



Making

Integrated Flood Management

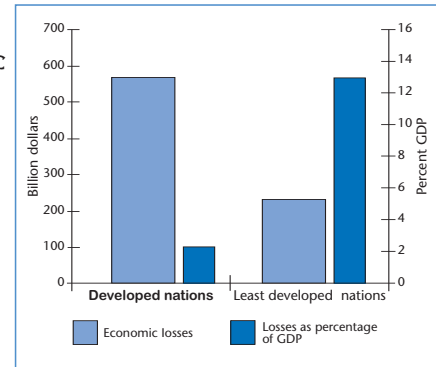
Part of the Development Agenda

IWRM and FLOODS



The challenge

Our planet's water resources are vital for sustainable development. Floods play a major role in replenishing freshwater resources, recharging wetlands and groundwater and supporting agriculture and fishery systems, thereby making flood plains preferred areas for human settlement and various economic activities. Flood plains are subjected to periodic inundation by the smaller and more frequent floods that also provide nutrition to fertile agricultural lands, supporting livelihoods of riparian communities. Occasionally, however, floods have negative impacts on lives, livelihoods and economic activities and in extreme cases cause devastation. During recent years there has been an alarming rise in economic losses due to flooding in both developed as well as developing countries. The way we deal with floods co-determines whether water remains a life-providing element or becomes a destructive force against human life and economic development.



"In the last decade, the developing countries have shouldered a much greater share of the impact of natural disasters on their economies than their developed counterparts (Munich Re)."

The United Nations General Assembly proclaimed the years 2005 to 2015 as the International Decade for Action, "Water for Life". Against the backdrop of increasing water-related disasters in recent years, the Decade provides a challenge as well as an opportunity for the international community to factor water hazard risks in the management of water resources to ensure its sustainable use so that water continues to be the provider of life. The challenge therefore is to:

- Incorporate risk management principles in water resources management;
- Prevent flood hazards turning into disasters;
- Increase multidisciplinary approaches in flood management;
- Improve information on integrated flood management approaches;
- Alleviate poverty through preventive and response strategies for vulnerable sections;
- Enhance community participation.

"The task is not just to preserve water resources to sustain life, but also to reduce the capacity of water to take life away. ...we can and must reduce the number and impact of disasters by building sustainable communities that have the long-term capacity to live with risk."

Kofi Annan, United Nations Secretary-General (8 October 2003)

Flood control to flood management

Traditionally, flood control has focused on reactive practices. The initial interventions have largely relied on control of floods through structural measures, later supported by certain non-structural measures. These approaches have been ad hoc and essentially mono-disciplinary in nature. For quite some time now there has been a growing realization that the flood control strategies adopted to date have fallen short of expectations. The structural measures have generally disturbed the ecological balance and rather than mitigating flood risks have largely succeeded in only shifting them. It is widely recognized that a paradigm shift is required to move from defensive to proactive action – towards a culture of prevention by managing the risk of and living with floods.



For many years, the concept of Integrated Water Resources Management (IWRM) has been recognized to be the key to achieving water security and water resources sustainability in face of the many competing demands for water. There is a growing recognition that flood disasters have been adversely affecting the sustainability of development and that flood issues need to be addressed in the context of IWRM. Integrating flood risks in development strategies for integrated water resources management requires a paradigm shift from flood control to flood management.

The [Integrated Flood Management](#) approach aims to maximize the net benefits from flood plains and at the same time reduce loss of life as a result of flooding, flood vulnerability and risks, and preserve ecosystems and their associated biodiversity within the overall framework of IWRM. The concept recognizes the benefits of the smaller and more frequent floods, the importance of flood plains and the increasing development demands they face, while at the same time recognizing the disruptive nature of floods. It integrates structural and non-structural measures; land and water management; ecosystem preservation and development needs; and short- and long-term measures.

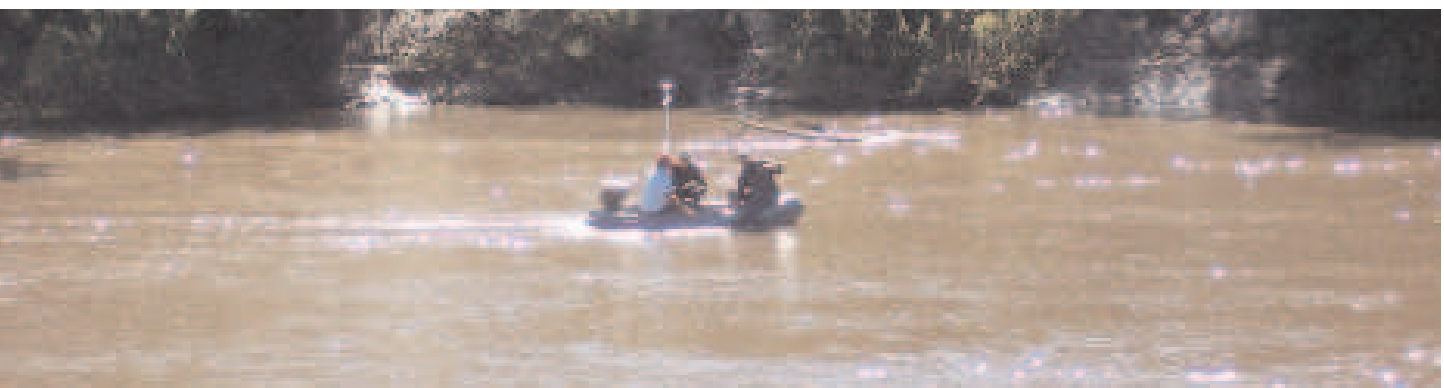
Getting the message right

In different situations, the shift has been largely guided by local conditions and experiences. It is generally not feasible and appropriate to replicate the experiences elsewhere in totality. If not adapted with due consideration, such strategies are likely to prove counterproductive in other conditions. It is therefore important to clearly set out the basic elements of Integrated Flood Management. The basic concept of the approach has been presented in the *Integrated Flood Management Concept Paper*. Accordingly, Integrated Flood Management aims to maximize the efficient use of flood plains while minimizing the loss of life from flooding, and has five key elements:



- Adopting a best mix of strategies, both structural and non-structural;
- Managing the water cycle as a whole while considering all floods, including both extremes;
- Integrating land and water management, as both have impacts on flood magnitudes and flood risks;
- Adopting integrated hazard management approaches, taking into consideration the risks due to all related hazards such as landslides, mudflows, avalanches, storm surges and tsunamis and creating synergies;
- Ensuring a participatory approach to develop a sense of ownership and reduce vulnerability.

Integrated Flood Management requires adopting a river basin approach to planning through multidisciplinary inputs in order to reduce flood vulnerability and risks and preserve ecosystems. It also strengthens the adaptive capacity to climate variability and change. The United Nations system, in its policy paper entitled *Water Hazard Risks*, has accordingly adopted Integrated Flood Management as the basic principle for dealing with water hazards related to floods.



Working together

The **World Meteorological Organization (WMO)** has a vision to provide world leadership and expertise and international cooperation in weather, climate and water, and thereby to contribute to the safety and well-being of people throughout the world and to the economic benefit of all nations. This vision is being achieved through the strategy of Improved protection of life and property through:



- Reduction of the social and economic impacts of natural disasters;
- Increased awareness and preparedness of peoples and society;
- Improved safety of infrastructure;
- Reduced vulnerability of human life and property to weather- and climate-related hazards.

The **Global Water Partnership (GWP)** is a working partnership among all those involved in water management: government agencies, public institutions, private companies, professional organizations, multilateral development agencies and others committed to the Dublin–Rio principles. The mission of the Global Water Partnership is to “support countries in the sustainable management of their water resources.” The objectives of GWP are to:



- Clearly establish the principles of sustainable water resources management;
- Identify gaps and stimulate partners to meet critical needs within their available human and financial resources;
- Support action at the local, national, regional or river basin level;
- Help match needs to available resources.



Associated Programme on Flood Management

Realizing the need to facilitate, both technically as well as financially, the efforts of countries, developing countries in particular, in making this paradigm shift in flood management WMO and GWP have been jointly promoting an integrated approach to flood management as a subset of Integrated Water Resources Management. The Associated Programme on Flood Management (APFM) was launched in August 2001. The objective of APFM is:

“...to support countries in the integrated management of floods within the overall framework of Integrated Water Resources Management (IWRM).”



Phase I (2002-2006) of the programme established the principles of Integrated Flood Management, identified examples of “best practice” and developed tools in support of IFM. APFM provides a platform for various stakeholders to develop a common strategic vision in flood management policy development. The present pamphlet outlines the activities undertaken towards promoting the concept of Integrated Flood Management and the challenges and resulting priorities of future action towards achieving sustainable development goals.

The Government of the Netherlands and the Government of Japan have financially supported the programme. The programme banks on networking with collaborating partners such as CapNet, IW:Learn, World Bank Institute, UNITAR, UNESCO-IHE, UNESCO, ISDR, UN-Water, Asian Disaster Preparedness Center, Asian Disaster Reduction Center, Public Works Research Institute (I-CHARM), International Committee of the Red Cross, International Network of Basin Organizations, International Association of Hydrological Sciences, International Association of Hydraulic Engineering and Research, International Commission on Irrigation and Drainage, International Commission on Large Dams, International Water Law Research Institute and International Law Association.

Come and be a partner

ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT

c/o Hydrology and Water Resources Department
World Meteorological Organization

7 bis, avenue de la Paix - P.O. Box 2300 - CH-1211 Geneva 2, Switzerland
E-mail: apfm@wmo.int - www.apfm.info

Implementing the concept

The Associated Programme on Flood Management has been encouraging the implementation of the concept through pilot projects in different countries such as Bangladesh, Brazil, India, Kenya, Nepal, Poland, Romania, Slovakia, Uruguay and Zambia. Different aspects of IFM have been implemented through these pilot projects.

Flood Management Strategy for Kenya

APFM helped the Kenyan Ministry of Water Resources Management and Development to develop a Flood Management Strategy for the Lake Victoria Basin. This Strategy was prepared as a collaborative effort between WMO and Kenyan experts in consultation with various stakeholders, ministries and departments, and was launched in September 2004. The Japan International Cooperation Agency (JICA) launched preparation of a basin plan for Integrated Flood Management for the Nyando River Basin, which is part of the Lake Victoria Basin. APFM is committed to supporting the Government of Kenya on a continued basis and cooperating with JICA in the implementation of the Strategy.

Cooperation in a transboundary basin shared between Brazil and Uruguay

The project on the River Cuareim (Quarai) Basin focused on flood management in this transboundary river within the framework of Integrated Water Resources Management. The



Institute of Hydraulic Research of Brazil and the National Directorate of Hydrography of Uruguay participated in the project. The project provided an opportunity for these institutions from the two countries to collaborate on related transboundary issues. The River Cuareim (Quarai) Basin is part of the La Plata Basin and the recommendations formulated for the IFM approach under the pilot project are being adopted at the Basin level. As a result, a joint project was prepared in late August 2005 and presented to the Global Environment Facility (GEF) with the support of the La Plata Basin Intergovernmental Coordinating Committee (CIC).

Enabling communities

Vulnerability is central to the origin and cause of flood disasters. This inherent state of community determines if a flood is likely to become a disaster or not. This vulnerability is manifested in various forms. Therefore, pilot projects addressing this important issue have been undertaken.

Reducing the vulnerability of communities in South Asia to flooding

A pilot project on a community approach to flood management has been implemented in selected communities in Bangladesh, India and Nepal with a view to enabling these communities to develop and strengthen community-based institutions for better flood response and management. Based on a manual developed under the pilot project, describing specific activities before, during and after flooding, field-testing was successfully conducted during the monsoon seasons of 2004 and 2005. The results of the pilot project have been linked to the national disaster planning process. The Government of India has taken a decision to link the disaster management institutions with such community-based initiatives and that community-based flood management activities would be adopted nationwide over the coming years.



Flash floods in Central and Eastern Europe

Various parts of Central and Eastern Europe are affected every year by flash floods. The APFM pilot project on flash floods was initiated in collaboration with the Central European Technical Advisory Committee of GWP to collect, analyse and synthesize existing knowledge and practices in seven countries in the region. The study identifies the need to address flash floods in an integrated manner and provides concrete suggestions. The development of appropriate flash flood forecasting methodologies as well as of warning mechanisms suited to the needs of the affected population were identified as central to the further development of IFM practices in the region. Based on the study, specific pilot projects are currently being implemented in three pilot basins in the region. The overall objective is to increase the flood awareness, preparedness and response capacity of the local authorities and population in flash flood-prone pilot communities to forecasts and warnings issued by the respective authorities in order to reduce the vulnerability of the affected population.

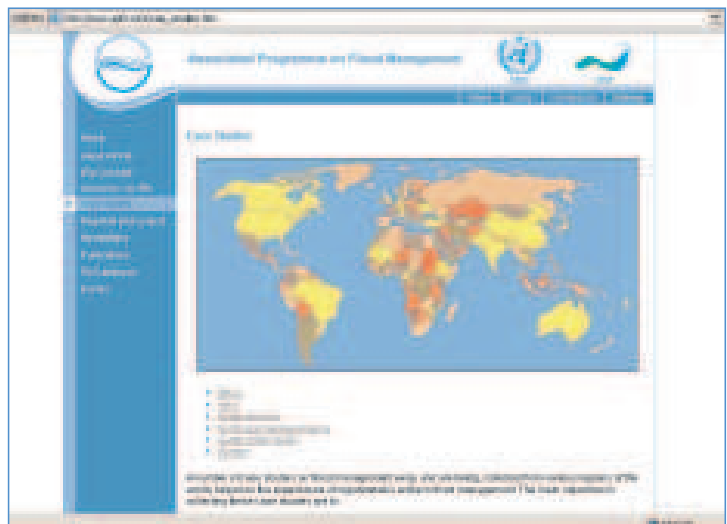


Spreading the message

In an effort to enable a multidisciplinary approach in Integrated Flood Management and to articulate the concept of IFM to various professionals involved in flood management, advocacy papers on specific issues such as the environmental, legal, economic and social aspects of IFM have been developed. The preparation process for each of these advocacy papers was highly participatory, drawing from the expertise of leading experts in the respective specialized fields. Together with the Concept Paper, these are being published under the Flood Management Policy Series. These publications go beyond the advocacy of the concepts and also provide guidance on available tools to implement IFM, such as tools for the economic valuation of various flood management options and the analysis of a country's legal framework related to flood management. Technical tools, such as those for flood forecasting and warning as well as flood hazard mapping, will be published separately under a Flood Management Tools Series.

The concepts, tools and services developed, and proposed to be developed, under the programme are targeted at policymakers, planners, disaster managers in general, and flood managers in particular for better managing the risks due to flood hazards. As a prime task in advocating Integrated Flood Management, APFM has been continuously disseminating information and products to its prime target audience through a mix of mechanisms and channels. More directly, IFM has been advocated at various conferences, workshops and seminars attended by APFM's target audiences. APFM publications are being made available in print and electronic format through the APFM web page.

The APFM website serves as the central access point for information on programme activities and its information services, including the reference centre on integrated flood management. This centre provides various information services to its users, namely a global record of flood-prone areas, institutions and agencies involved in flood management, flood management policy and legislations in different countries and literature on flood management.



www.apfm.info

Moving forward

The shift from flood control to Integrated Flood Management is a continuous process. It requires learning from experience and good practices elsewhere and a continuous exchange of these experiences. Having established the principles of Integrated Flood Management and vindicated by the outcome of the pilot projects, the next challenge is to enable countries to incorporate these principles into policy and into practice. There is a need to facilitate the adoption of the approach at the field level.

Consolidating the achievements of the first phase, in the coming years APFM will lay more emphasis on the implementation of the IFM concept in its multidisciplinary approach into practice on the ground. Its focus will be on developing the capacities in countries by supporting local and regional actions that advocate, support and demonstrate the IFM principles. This will be supported by a combination of training and awareness building measures to convey the need for addressing flood management issues within IWRM. The provision of long-term support in the form of help desk and information services facilities is planned under APFM.

It is proposed to further develop partnerships among groups dealing with various aspects of floods with a view to enlarging the support base for the cause. In addition to enjoying the partnership of WMO and GWP, APFM has been developing ties with a number of initiatives and international programmes on flood management and related issues such as the [International Flood Initiative](#) (IFI), the WMO flood forecasting initiative, the UNESCO-IHP, IFNet, the I-CHARM and other UN-Water partners' programmes. APFM will continue to strengthen both its governmental and non-governmental partner institutions for the development and strategic outreach of the programme.

This is only the beginning. There is need to consolidate our resources and provide enabling mechanisms for countries to adopt this process. APFM, in association with its network partners, will continue to strive towards this end and seeks partners in this process.

