrying out research and education to improve analytical skills for assessing watershed conditions.

Institutional and organizational issues

Up-coming watershed management projects and programmes need to address the following institutional and organizational issues:

- They can continue to be planned over administrative rather than watershed boundaries as long as the capacity of countries to audit input–output relationships of soil erosion and runoff and to analyse cost and benefits does not exist.
- Consider implementing projects with a more manageable number of administrative units and local functionaries, especially for participatory watershed management projects that focus on increasing productivity across a range of productive resources.

In upland areas, work should focus on sustainable forest management. In more densely populated watersheds, projects should aim to improve overall resource productivity by continuing their focus on integrated rural development.

Create watershed management infrastructure to support both umbrella and interagency projects by establishing nodal points at the national, provincial and district levels.

Future projects should work more closely with existing national policies, programmes and procedures, including environmental legislation and poverty alleviation policies. Where appropriate, they should support the decentralization of local government.

Future projects should aim to attract the full support of local people and local government. They should reduce their reliance on external inputs and aim to institutionalize participatory principles and methods at all levels by giving more priority to supporting organizational strengthening.

Investment in watershed management

The improved funding of watershed management initiatives must involve mobilizing more internal resources and getting longer commitments from donors. All countries need to put in place mechanisms to raise funds by, for example, requiring that a certain percentage of revenue from hydropower, ecotourism, irrigation water fees and forests goes to fund watershed management.

In several cases donors have made long-term commitments to fund watershed projects. Bhutan's Environmental Trust Fund (Government of Bhutan, 1994) was set up to fund nature conservation and biodiversity projects. The Government of Bhutan established a core fund and several donors contributed further funds to implement different environment-related activities under the government's national programme.

The interest from this fund is spent on the projects, and the capital has been locked to generate additional funding for the future projects. Viet Nam's Forest Sector Support Programme and Partnership for 2001 to 2010 is another example (Government of Viet Nam, 2001). It consists of portfolios of different investment projects. Donors are invited to make pledges to a trust fund or to a subsector activity in the programme document. A similar approach could be tried to fund the next generation of watershed management projects and programmes in other countries.

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