

Small Watershed Rehabilitation and Management in a Changing Economic and Policy Environment

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Abstract: China is considered one of the most seriously eroded countries in the world. The many causes of this degradation can be divided into natural, human-induced and root causes. The consequences of watershed degradation are severe and reach even beyond the country's boundaries. Addressing this issue requires a sustainable participatory and integrated watershed management approach. The Loess Plateau Watershed Rehabilitation Projects, implemented by the Ministry of Water Resources and co-financed by the World Bank has provided a model that is widely recognized for its great success. This calls for a paradigm shifting from a sectoral, top-down, technical and physical watershed intervention to a holistic, participatory, multi-sectoral and inter-agency collaborative, and result based watershed development.

Keywords: degradation, watershed rehabilitation and management,

China - one of the most seriously eroded countries in the world

China is considered one of the most seriously eroded countries in the world (see World Bank (2001): China: Air, Land & Water). According to the Ministry of Water Resources (MWR) about 38.2 % of China's total land area or 9.6 million km² is eroded of low degree or above. The biggest problems are water (almost 50%) and wind erosion.

There are many causes of the current watershed degradation, which can be divided into natural, human-induced factors and root causes. The seasonal rains of high intensity, steep slopes, erodible soils, semi-arid/arid climates, strong winds, geological instability, and other factors, which are closely related to the country's ecological environment, are increasing the risk of land degradation. Unsuitable land uses and inappropriate land management practices constitute the direct human causes of land degradation. This includes poor farming or grazing practices, inadequate soil conservation measures, overgrazing, over-exploitation of forest resources, poor water resource management and extensive land conversion to unsuitable uses (*Preparing National Strategies for Soil and Water Conservation, ADB, 2002*).

Watershed degradation in China has major implications on the socio-economic circumstances of the rural land users, i.e. farmers, foresters and herders, and the social, cultural, economic and policy environment. These are the underlying reasons for the inappropriate land use and management practices and might be called the root causes of watershed degradation.

The consequences of watershed degradation are severe and go even beyond the country's boundaries. Watershed degradation has caused the loss of millions of mu of farmland, declining soil productivity and loss of vegetative cover and biodiversity. It has also caused billions of tons of sediment annually clogging up downstream reservoirs, reduces the hydraulic capacity of important river systems, and posed a serious flood risk in the lower reaches. Watershed degradation has also severe economic consequences as it leads to declining yields from croplands, grasslands and forests/woodlands and, consequently, reduced farm income.

Watershed degradation has also profound social consequences. It threatens the livelihood of millions of people in fragile catchment areas. It has reduced food security and increased health

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problems due to malnutrition, polluted water and poor air quality. It increases the threat to personal safety and security from increased risk of natural disasters (floods, land slides, mud flows) and accelerates forced migration, in the search for new land or alternative livelihoods.

Loess plateau concept and practice

The Loess Plateau with an area of about 640,000km² has the highest erosion rates anywhere in the world. Several billion tons of sediment annually still clog up the Yellow River (now the most silt laden river in the world) and pose a serious flood risk in the lower reaches; large reservoirs such as Xiaolangdi and Sanmenxia lose their storage capacity quickly and huge economic losses occur. The Loess Plateau area is still home to about 30 million poor farmers. Traditional farming practices are still ongoing, posing huge threats for land and the environment.

From 1994 – 2005, two phases of a Loess Plateau Watershed Rehabilitation Project have been successfully implemented in 48 counties in Shanxi, Shaanxi, and Gansu Provinces, and the Autonomous Region of Inner Mongolia. Total investment costs amounted to US\$ 550 million of which IBRD and IDA resources made up US\$ 300 million.

The Project has achieved its dual objectives: to help achieve sustainable development in the Loess Plateau by increasing agricultural production and incomes, and improve ecological conditions through: (a) the introduction of more efficient and sustainable uses of land and water resources; and (b) reducing erosion and sediment flow into the Yellow River.

The Project has been one of the largest and most successful erosion control programs in the world with a long-term and sustainable development impact. It helped 2.5 million people out of poverty: per capita rural net income increased from about US\$ 45 to US\$ 203 (US\$ 44 more than in non project area). It fundamentally improved the ecological environment: vegetation cover increased from 17% to 33%. And it substantially reduced erosion: annual sediment flow into the Yellow River has been reduced by 107 million tons.

The project's key contributions have had far reaching strategic impact on both policy and operations, which are far beyond the funding and physical benefits per se. The project has contributed to the profound changes in policies and similar programs of the Chinese government and other donors.

The key reasons for the success lie in the holistic and integrated watershed planning approach; its focus on people through a participatory learning and action approach; strict supervision of physical and financial progress and rigorous M&E; improved grazing management; multi-sectoral and inter-agency collaboration and capacity building. The Loess Plateau concept and practice is an economically viable and environmentally sustainable integrated watershed management model that is being replicated in China and beyond.

Major challenges in China toward an integrated watershed approach

Sustainability is a fundamental principle of China's development policy. To address watershed degradation issue, the Government of China, and MWR in particular, has attached great importance to control water and soil erosion and land degradation. A series of policies and programs related to watershed rehabilitation and management, poverty reduction, afforestation, grassland improvement, combating desertification, etc have been initiated and implemented. Investment in these areas has increased considerably over the last decade. Great achievements have been made with substantial improvements on the ground in many locations.

However, in the day-to-day struggle to subsist, the long-term view of soil conservation and resource management is lost by most poor and low income watershed inhabitants. There are

overlapping responsibilities and substantial duplication of efforts, between and within the various central, provincial and local government stakeholder institutions. There is an absence of cross-linking mechanisms for inter-institutional cooperation and collaboration, in tackling what is a multi-dimensional problem that cuts across different sectoral development interests. Lack of participation, ownership and capacity of farmers and other resource users (a social sensitivity) is hindering targeting and effectiveness of watershed intervention.

Watershed Management: A New Paradigm

Watershed Management has come to mean different things to different people. A watershed is used to define hydrological boundaries of water catchment areas. Watershed management deals with the use and conservation of its natural resources. Sustainable participatory integrated watershed management was defined as: *“Utilization and conservation of land, water, and forest resources at farm household and community (or given watershed) level for continuously improved livelihood and human development.”*

By working to address not just the physical manifestations of watershed degradation but also its root causes, an integrated watershed approach advocates the sustainable and productive use of the natural resources (specifically soil, vegetation and water) in ways that are ecologically sound, economically viable, socially acceptable and equitable. This calls for a paradigm shifting from a sectoral, top-down, technical and physical watershed intervention to a holistic, participatory, multi-sectoral and inter-agency collaborative, and result based watershed approach.

First, a better planning process should be in place for any watershed intervention, whether large or small. Such planning process would be (i) comprehensive and consider dynamics and interaction of land, water and other natural resources; (ii) a participatory and decentralized process, which puts the primary stakeholders (community land/resources users) into the drivers’ seat; (iii) a coordinated process between all levels of watersheds and their management institutions. The process would be iterative and emphasize learning, and flexibility.

Second, a better participatory approach should be incorporated into the whole watershed planning, implementing and M&E process. There are a number of key elements to be considered: (i) a change of mindsets and redefining the government roles from top-down to bottom-up, and more facilitation, accountability and commitment; (ii) community/farmers’ empowerment and ownership of watershed management processes and programs, e.g. community-led/driven facilitating, planning, implementation, M&E, capacity building, funding use, local technical use, sharing of information and lessons learnt; (iii) secure land tenure and other natural resources users rights as key incentives to genuine participation.

Third, a better coordination mechanism is essential to an integrated watershed approach. An integrated approach needs involve all sectors that have an impact on watershed degradation. It requires strong coordination mechanism in the process of policies and regulations, including the revision of the Law of Water & Soil Conservation. This will ensure that an institutional framework exist that coordinates the activities among different ministries/commissions as well as with farmers, private sector, NGOs and other stakeholders.

Forth, the efficiency of investment into watershed rehabilitation should be increased. Three strategies would help towards this aim: (i) integration and coordination of fiscal resources for rural development; (ii) working in partnership with the private and financial sector; and (iii) combine investment resources with the right policies and their enforcement.

Fifth, an improved M&E system for watershed management will be vital for effectively rehabilitation and managing watersheds. A comprehensive M&E system would inform on: a) socio-economic and environmental impacts of watershed-based interventions; b) interactions between people and the environment in the context of a watershed; and c) long-term changes within the watershed. Such system should (i) clearly define links and interaction between

institutions and stakeholders; (ii) improve the quality and efficiency of data collection, handling, analysis, and sharing; (iii) ensure accountability; and (iv) be cost effective.