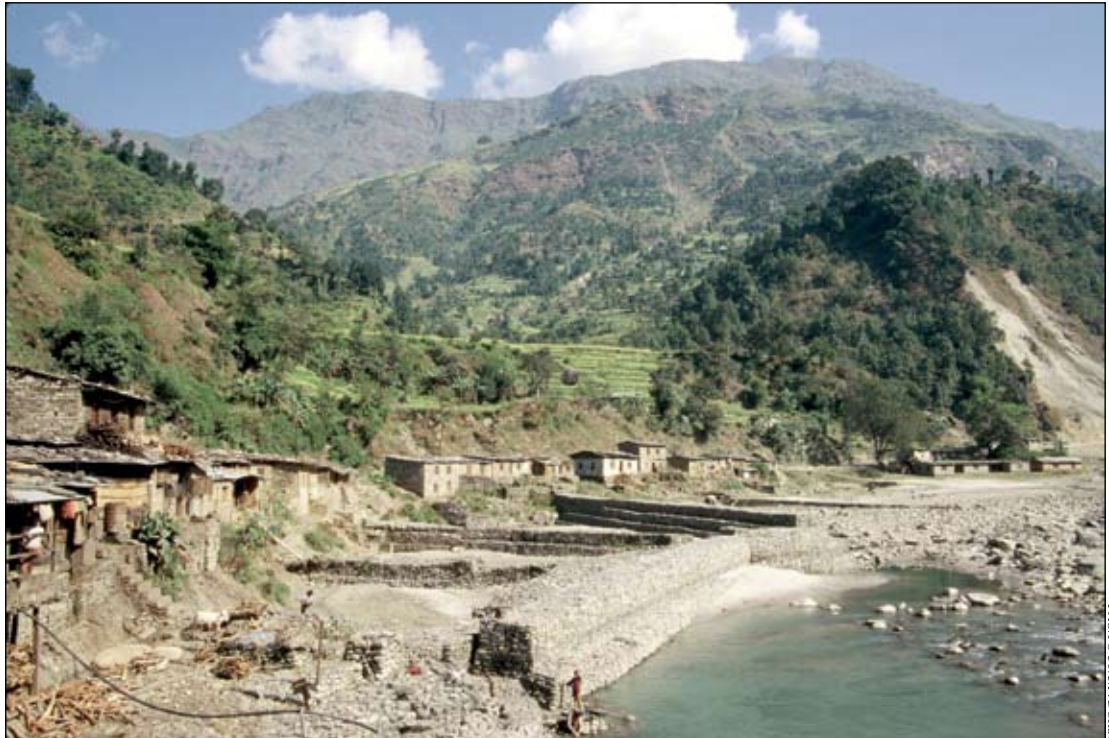


Five years after Shiga: recent developments in forest and water policy and implementation

P.C. Zingari and M. Achouri

Progress since the milestone International Expert Meeting on Forests and Water held in Shiga, Japan in 2002.

Climate change, water scarcity, environmental degradation, food insecurity and livelihood and human health challenges all urgently require policy attention to interrelationships between forest and water (riverside settlement, Nepal)



FAO/IFD-SG/SHIGA-DIRSI

The recurrence of extreme weather events, climate change and the need for adaptation strategies are focusing national and international attention on water, water-related ecosystems and watersheds. In addition, growing problems of water scarcity, environmental degradation, food insecurity and poor livelihood conditions and human health all require urgent policy and management measures, pointing attention to interrelationships between forest and water.

A number of forest-related cooperation mechanisms such as regional criteria and indicators processes to monitor sustainable forest management, and the global legally binding

environmental conventions on biological diversity, desertification and climate change, have been considering water and watershed issues. At the same time, the growing number of water-related initiatives worldwide, such as the International Network of Basin Organizations (INBO, see www.inbo-news.org) or the World Water Council (WWC, see www.worldwatercouncil.org), are progressively taking into account the role of trees, forests, riparian ecosystems and their management in achieving targets of freshwater quality, quantity, timing and hazard prevention. The Global Water Partnership, as another example among many, has developed a compendium of good practices that identifies field

Pier Carlo Zingari is Director of the European Observatory of Mountain Forests, Chambéry, France.

Moujahed Achouri is Chief of the Forest Conservation Service, Forestry Department, FAO, Rome.

examples of forests providing benefits to water resources and to balanced management of watersheds (GWP, 2007).

In many countries, forest and water policies, legislation and administration have long been shaping forest rehabilitation programmes; this has been the case in European countries such as France, Italy and Switzerland since the eighteenth century. Only in the past few decades, however, has the emphasis on theory and practice of hydrology been replaced by a more comprehensive approach embracing environmental issues, land use and watersheds. More recent efforts have sought further to integrate varied sectors and the participation of stakeholders within a wider approach to environmental protection with a solid basis in forest science.

The International Expert Meeting on Forests and Water in Shiga, Japan, held in November 2002 in the framework of the Third World Water Forum in Kyoto, Japan, can be considered a major step towards improved understanding and effective implementation of policies, planning and management initiatives worldwide related to forests and water. Convened jointly by FAO, the International Tropical Timber Organization (ITTO), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Forestry Agency of Japan, the expert meeting focused on new challenges and perspectives concerning forest and water interactions, such as the need for better understanding of the hydrological and environmental services provided by forest ecosystems, more effective management tools integrating forest and water resources, and clearer national strategies and policies to guide stakeholders in the field (Forestry Agency of Japan, 2002). The meeting also raised questions on the role and services of forests in the global freshwater crisis which threatens livelihoods – including health and food security – and biodiversity conservation. These were grouped as follows:

- what are the exact nature, possibilities and limits of the contribution of forests to the water crisis under different climatic conditions and overall climate change?
- how can forest services be incorporated into larger watershed management approaches, including payment for environmental services?
- to what extent and on what basis should each stakeholder be involved for effective and equitable action?

This article reviews some of the progress made during the past five years (2002 to 2007) on the main issues raised, providing some practical evidence and examples from around the world. It addresses four broad areas considered at Shiga:

- integrated, participatory and cross-sectoral approaches to planning and management;
- understanding of biophysical processes;
- economics of watershed services;
- effective collaborative arrangements and partnerships among stakeholders.

INTEGRATED PLANNING AND MANAGEMENT

The need for cross-sectoral approaches and practices in forestry is widely recognized, and the implementation of national integrated water resources management and water efficiency plans was requested at the World Summit for Sustainable Development in 2002 (WSSD, 2003). Institutions and individuals should take concrete steps to integrate water considerations and water resources management into the many sectors affecting and influencing it, including forestry. The main recommendation of the Shiga meeting on this point was that policies and institutional arrangements should be defined to facilitate collaboration among decision-makers and between the decision-makers and resource users.

One example of a policy instrument that integrates forestry and water is the “social accounting” established by the

forest administration of the Autonomous Province of Trento, Italy (2006). This tool aims to establish the value of the social, economic and environmental benefits of the watershed management fieldwork implemented annually in terms of water quality, quantity control, sustainability and monitoring. The accounting covers 5 600 km of torrents and rivers over a land area of 6 400 km², a forest area of 3 500 km² (55 percent of the land area), the work of 333 employees and over €34 million budget in 2005.

The Mekong River Commission (MRC) (see www.mrcmekong.org; www.mekonginfo.org) in Southeast Asia is one of the largest-scale and most complex examples of integrated trans-boundary forest and water management programmes. It deals with 795 000 km² in six riparian countries and over 60 million people. Ninety percent of the area’s population lives in rural areas where they supplement food crops with fish from forests and wetlands, including large areas of flooded forests. One of the three main goals of the current strategic plan for 2006 to 2010 is the implementation of an integrated approach to watershed management in which forest conservation plays a pivotal role in relation to biodiversity; water quality, availability, timing, use and monitoring; and individual and institutional capacity building. MRC is part of the above-mentioned International Network of Basin Organizations (INBO), which brings together watershed management authorities worldwide.

The implementation process of the European Union Water Framework Directive (EU-WFD) applies the overarching principle of “restoring the good ecological status of waters through an integrated approach to, and a long-term planning of, the watershed” (European Communities, 2000). Implementation of EU-WFD is based on:

- surveys of each basin situation (by 2004) and setting of standard monitoring networks (by 2006);



The Mekong River Commission in Southeast Asia is one of the largest-scale and most complex examples of integrated transboundary forest and water management programmes (the River Ou, a Mekong tributary, in the Lao People's Democratic Republic)

- participatory large-scale watershed management master plans and specific operational action plans (by 2009);
- review and report of achievements and development of a second action plan (by 2015).

This regional legally binding instrument is also attracting interest outside the European Union and may be an interesting model for other regions. A survey on watershed issues and priorities in 31 countries carried out in 2003 by FAO in collaboration with the European Observatory of Mountain Forests (FAO, 2006a) indicated that national forest institutions consider EU-WFD a balanced combination of planning, administrative, financial, methodological and practical measures that is helping to achieve concrete goals.

The Motueka River/Tasman Bay Community provides a good example of participatory and integrated watershed management (ICM Motueka Research Programme, 2007). The overall basin is about 2 200 km² and is located in the northwestern part of the South Island of New Zealand. Two-thirds of its area is steeplands covered by native southern beech (*Nothofagus* spp.), podocarps (*Podocarpus* spp.) and commercial radiata pine (*Pinus radiata*) and Douglas

fir (*Pseudotsuga menziesii*) plantations. The river rises in elevation from sea level to 1 600 m in alpine headwaters and delivers 95 percent of the freshwater to Tasman Bay, a productive and shallow coastal body of high cultural, economic and ecological significance. Consideration of upstream–downstream interactions in the planning and implementation of water management activities ensures and reinforces the practice of participatory and integrated approaches.

UNDERSTANDING OF BIOPHYSICAL PROCESSES

Forested watersheds are exceptionally stable hydrological systems (FAO, 2003). In comparison with other land uses, healthy forests:

- strongly influence the quantity and quality of water yielded from watersheds;
- discharge lower storm flow peaks and volumes for a given input of rainfall;
- moderate variation in stream flow during the year;
- stabilize soil and prevent gully and surface erosion;
- export the lowest levels of sediment downstream.

Forested watersheds are exceptionally stable hydrological systems (Canada)



The Shiga Meeting underlined that although much was known about hydrological processes in forests on the small scale, many biophysical aspects of the relation of forest and water on a larger scale were still to be clarified within the different climatic areas of the world. Moreover, it noted that despite basic knowledge on biophysical processes (see Bonell and Bruijnzeel, 2005), there were discrepancies between the views of policy-makers, the public at large and the scientific community, for example on the effects of reforestation on streamflow. The Shiga debate on these scientific aspects was very rich, raising stimulating questions for further work.

The “Forest Management and Water Cycle” (FORMAN) initiative, which started in 2007 under the intergovernmental European Cooperation in the field of Scientific and Technical Research (COST) network (see www.cost.esf.org/index.php?id=142), is addressing some of these questions. The main objective of this COST Action is to enhance knowledge on forest–water interactions and to elaborate science-based guidelines for improving the management of forests predominantly designated for the production, storage and provision of water. It is currently reviewing temperate forest and water issues. The five priority areas of research are:

- influences of different forest types, species and management practices on water;
- importance of scale on forest management–water relations;
- overall effects of forests on water status (quality, quantity, ground-water);
- protective function of forests (low and peak flow, flood mitigation, erosion);
- effects of climate change on forests and water.

Addressing similar issues, an international workshop on “Water Management through Forest Management”, held in November 2007 in Beijing, China [ed.

note: see p. 68, this issue], examined advances over the past century in the scientific understanding of forest hydrological processes and impacts at the scale of forest stands and small watersheds.

ECONOMICS OF WATERSHED SERVICES

One of the main recommendations of the Shiga meeting was to assess the full economic value of forest and water resources in order to put in place appropriate incentives to support natural resource management for the sustainable provision of services – which also depends on secure resource and land tenure rights. Economic valuation will allow awareness-raising on the importance of environmental services and equitable sharing of costs and benefits between resource users and providers. The Shiga meeting discussed partnerships built on upstream–downstream interactions, as management or mismanagement of upland and riparian forests affects all those living downstream. Payment for environmental services (PES) is one form of such partnerships.

Since the Shiga meeting, considerable work has been done to develop the concept and practices related to PES, defined by UNECE (2006) as a

“contractual transaction between a buyer and a seller for an ecosystem service or a land use/management practice likely to secure that service”. Case studies and guidelines collected in the framework of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes document methods, payment schemes and accompanying measures (many of them forest related) from successful experiences around the world (UNECE, 2006; Working Group on Integrated Water Resources Management, 2006). Forest- and water-related PES schemes have been implemented in many countries, especially in Latin America. Schemes range from local initiatives with or without external funding to national programmes financed through cross-sectoral subsidies.

Along the same line, the Organisation for Economic Co-operation and Development (OECD) has recently reiterated its support for forest and water policy that rewards the provision of services instead of subsidies to the forest sector (Bonnis, 2007).

COLLABORATIVE AND PARTICIPATORY ARRANGEMENTS

The Shiga meeting, in line with the WSSD Plan of Implementation (WSSD,

The need to assess the full economic value of forest and water resources is increasingly recognized (in Mexico, local spring water is bottled by rural communities for sale in nearby cities – a non-wood forest product of growing importance)



ITTO/S. ANTA-FONSECA

2003), recommended the promotion of effective and equitable collaborative arrangements and partnerships among all stakeholders and at all levels for better and more coordinated management of water resources.

Collaborative arrangements among national and international organizations include the World Water Council (see www.worldwatercouncil.org) and the Collaborative Partnership on Forests (see www.fao.org/forestry/cpf). Linking forests and water, FAO collaborated with countries and institutional partners to shape a new generation of watershed management programmes and projects. The resultant resource book for practitioners and local decision-makers (FAO, 2006b) assembles the input of more than 80 institutions, gathered through a global survey and four regional workshops [ed. note: see Box p. 22].

Other alliances on the global level are exchange and twinning initiatives. Examples include the Brahmatwinn Project (2007), a collaboration between the Upper Brahmaputra River Basin in South Asia (Tibet, Bhutan and the state of Assam in northeastern India) and the Upper Danube River Basin in Europe, and the Twinbasin Initiative (2007) which promotes twinning of river basins worldwide for the development of integrated water resource management practices.

Many forested watersheds around the world are brought together within the Hydrology for the Environment, Life and Policy (HELP) Programme of UNESCO and the World Meteorological Organization (WMO) (see www.unesco.org/water/ihp/help). This initiative supports integrated watershed management through frameworks enabling experts, managers and scientists to work together on water-related problems. A global network of watersheds (measuring up to 106 km²) facilitates exchange of field experiences. The Motueka River/Tasman Bay Community described above is one of the basins in the HELP network.

CONCLUSIONS

The Shiga meeting offered an international platform for building consensus and identifying the way forward on forest and water conservation and management. After only five years it is early to evaluate the implementation of its recommendations; yet there have been significant achievements at the international and national levels. The International Year of Freshwater 2003, together with the International Decade for Action “Water for Life” 2005–2015 (see www.un.org/waterforlifedecade), further contributed to the recognition of the interrelations of water and terrestrial ecosystems and the need for urgent action to protect them both for sustainable provision of environmental services. Policy discussions show clear trends towards stronger links between forest and water resource management.

There is no doubt that these links will have to be further reinforced in practice. Further efforts are required on interdisciplinary research, on the improvement of data quality and availability, and on a wider use of equitable PES schemes. Growing problems of water scarcity and increasing environmental degradation and their impacts on food security make water supply and demand a pressing issue and a potential source of conflict, calling for greater attention to the development of appropriate approaches and comprehensive policies to achieve successful integrated water resources management.

Based on the main achievements and on the needs identified since the Shiga meeting, local and national decision-makers should further enhance forest and water policies and practices by thoroughly considering, adapting and adopting the following actions:

- specific cross-sectoral laws, plans, measures and institutional reorientations;
- programmes for effective awareness-raising, linking of science and policies, and capacity building for var-

ied target groups ranging from local watershed inhabitants to high-level policy-makers;

- initiatives to improve scientific understanding of forest–water interactions, local knowledge and monitoring to support evidence-based interventions;
- harmonized micro- and macro-level linkage of experiences, initiatives and mechanisms in the context of sustainable forest and water management;
- expanded evaluation of projects based on real changes and progress;
- locally adapted mechanisms for valuation of and payment for services, and financing of long-term collaborative watershed management processes;
- regional fora for exchanging experiences, identifying common interests and responsibilities and negotiating agreements, especially over transboundary watersheds.

International organizations such as FAO and its partners can effectively help promote actions directed at better management of water resources through normative and field programme activities at the national, regional and global levels. In this respect, it is important to underline that comprehensive policies and tools for sustainable natural resource management and for enhancing people’s well-being must build on an awareness of and respect for the cultural, technological and human resources of each area (UNESCO, 2005). With water issues now prominent around the world, it is time to promote and apply the interrelations between water resources management and the conservation and management of forest ecosystems. ♦



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