

RIVER BASIN MANAGEMENT-I

Introduction

Water does not stop at administrative or political boundaries, so the best way to protect and manage water is by close international co-operation between all the countries within the natural geographical and hydrological unit of the river basin – bringing together all interests upstream and downstream. As water scarcity increases and hydrological variability becomes larger, dealing with changes brought about by development presents a formidable challenge. This means finding smarter ways to develop and manage water resources and finding responses appropriate to the circumstances in each particular basin. River basin planning and management includes various aspects such as proper basin planning, active stakeholder participation, water allocation, pollution control, monitoring, information management and economic and financial instruments.

IWRM at the river basin level seeks better water resources management through such means as progressively developing water resources in the basin, building a more integrated institutional framework, and improving environmental sustainability. This goal must always be kept in mind wherever positioned in the IWRM spiral. The ‘spiral model’ is a convenient graphical conceptualization of the iterative, evolutionary, and adaptive management process, adjusting to new needs, circumstances, and societal goals. One turn of the spiral includes such phases as:

- Recognizing/identifying pressing issues or needs;
- Conceptualizing the problem itself and locating possible solutions;
- Coordinating and planning among stakeholders to reach an agreement;
- Implementing/monitoring/evaluating the plan and its outcome.

The spiral evolutionary model reflects progressive positive changes in historical water resources development and management and offers the following advantages:

- ✓ It allows IWRM actions to be started at any point of the evolutionary process.
- ✓ It builds capacity over time.
- ✓ It promotes cooperation and integration.
- ✓ It promotes the pursuit of better solutions that adapt to changing circumstances and values.
- ✓ It facilitates consensus building and stakeholder ownership at each ‘turn of the spiral’.

- ✓ It illustrates IWRM as an incremental, step-by-step process, and therefore provides a practical framework for looking ahead and planning for successive ‘turns of the spiral’.

Water resource systems are directly and indirectly affected by the interaction of numerous human related drivers of economic, social, and demographic functions, including climate change as an uncertain driver. Water managers should understand how different drivers of change affect the hydrology and therefore affect the related water demands and functions by the inhabitants in the basin. Setting up a viable IWRM framework is necessary as a platform for adapting to changes where the adaptation responses to those changes can be prioritized. Reassessment of basin hydrology improves understanding of a changing water cycle and can be an opportunity to consider and address special drivers such as climate, land-use changes, and the agricultural footprint in the evolving step by- step IWRM process.

Principles of IWRM at the River Basin Level

Integrated water resources management is a continuing process of managing water resources in a harmonious and environmentally sustainable way by gradually uniting stakeholders and involving them in planning and decision-making processes while accounting for evolving social demands due to such changes as population growth, rising demand for environmental conservation, changes in perspectives of the cultural and economic value of water, and climate change.

The emerging concept of IWRM at the river basin level

A river basin approach in the implementation of IWRM is being recognized as a comprehensive basis for managing water resources more sustainable and will thus lead to social, economic, and environmental benefits. However, actual progress towards implementing IWRM varies enormously and depends on the area, capacity, political will, and the understanding of IWRM concepts and their implementation

The principles and concepts of IWRM have been widely recognized, but the implementation of IWRM is not satisfactorily progressing in many basins. This is perhaps because the practitioners responsible for water resources management at the basin level encounter difficulties in understanding where and how to begin, or the advantages of applying IWRM with respect to their actual situation may not be so apparent. On the other hand, policymakers dedicated approaches for setting up enabling environments and political frameworks that strongly support sound and sustainable water resources management are necessary prerequisites for IWRM to function effectively. To get started with IWRM, practitioners and water managers need to identify the full spectrum of stakeholders involved in river basin management issues as well as have a good understanding of how other stakeholders relate to water, and how they relate to every activity through it. The river basin approach seeks to focus on implementing IWRM principles on the basis of better coordination amongst operating and water management entities within a river basin, with a focus on allocating and delivering

reliable water-dependent services in an equitable manner. It is a holistic approach that seeks to integrate the management of the physical environment within that of the broader socioeconomic and political framework.

The implementation process

Within a country or a river basin, different areas have diverse water problems and challenges. Each country and river basin must chart its own vision and plans based on its unique situation. A fully integrated approach to managing water in a basin may not be immediately possible. Although their existence is not essential to begin with the IWRM process at the river basin level, river basin organizations provide a good institutional mechanism to facilitate implementation. The application of IWRM by basin organizations varies according to each river basin's specific conditions and requirements. Many river basins have set up coordinating bodies to facilitate river basin management. These may take the form of informal committees or authorities with important mandates and authorization. In the case of transboundary river basins, a more flexible approach towards national policies and legislation is required. Nevertheless, the overall water management process at the basin level does not greatly differ. IWRM aims to create sustainable water security within the present constraints and by improving conditions incrementally in each basin.

Benefits of integrated water resources management at the river basin level

Basin-level perspective enables integration of downstream and upstream issues, quantity and quality, surface water and groundwater, and land use and water resources in a practical manner. By responding to changing social, economic and environmental needs or impacts, one can gradually achieve better and sustainable water resources management as if moving up a spiral, through such means as progressively developing water resources in the basin, building a more integrated institutional framework, or improving environmental sustainability. The first step on the path to integration requires that each sector have access to all the compiled basin data and updated information as well as the ability to avoid unexpected risks caused by uncoordinated internal and/or external sector activities.

Important conditions for implementing IWRM

Political will and commitment

Political will at all levels can help unite all stakeholders and move the process forward. It is especially needed if the resulting plan or arrangement would create or require changes in legal and institutional structures, or if controversies and conflicts among stakeholders exist.

Basin management plan and clear vision

Water resources development coordinated among various sectors and users is facilitated by the preparation of a master plan that reflects the individual sector plans and offers the most effective and efficient utilization of the resource.

Participation and coordination mechanisms, fostering information-sharing and exchange

The identification of key stakeholders can be facilitated through interviews and meetings. Stakeholder involvement can be defined appropriately for local conditions and improved gradually. Initial sharing of general basin-wide data and information, and further sharing of more specific information, will assist the self-sustaining system.

Capacity development

Capacity development and training priorities should be expressed at all levels, including that of decentralized local government. Participants who may be adversely impacted and/or socially marginalized may be stimulated to participate within a consensus-building strategy.

Well-defined flexible and enforceable legal frameworks and regulation

It is necessary to assemble and review the full range of existing laws and regulations that apply to water-related activities and determine how existing legislation adapts or can be better adapted to accommodate sustainability and integration with regard to water resources management.

Water allocation plans

As water is a shared resource, water rights should be flexible in terms of allocation in order to accommodate changes. Preparing a master plan that reflects individual sector plans facilitates the coordination among various sectors and advocates the most appropriate utilization of a basin's resource.

Adequate investment, financial stability and sustainable cost recovery

Coordination for IWRM implementation needs financial sustainability – such as the promotion of cost recovery – and must consider long-term management. Various combinations and roles of international financing and donors such as government grants, public resources, user charges and taxes, donor funds, basin environmental trust funds can be considered as funding options.

Good knowledge of the natural resources present in the basin

Adequate knowledge and information on the water resources inventory and human resources of the basin is desirable. Including scientists as water resource managers can help maintain and accrue sound knowledge of the natural resources.

Comprehensive monitoring and evaluation

Monitoring and evaluation are essential for ensuring that the current management of water resources is properly implemented, and to identify the needs for adjusting management strategies. Upgrading new technologies is vital for effective performance both of local and central water management.

River Basin Management - EU Framework

All countries of the European Union are using a river basin approach for water management since the adoption of the EU Water Framework Directive. The Danube River Basin (DRB) covers a vast area of 801,463 km², making it the second largest river basin in Europe, after the Volga. It is also the basin that covers the greatest number of countries in the world, with a total of eighteen states. The DRB lies to the west of the Black Sea in Central and Southeast Europe (see Map 14.2). It discharges into the Black Sea via the Danube Delta, which lies in Romania and Ukraine. With an average discharge of about 6,500 m³/sec, the Danube is the Black Sea's largest tributary. Some countries such as Austria, Hungary, Romania, Serbia and Montenegro and the Slovak Republic are almost completely situated within the DRB, whereas less than 5 percent of the territories of Albania, Italy, Macedonia, Poland and Switzerland lie in the basin. More than 26 percent of the overall basin population is Romanian. This is by far the largest population group in the DRB, followed by populations from Germany, Hungary, and Serbia and Montenegro.

The International Commission for the Protection of the Danube River (ICPDR) serves as the platform for coordinating the development of the Danube River Basin Management Plan, which is to be implemented by 2009. Preparation of basin management plans by this date is compulsory for all European Union (EU) countries as per the requirements of Water Framework Directive (WFD). In the ICPDR, all Contracting Parties support the implementation of the WFD in their territories and cooperate in the framework of the ICPDR to achieve a single basin-wide coordinated Danube River Basin Management Plan. To this end, each country is in the process of preparing national reports and 'roof reports', which give an overview of WFD issues such as the pressures on the Danube River Basin (DRB) main surface and groundwater resources and related impacts exerted on the environment. The 'roof reports' will be the basis for the preparation of the Danube River Basin Management Plan. The main problem in the DRB is the water quality rather than quantity. Nine countries (six EU members and three concession countries) are at different stages of implementation of the WFD. The other contracting parties of the ICPDR are also working towards the common goal of improving the quality of water resources. However, marked differences in economy, sociology and topography complicate the tasks of the states. For this reason, both WFD and ICPDR goals are yet to be implemented uniformly throughout the region, and there is still a substantial amount of work to be done at the national level. However, members of ICPDR consider the sustainable utilization of water resources as the overriding priority and work together to this end.

References

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