



**World Meteorological Organization**



## **ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT**



**ANNUAL REPORT**

June 2010

APFM Report No.24



The Associated Programme on Flood Management (APFM) is a joint initiative of the World Meteorological Organization (WMO) and the Global Water Partnership (GWP). It promotes the concept of Integrated Flood Management (IFM) as a new approach to flood management. The programme is financially supported by the Governments of Japan and Switzerland.



The World Meteorological Organization (WMO) is a specialized agency of the United Nations. It coordinates the activities of the meteorological and hydrological services of 189 countries and territories and such is the centre of knowledge about weather, climate and water.



The Global Water Partnership (GWP) is an international network open to all organizations involved in water resources management. It was created in 1996 to foster Integrated Water Resources Management (IWRM).



# ANNUAL REPORT (2009-2010)

## TABLE OF CONTENTS

<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. ACTIVITIES.....</b>	<b>2</b>
2.1 FLOOD MANAGEMENT POLICY SERIES AND IFM TOOLS SERIES .....	2
2.1.1 IFM as an adaptation tool for climate change (case studies) .....	3
2.1.2 Flood emergency management .....	4
2.1.3 Management of sediment related risks .....	4
2.1.4 River restoration and wetland conservation (in process) .....	5
2.1.5 Transboundary aspects (in process) .....	5
2.1.6 Guidelines on Flood Mapping (in process).....	6
2.2 NATIONAL AND REGIONAL SUPPORT ACTIVITIES.....	7
2.2.1 Kenya.....	7
2.2.2 Mali.....	7
2.2.3 Zambezi Basin .....	8
2.2.4 Mauritania.....	8
2.3 CAPACITY BUILDING .....	8
2.3.1 Partnerships for the delivery of a comprehensive portfolio of capacity building measures .....	9
2.3.2 Training activities .....	10
2.4 FLOOD MANAGEMENT REFERENCE CENTRE .....	12
2.5 DISSEMINATION OF INFORMATION .....	12
2.5.1 Newsletter .....	12
2.5.2 Conferences .....	13
2.5.3 Website .....	13
2.5.4 Dissemination of publications .....	14
2.6 LINKAGE TO OTHER ACTIVITIES .....	15
2.6.1 ICHARM .....	15
2.6.2 JICE .....	15
2.6.3 Swiss Federal Office for the Environment .....	15
2.7 IFM HELP DESK .....	16
2.7.1 Outline of IFM Help Desk Concept.....	16
2.7.2 Institutional arrangements and mechanism for the IFM HelpDesk .....	17
2.7.3 Operational Status of the IFM HelpDesk .....	18
<b>3. PROGRAMME PERFORMANCE .....</b>	<b>20</b>
3.1 PROGRESS OF ACTIVITIES .....	20
3.1.1 IFM Concept Paper, Flood Management Tools Series and Flood Management Policy Series ..	20
3.1.2 Support national and regional activities.....	20
3.1.3 Capacity building.....	20
3.1.4 Flood Management Reference Centre .....	20
3.1.5 Dissemination of Information and linkage to other activities.....	21
3.1.6 Establishment of the HelpDesk for Integrated Flood Management.....	21



3.2	FINANCIAL SUPPORT AND PERFORMANCE.....	21
3.2.1	Financial support .....	21
3.2.2	Financial performance .....	22
<b>4.</b>	<b>ACTIVITY PLAN FOR THE PERIOD 2010/2011 .....</b>	<b>23</b>
4.1	IFM TOOLS AND IFM CONCEPT PAPER .....	23
4.1.1	Flood proofing (in planning).....	23
4.1.2	River restoration and wetland conservation (in process).....	23
4.1.3	Transboundary aspects (in process).....	23
4.1.4	Guidelines on Flood Mapping (in process).....	23
4.1.5	Flash flood management (in process) .....	23
4.2	SUPPORT TO NATIONAL AND REGIONAL ACTIVITIES .....	24
4.2.1	Conferences and Seminars.....	24
4.2.2	Kenya.....	24
4.2.3	Flood Impacts Assessment in Mali.....	24
4.2.4	Flood Management in Guinea.....	24
4.2.5	Flood Management in Mauritania.....	25
4.2.5	Flood management in Zambezi Basin .....	25
4.2.6	Flood management in Ukraine.....	25
4.2.7	IFM policy support for Afghanistan .....	25
4.2.8	International Federation of Red Cross – SADC region .....	25
4.3	CAPACITY DEVELOPMENT .....	25
4.3.1	Development of training material .....	25
4.3.2	Training courses.....	26
4.4	IFM HELP DESK .....	26
<b>ANNEX I</b>	<b>VISITORS TO WEBSITE .....</b>	<b>27</b>
<b>ANNEX II</b>	<b>DISSEMINATION OF PUBLICATIONS .....</b>	<b>33</b>



## LIST OF SUB MATERIAL

- I. Flood Management Policy Series
  - (a) **IFM Concept Paper 3<sup>rd</sup> Edition** (English, French, Spanish)
  - (b) Legal and Institutional Aspects of IFM (English, French, Spanish)
  - (c) Environmental Aspects of IFM (English, French, Spanish)
  - (d) Social Aspects and Stakeholder Involvement in IFM (English, French, Spanish)
  - (e) Economic Aspects of IFM (English)
  
- II. IFM Tools
  - (a) Formulating a Basin flood management plan
  - (b) Applying Environmental assessment for flood management
  - (c) Conducting Flood loss assessments
  - (d) Organizing community participation for flood management
  - (e) Reservoir operations and managed flows
  - (f) Urban flood risk management
  - (g) The role of land-use planning in flood management
  - (h) Risk sharing in flood management
  - (i) IFM as an adaptation tool for climate change
  - (j) **IFM as an adaptation tool for climate change (case studies)**
  - (k) **Flood emergency planning**
  - (l) **Management of Sediment-related risks**
  
- III. National and Regional support activities
  - (a) The Study on Integrated Flood Management for Nyando River Basin in the Republic of Kenya
  
- IV. Training activities - Partnerships for the delivery of a comprehensive portfolio of capacity building measures
  - (a) Integrated Flood Management for Sustainable Development - An APFM & Cap-Net collaborative capacity building programme for flood-prone countries, cities, and communities
  - (b) Outline of the Training Course for Integrated Flood Management Policy Course
  - (c) Education materials in collaboration with Project WET
  
- V. Dissemination of information
  - (a) Flood Management Reference Centre
  - (b) **Newsletters (No.20, No.21, No.22)**
  
- VI. Linkage to other activities
  - (a) Memorandum of Understanding between the World Meteorological Organization (WMO) and Japan Institute of Construction Engineering (JICE)
  - (b) Agreement between the Swiss Federal Office for the Environment (FOEN) and World Meteorological Organization (WMO) on “Long-term partnership to support countries in Integrated Flood Management”
  
- VII. IFM HelpDesk
  - (a) **HelpDesk for Integrated Flood Management (Concept Note)**

*\*Bold materials above indicate those newly added or updated in this report.*





## 1. INTRODUCTION

The Associated Programme on Flood Management (APFM), a joint initiative of the World Meteorological Organization (WMO) and the Global Water Partnership (GWP), was established in order to promote the concept of Integrated Flood Management (IFM) and to help demonstrate the practical steps for putting the concept into practice. An IFM approach aims at maximizing the net benefits from flood plains and reducing loss of life due to flooding, flood vulnerability and risks, and at the same time preserving ecosystems within the overall framework of Integrated Water Resources Management (IWRM). It conceptualizes integration of land and water resources development activities in a river basin.

With its basic aims of sustainable development, through comprehensiveness of measures and strategies employed and the involvement of various stakeholders and disciplines, the IFM concept provides the rationale and means to shift away from the traditional 'flood control' approach that focuses on engineering measures. The aim of IFM can be realized only if flood management activities are undertaken within well-defined river basin flood management plans. The key elements that should be considered while preparing such plans are:

- River basin should form the planning unit.
- Risk management principles should guide the planning process.
- Multi-disciplinary and multi-sectoral perspectives need to be considered.
- All stakeholders should be engaged.
- Floods should be considered as part of the water cycle; and
- Equity and fairness in the development process are ensured.

During the phase I (August 2001- July 2006) of the APFM, the principles of Integrated Flood Management have been established through the IFM Concept Paper supported by Flood Management Policy Series. The programme has conducted various regional pilot projects, has collected and synthesized flood management case studies and established a website to offer a variety of information including various products and a set of databases on flood management. The outcomes of phase I are acknowledged and appreciated at various international conferences, workshops and meetings, which induce the dialogue and involvement of institutions and individuals and start a global network to create the required knowledge base to support countries in their efforts to adopt IFM.

The phase II of the programme (2006-2010) is in the process of consolidating these gains. It focuses on implementation of the IFM concept on the ground and seeks to develop capacities in the countries by supporting local and regional actions that advocate, support or demonstrate the IFM principles. The primary focus is on activities at the ground levels in supporting countries by providing guidance and organizing field demonstration projects to put the concepts of IFM, in its multidisciplinary approach, into practice. This is supported by a combination of training and awareness building at various levels addressing flood management issues within the integrated water resources management. The advocacy for IFM is being achieved through capacity development, implementation of field demonstration projects and providing long-term support in the form of Help Desk and information services. Major outputs of the programme would be:

- Field Demonstration Projects;
- National platforms for multidisciplinary dialogue;
- Network of institutions supporting multidisciplinary approach;
- Training, awareness building and advocacy material;
- Capacity building through Trainings of Trainers, Regional Workshops and Seminars;
- Information services in form of a Reference Centre on Flood Management;
- Decision making Tools in support of IFM; and
- Strategic advice on flood management projects in form of a HelpDesk.

This report is the fourth Annual Report of APFM Phase II, which documents the activities undertaken during the fourth reporting period - i.e. from 1 April 2009 to 31 March 2010. Some of the outputs and summarised documents are shown as Sub-material, meanwhile most of the output materials are attached as sub-material in a separate CD-Rom.



## 2. ACTIVITIES

### 2.1 FLOOD MANAGEMENT POLICY SERIES AND IFM TOOLS SERIES

#### *Third Edition of Flood Management Concept Paper*

The '*Flood Management Concept Paper*', which was released five years ago in its second edition, has been revised as emerging issues are treated in more detail: risk management, urbanization, climate variability and change, and adaptive management. Various experiences related to the concept have been gathered since then on the platform of APFM in form of pilot projects, discussion and debate at conferences and interactions with various partners. To capture the full range of experiences before the end of APFM Phase II, the IFM concept paper has been released in its Third Edition during the reporting period (Sub-material I(a)). The IFM concept has proven to be a robust policy concept in terms of being applicable under changing national priorities (such as the recent food security debate). This robustness must be maintained while deepening certain other aspects, such as the role of IFM as an adaptation tool to climate variability and change. The publication has been translated into various languages as shown below;

- IFM Concept Paper (En, Fr, Sp)  
(Above publications are available from: <http://www.apfm.info/publications.htm>)

#### *Flood Management Policy Series*

The '*Flood Management Policy Series*' has been established within the framework of the APFM. The series comprises of publications on various aspects of flood management policy, including legal and institutional, environmental, social, as well as economic aspects to facilitate the implementation of IFM principles into the development planning practice of river basins (Sub-material I(b), I(c), I(d) and I(e)). The series of publications have been translated into various languages as shown below;

- Legal and Institutional Aspects of IFM (En, Fr, Sp)
  - Environmental Aspects of IFM (En, Fr, Sp)
  - Social Aspects and Stakeholder Involvement in IFM (En, Fr, Sp)
  - Economic Aspects of IFM (En)
- (Above publications are available from: <http://www.apfm.info/publications.htm>)

These publications have been translated into several additional languages, based on interest from partners. Those translations are generally undertaken through a License Agreement without resource inputs from the APFM. Currently the following translations are in progress or completed:

- Legal and Institutional Aspects of IFM → Japanese (complete), Serbian (complete)
- Environmental Aspects of IFM → Japanese (complete)
- Other Flood Management Policy Series volumes → Japanese (ongoing)

#### *IFM Tools Series*

During the process of compiling policy series papers, requirement of several tools to implement the concept of IFM in the field were identified. Along with the issued tools (Sub-material II(a), II(b), II(c) II(d), II(e), II(f), II(g), II(h) and II(i)), a new inventory of IFM Tools has been prepared (Sub-material II(j) and II(k)). IFM Tools are guiding materials for flood management practitioners for various specific purposes, e.g. flood mapping, basin flood management planning, floodplain zoning and land use planning, flood loss assessment, flood forecasting and warning, environmental assessment, flood insurance and other burden sharing schemes etc. Those tools are intended to provide substantive guidance to the practitioner and provide a clear perspective of how the different tools fit together for an integrated approach to flood management.





Different IFM Tools are being developed on a number of topics. Some of the tools provide an initial understanding of the issues while the others may provide detailed operational guidance. These would largely be based on outputs from the applied research undertaken in the field around the world and would help the reader attain the multidisciplinary perspective. The tools serve as a resource guide/material for practitioners and not as academic state of the art papers. Other discipline specific tools, already available, would also be included for completeness and comprehensiveness. These tools can be categorized as follows:

- Category A: Introductory notes that address the multi-disciplinary perspective to the tool
- Category B: Detailed notes, which provide the reader with basic understanding of the concepts and initial guidance on the issue to be able to participate in a multi-disciplinary discussion
- Category C: Detailed Methodologies and Guidance Materials

Three tools were selected to be developed during the last period (April 2009 to March 2010), which are “IFM as an adaptation tool for climate change (case studies)”, “Flood emergency planning” and “Management of sediment related risks”. These are basically developed by the TSU staff with peer reviews by outside experts, including universities and institutes. These tools are based on assessing readily available literature, and drawing findings from relevant works into the contents wherever possible. References used are mostly available on the internet and hyperlinks are provided in the “References” section. This approach corresponds to the needs of practitioners that may be confronted with immediate tasks such as flood loss assessment for easy access to relevant guidance materials. All these tools are branded as the “Flood Management Tools Series”, and are disseminated on the APFM website. As the “Flood Management Tools Series” is not planned to undergo extensive linguistic editing, it would be given a distinctive branding that distinguishes the tools series from the “Flood Management Policy Series”. These tools would be living documents and would be updated based on experience sharing.

### **2.1.1 IFM as an adaptation tool for climate change: case studies**

A major element of climate change impact assessments undertaken within the 4th Assessment Report of the WMO/UNEP Intergovernmental Panel on Climate Change (IPCC) was pointing at the possible changes in flood frequency, magnitude and, subsequently, flood risk. The tool on IFM as an adaptation tool for climate change developed in 2008-2009 was to bring the different aspects of climate variability and climate change as it affects flood risks with the aim to show possibilities of how they can be managed successfully. The case studies are complementing the tool on climate change issued in 2008-2009 developing a similar approach. Collected cases from U.S., U.K, France, Germany, the Netherlands, China, Korea and Japan which have advanced experiences in development of adaptation strategy to climate change, elaborate the following aspects: how to assess flood risks for climate change and adapt to the risks; how legal and institutional framework support climate change adaptation; and roles and responsibilities for the adaptation. In principle, the tool is not seen as a technical manual but rather as a starting point for the adaptation to climate change through integrated flood management hence, case studies have emphasized the variety of approaches towards climate change adaptation in flood management practices. Wherever possible, references to more specific sources of information, predominantly online sources, are provided. As climate change impacts are better understood and experiences in dealing with them are gained, the tool will remain a living document in the true sense.

A broad audience is targeted by this tool, as the implications of climate change and variability on flood risks has to be dealt by various stakeholders. However, since flood management is primarily a public task with full involvement of stakeholders the target group are primarily the staff of the respective municipal authorities, national flood planners, emergency response authorities and the public at large. These include: flood managers, spatial planners, civil engineers, water supply and sanitation services, civil defense authorities and health and social services.

The current version of the Tool is attached as Sub-material II (j).



### **2.1.2 Flood emergency management**

Since absolute protection from flooding is a myth, flood emergency management is an integral part of flood risk reduction, which aims at managing and minimizing the damaging effects of flooding. This tool addresses the issue in flood emergency management, the contents of a flood emergency management plan and the preparation of emergency response plans at various levels, including the community level. The tool explains how the flood emergency management intervenes in the framework of risk reduction by reducing exposure to flooding under each stage of flood risk management.

The target group of this tool is primarily flood managers and in particular those who are involved in formulating flood management strategies and policies, having engineering backgrounds and needing rapid access to information to interact with emergency response mechanisms as part of their overall flood management strategy. The staffs of the respective municipal authorities, civil defense authorities and emergency response authorities, who are also essential players as well as adequately the public at large, will also benefit from the tool.

In the context of IFM, decision-making in flood emergency management must take into account not only flood risk alleviation, but also humanitarian and civil protection issues. Planning at all levels must be integrated so that the government's strategy, implemented through different departments, is coherent and harmonized. It must be applied at all levels of public planning, whether national, regional or local, and involve all relevant public agencies. Hence, horizontal and vertical interactions are keys for emergency planning.

With all the efforts in place, the remaining losses should be transferred, shared, or retained properly. The efforts should be made to reduce the residual risks that involve flood emergency management, such as early warning, evacuation and preparation for disaster relief and flood proofing, along with land use and spatial planning. With all the efforts in place for reducing flood risks, the retained risk should be managed properly by each community comprised of many different entities including the government at district levels, business and industry, NGO, and individual citizens. No matter which principles and procedures they have, they need to upkeep their respective operations and make decisions under risk based uncertainties.

The current version of the tool is attached as Sub-material II (k).

### **2.1.3 Management of sediment related risks**

The sediment related disasters such as debris flows and landslides are often combined with floods, particularly flash floods. The mechanism of their origin is in a variety of forms and is not always fully understood. Developing a sustainable strategy to deal with it requires appropriate analytical understanding to formulate strategy combining structural and non structural measures. This tool addresses how these hazards have to be addressed in conjunction with flood issues.

Sediment-related disasters are defined as the phenomena that cause direct or indirect damage to the lives and properties of people, inconveniences to the life of people, and/or the deterioration of the environment, through a large-scale movement of soil and rock. Debris flows and landslides have a high damage potential to human activities and properties seriously and cause the loss of lives at the worst case when they happen near human living-area. Since debris flows and landslides happen unexpectedly and are difficult to predict, it is difficult to take precautionary measures and to establish early warning systems. Integrating land use planning is a pre-requisite in this endeavor. Debris flows and landslides have become a major source of risk for human living as a result of population pressure and related land use changes in landslide prone regions, most notably hilly and mountainous regions around the world. Debris flows and landslides, on the other hand, have been essential sources of sediment to downstream morphology and ecology of rivers, and provided potential land developing of alluvial fans and floodplains historically. The primary objective of this tool is to



demonstrate approaches to address risks posed by landslides and mudflows as well as to provide guidance of how they can be managed to minimize loss of lives and livelihoods through

- Understanding characteristics of debris flows and landslides
- Identifying the benefits and losses through sediment phenomena in river basin
- Assessing sediment movement risks
- Introducing some historical experiences and options to tackle sediment-related disaster management
- Providing a detailed guideline for the management of debris flows and landslides

The current version of the tool is attached as Sub-material II (I).

#### **2.1.4 River restoration and wetland conservation (in process)**

Traditional flood management has been concerned primarily with providing flood protection to farmers, urban dwellings and industry. The concept of draining water as quickly as possible downstream has been ingrained in flood management policies for decades. The visible result of such policy are rivers that have been transformed into straight channels, without active floodplain, and without taking advantage of the natural morphology of rivers and the services which well functioning ecosystems provide for livelihood. The effects of such single purpose interventions in the river system are reduced ground water recharge, a loss of habitat for those species dependent on diversified aquatic environment, reduced in-stream storage and loss of ecosystem services. Social and economic values change in the course of development, so once the above effects become evident, e.g. after a phase of rapid growth, the floodplain communities demand not only flood control but also a healthy, livable, and scenic river environment. Reserving parts of the floodplain as active flood storage, as well as river restoration projects have received a lot of local support in such situations. While the value to biodiversity, scenery and local tourism of such projects is undisputed, flood management practitioners have been struggling to separate facts and fiction in the public debate about the particular type and magnitude of different ecosystem services, especially those pertaining to the effect of different river/wetland restoration options on flood peaks. Experience has shown that retaining or restoring at least some of the natural structure and function of rivers and floodplains, and the wetlands associated with them, can be of great value in flood management programs, offering cost-effective solutions to some of the flooding problems while also generating significant environmental, social and aesthetic benefits. Implementing successful conservation and restoration projects serving multiple objectives requires that interventions are planned and designed with a broad set of stakeholders. The tool would assist practitioners through:

- Reviewing and describing options for conservation and restoration of rivers and floodplains that can potentially assist flood management practitioners in addressing various flood management objectives, such as reduction in peak flows and/or volumes, detention of flood peaks, retention of floodwaters and recharge of groundwater;
- Providing an overview of current practices that could help flood management practitioners in identifying and establishing the values of ecosystem services generated under different conservation, restoration and flood management scenarios;
- Providing ample reference to successful river and floodplain conservation and restoration projects that have helped in achieving flood management objectives or vice versa, and
- Providing examples of structures for the successful decision making processes and the tools and information required for integrating solutions across different objectives.

During the reporting period, administrative procedure for consulting outside expert was explored, and a contract has been issued to an external consultant for the development of the tool.

#### **2.1.5 Transboundary aspects (in process)**

As floods do not recognize borders, transboundary flood risk management is imperative in shared river basins, involving both Governments – as borders are involved – and their people – as risk is involved. However, transboundary flood management is not easy to implement, as joint monitoring, forecasting and



early warning, coordinated risk assessment and joint planning of measures, and appropriate legal and institutional frameworks are all necessary. Transboundary flood management has been at the core of the work under the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) since its entry into force in 1996. Although the Convention does not address floods in detail, most of its provisions are fundamental to the management of transboundary floods. Above all, the Convention obliges Parties to prevent, control and reduce transboundary impacts, including those resulting from floods and from unilaterally decided flood protection measures such as dams. Since the Convention came into force, these core obligations have been elaborated in more detail and expanded in a number of guidelines. Several capacity-building activities have also allowed for strengthening capacity in the region and exchanging knowledge and experience. It should be noted that the European Union (EU)'s Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks has also raised an issue for transboundary aspects. Since then, efforts in the areas of floods management mostly focused on exchanging experiences and knowledge between EU and non-EU countries. As was reported in the previous activities of APFM, a Workshop on Transboundary Flood Risk Management was organized on 22 and 23 April 2009 in Geneva by UNECE, the Governments of Germany and the Netherlands as well as APFM. The workshop aimed to take stock of current problems, recent progress and remaining challenges in transboundary flood management, all on the basis of concrete examples. The workshop was prepared in close cooperation with Parties and non-Parties, who elaborated the case studies by analyzing in depth flood management problems in the different basins. Moreover, a background study was prepared to guide the discussions. Based on this experience, the tool for transboundary aspects will show that in spite of the very different circumstances, there are common problems, objectives and approaches, as a number of useful knowledge for managing transboundary flood risk.

### **2.1.6 Guidelines on Flood Mapping (in process)**

Flood Maps are tools to visually organize the flood information for use by decision makers and the public. They form the basis for developing flood risk scenarios based on various climate conditions, development alternatives, and social and economic conditions. In addition to the general objective of a flood map, special uses like tools for evacuation routes may be of utmost importance in cases of tsunamis and floods in large flatlands. Some other functions of flood maps are (non-inclusive):

- Regulatory: Land use regulation and building codes
- Planning: Impacts of urbanization, other land uses and climate change
- Rescue Operations: Building shelters and earmarking escape routes
- Flood Insurance
- Vulnerability Index
- Informational/Educational: record of flood magnitudes in an area

The decision making process does not end with the preparation of flood maps. Information regarding the risks needs to be communicated to planners, flood managers and the public at large. Flood maps may be developed following various methodologies, but the final product must contain adequate information for decision-making .

Following an “Expert Group Meeting on the preparation of Guidelines on Flood Mapping” in April 2008, the second expert group meeting was organized in Geneva, 4-5 December 2009. Nine international experts attended the expert group meeting. The meeting achieved its objectives in clarifying on the structure and major contents of the final product and agreeing on the finalization schedule.

Scoping the document resulted in several broad areas to be covered by the tool:

- Development of the flood mapping strategy



- Describe various approaches for developing flood maps in brief (e.g., Geo-morphological, Historical, Remote Sensing, Hydraulic)
- Methodologies/technology of Hydraulic approach
- Development of different types of maps
- Social, economic, legal and other issues related to development and dissemination, including communication of flood maps with the user communities

In the months following the first expert group meeting, contributions were received from various experts and compiled as an alpha version draft. An Editorial Board was setup to review the contributions and make the necessary adjustments before starting an external review process of the Guidelines. Due to the fact that the effort is mostly based on voluntary inputs of the members of the expert group, the receipt of contributions sometimes required patience. The draft contributions were of good quality and the critical mass of contributions is there for the Editorial Board to take up its main job in the coming months.

Following the second Expert Group meeting, a technical editor was identified to assemble and homogenize the different contributions. The Tool is scheduled to be completed by November 2010.

## **2.2 NATIONAL AND REGIONAL SUPPORT ACTIVITIES**

Supporting national and regional efforts in implementation of the IFM concept on the ground is one of the priorities of the APFM Phase II. Such activities are categorized as;

1. Technical support activities to help initiating and promoting IFM in a country or region;
2. New field demonstration projects to show IFM on the ground; and
3. Continuous support for the pilot projects undertaken in APFM Phase I to enhance the outreach process of national and regional activities.

New field demonstration projects could be undertaken depending on the availability of APFM core funding. However, inputs were provided for the formulation of project proposals to be implemented with third party funding. As part of these supports, IFM has been positively introduced as a part of comprehensive water policy (Flood Risk Management, California Water Plan, Update 2009) in California, USA (<http://www.waterplan.water.ca.gov/cwpu2009/>).

### **2.2.1 Kenya**

Since the Flood Management Strategy in the Lake Victoria basin as a pilot project in Phase I of APFM, APFM has been contributing to the progress based on the strategy. Among the efforts, “The Study on Integrated Flood Management for Nyando River Basin in the Republic of Kenya”, supported by Japan International Cooperation Agency (JICA) since 2006, was issued in 2008. The executive summary of this study are attached as Sub-material III (a). The key achievement of this project where community-driven flood management organization was established is that the actions taken for flood management such as the construction of facilities, training for flood management and education for disaster prevention are done together with other community-based activities in an integrated manner so that those actions can be sustainable at the community level. From May 2009, the program will be launched based on the agreement between Kenyan government and JICA. APFM continues to provide inputs to the JICA and facilitate the overall understanding of the concept by the central and regional officers in Water Resources Management Authority (WRMA) and Lake Victoria South Water Services Board (LVSWSB) who are responsible for planning and implementation of flood management in the region.

### **2.2.2 Mali**

As a result of a kick-off meeting in September 2009, with the participation of representatives from the national directorates for agriculture, hydrology and meteorology, and the Institute of Rural Economy,



consensus was reached on the general principles for the implementation and management of projects and including the criteria for the identification of the pilot areas and the nomination of focal point in the partner institutions. Likewise, a training course on the evaluation of drought impacts on agricultural systems was organized in September 2009. Concerning the flood component, lacking an already established methodology for the assessment of flood impacts in agriculture, an expert mission in November 2009 discussed with the Malian counterpart the detailed implementation of this component, including identification of pilot area, inventory of flood events, classing of events, analysis of vulnerability and development of plan for its reduction, including the development of an early warning system. Field activities on the flood component are expected to start in March 2010 upon signature of an agreement between WMO and DNH.

### **2.2.3 Zambezi Basin**

WMO in collaboration with USAID/OFDA are developing a Strategy for Flood Forecasting and Early Warning in the Zambezi Basin. The proposed project is intended to assess the capacity for flood forecasting and early warning in the countries in the Zambezi River Basin and particularly in the Zambezi Basin area and formulate a consensus strategy. The project will be implemented through five main activity areas including, Regional Consultation Meeting, National Consultations, Basin-wide meetings of riparian hydrometeorological and disaster management organizations, implementation of a demonstration project on flood forecasting system and analysis and recommendation and proposal for Basin-wide Flood Early Warning Strategy. The regional consultation meeting was organized from 1<sup>st</sup> to 3<sup>rd</sup> December 2009 at Maputo, Mozambique as the first activity of the project. The main objectives of the meeting were to bring together all interested parties to agree on a framework for flood forecasting and early warning system for the Zambezi Basin, to gather necessary information from the countries in the Zambezi Basin to support the development of the Flood Forecasting and Early Warning (FFEW) Strategy in the Zambezi basin and decide on the implementation of the Demonstration Project. Based on the discussions at the meeting a regional consensus on development of a flood forecasting and early warning system for the Zambezi Basin based on a strategy was achieved. The process for confidence building among countries in the Zambezi River Basin for real-time sharing of flood information was initiated. A road map for activities to be implemented under the project until December 2010 (and tentatively up to 2012) was established.

### **2.2.4 Mauritania**

On 1 and 2 July 2009 in Nouakchott (Mauritania) a national workshop was held on Integrated Flood Management (IFM) with the main goal to demonstrate the concept of IFM to the relevant state services, local administration and other stakeholders. The workshop had been organized following a request by the Permanent Representative of Mauritania with WMO as an element of a general strategy to improve national capacities to cope with flood events designed after extensive consultations between WMO and Mauritanian authorities. It also offered the opportunity to provide the first short course on IFM in French language as APFM capacity building activities. The workshop was attended by experts and officers of the Ministries of the Interior and of Infrastructure and Transport, members of the National Crisis Commissions, parliamentarian and local administrators of flood prone areas, representatives of the various relevant technical State services as well as of UN Systems and NGOs. As a follow up to the workshop, a project document has been developed to implement demonstration projects on IFM in selected areas in the countries, notably Tintâne and the catchments of Gorgol, Ghorfa and Niordé rivers. The focus will be on improved flood forecast through the integration of meteorological and climatological information and on strengthening the response capacity of the local communities. Funding is being sought for the implementation of the projects.

## **2.3 CAPACITY BUILDING**

For the implementation of IFM in the field, capacity building of stakeholders is essential. In APFM Phase II major emphasis is placed on capacity building. Capacity building is undertaken at various levels and the contents and the applied methodologies differ accordingly. During the Phase I of APFM, policy series papers



have been developed to enhance knowledge that will be required for flood management. Training courses and materials are under preparation for a *portfolio of capacity building measures on IFM*. Progress during the reporting period is described in the section below:

### 2.3.1 Partnerships for the delivery of a comprehensive portfolio of capacity building measures

#### *Extended vocational training (in-service) together with Cap-Net*

It is recognized that the first line of action in matters of capacity building should be aimed at the professionals. These are water resources and flood managers (e.g. river engineers), planners and policy makers in the areas of water system management, land-use, infrastructure, and urban drainage and spatial planning. Therefore the first element of the portfolio of capacity building measures in the APFM is targeted towards extended vocational training of in-service policy makers as well as flood and water resources managers.

Cap-Net has been identified as one of natural partners for capacity building, for jointly developing and implementing training courses. The knowledge and experience gained in implementing the APFM combined with considerable experience and financial support capacity of Cap-Net in support of capacity building for Integrated Water Resources Management with its network of capacity building institutions have proven to be strong assets in pursuit of the joint work programme of both institutions since 2007. The document is attached as Sub-material IV (a). Development of Training Material in the framework of collaboration with Cap-Net is being undertaken on three topics for different target groups, namely

- Water/flood managers or policy makers at national level (*IFM Policy Course*)  
A modular course of three to five days has been created, including the Lesson Plans, PowerPoint presentation, group exercises, and video material. The Flood Management Policy Series serves as the main background reading material. For each specific course a number of local case studies are being prepared. A team of experts in South East Asia has started to compile those materials for a consolidated regional training package to be published jointly with Cap-Net and others. Based on this development the final consolidation of the global training materials is being considered by the TSU and Cap-Net.

The outlines of the Training courses are attached as Sub-material IV (b).

- National NGOs active in community outreach projects in water or disaster management, and subsequently district/municipal level authorities as well as community leadership in flood prone areas, particularly rural areas. (*Community flood management course*). Under this component it is envisioned to develop training course and materials suitable for adaptation to varied community realities related to the kind of water hazards occurring, as well as the local economic and social structure. Content of the material will focus on the establishment of local flood management cells or committees (CFMCs), responsible among others for community needs and capability assessment, flood awareness raising, flood management operations on the local level (flood preparedness, emergency response and rehabilitation), planning and interfacing with respective government institutions, etc. During the reporting period efforts were undertaken to engage the Bangladesh Centre for Advanced Studies (BCAS) to serve as a partner in reshaping the materials already available from the APFM Regional Pilot Project on the “Community Approach to Flood Management” and shape it into a baseline training material that could be adapted to local circumstances. BCAS has sent to the TSU a first draft for review, and should submit a complete set of training materials within the next few months.
- Municipalities of urban agglomerations, in particular units responsible for urban drainage, spatial planning, as well as warning and emergency services (*Urban Flood Management course*): After translating the course materials on “Urban Flood Management” by Carlos Tucci from Spanish into English, a CD with the full contents was published jointly with Cap-Net.



The advancement of collaboration with Cap-Net has further led to a request by Cap-Net for WMO/APFM to play an active role in a Cap-Net led capacity building initiative with the working title “IWRM as a tool for Adaptation to Climate Change- acting today; preparing for tomorrow”. APFM has responded positively in assisting Cap-Net to shape the contents particularly from a flood management point of view to promote IFM as an element of a climate change adaptation strategy, but also to serve as a hub to WMO climate-related divisions. A training for trainers regional event with WMO/APFM involvement as co-facilitator was held in November 2009 in Kenya together with a Cap-Net affiliated regional capacity building network (NBCBN).

### ***Materials for Educators and Children with Project WET***

The materials were targeted towards the younger generation to aid specialized services and institutions in their outreach to the public. “Project-WET: Water Education for Teachers”, a US based non-profit Foundation, have more than 20 years of experience in the field of water education for teachers and youths, and having developed a global water education delivery network designed to reach children through educators, currently active in more than 20 countries. They have a mutual interest in developing Educational Materials on floods for teachers and youths as this is a gap in their current portfolio of educational outputs.

The publication of the two materials under this category, “*Discover Floods Educators Guide*” targeted at teachers for use as teaching material; and “*Discover Floods KIDs (Kids In Discovery Series) Activity Booklet*” for children/youth ages 8-12, during the World Water Forum in Istanbul in March 2009 was a great success in terms of the amount of copies that was required for distribution. During the Forum and thereafter, various requests for translating the material in other languages (such as Turkish, Spanish, Farsi and Romanian) have been received and would be followed up in consultation between WMO, Project WET and its Education Delivery Network.

### ***E-learning with Technical University of Hamburg-Harburg***

While direct trainings through various mechanisms are considered the most effective means to build capacities for IFM in the field, the use of the Internet as a means of training dissemination is also considered an important component. It is recognized that providing the APFM’s outputs in a more accessible and didactically well-developed manner through web-based learning (or e-learning) options would greatly enhance the outreach of the programme. A list of available flood management e-learning offers is maintained on the APFM website under “Capacity Building”. The E-Learning Systems for Flood Practitioners named “*FLAWS – Living with Flood Risk in a Changing Climate*” and “*EU Flood Manager*” developed at the Technical University of Hamburg-Harburg (TUHH) distinguish themselves from other projects as the philosophy is based on the IFM concepts. APFM and TUHH, have been jointly upgrading the existing systems and incorporated the two systems into one, named “*Flood Manager E-learning*”. A section on the Integrated Flood Management Policy concept has been added and opened to the public in 2010.

## **2.3.2 Training activities**

### ***JICA Training course in Japan***

APFM participated and delivered lectures on the Integrated Flood Management (IFM) in a training course – “*Comprehensive Management of River and Dam*” organized by Japan International Cooperation Agency (JICA) for flood practitioners and water resources managers from government organizations of 7 countries in October 2009. The course “*Comprehensive Management of Rivers and Dams*”, under the supervision of Infrastructure Development Institute (IDI) of Japan provided knowledge and skills of the planning and the design of river improvement and water resources management to participants from China, Indonesia, Iraq, Myanmar, Pakistan, Philippines and Syria. APFM continues to contribute to these JICA training courses to bring the concept of IFM to flood practitioners from developing countries particularly from Asia. Through such trainings, participants will be able to extend their knowledge base to develop multi-disciplinarily approaches to flood management activities.





### ***Training course on Integrated Water Resources management for Iran***

A training course on Integrated Water Resources Management (IWRM) for IRAN was organized jointly by JICA and the Japan Water Agency (JWA) from 24 November to 18 December 2009 in Tokyo, Japan. As part of the training course, a lecture on was held on 9 December on “Floods and IWRM” The lecture aimed to introduce the concept of Integrated Flood Management and activities of the Associated Programme on Flood Management (APFM) and was presented to 11 participants from semi-governmental organizations, dealing with water management. In the course certain activities related to flash flood management and community approaches to flood management were also emphasised. Participants voiced their satisfaction with the lecture and their interest to adopt IFM approach in their flood management activities

### ***Training Workshop on IFM for Countries in Western Asia and Arab Region***

The training workshop, jointly organized by UNW-DPC, the WMO and the Regional Centre on Urban Water Management - Tehran (RCUWM) took place from 11-14 May 2009 in Tehran, Iran. More than 29 participants, including top and mid-level managers and professionals in water resources management, disaster management, land-use management and spatial planning, met in Tehran to share their experiences and best practices regarding the national situation of Integrated Flood Management in their countries. The main objective of the training workshop was to familiarize participants with the concept of Integrated Flood Management and prepare them to identify possible paths of action towards implementation of the concept in their own field of work. The technical presentations and the practical exercises were designed to provide the participants with an in depth exposure to the social, economic, environmental and institutional dimensions of flood management and allow them to develop an integrated perspective on floods, floodplains and the development process in their own country.

### ***IFM Capacity Building Programme in Malaysia***

Co-organized by DID, APFM and Cap-Net, the IFM Capacity Building Programme for the Department of Irrigation and Drainage (DID) of the government of Malaysia took place from 10-14 August 2009 in Kuala Lumpur, Malaysia. About 50 top managers and senior engineers of DID, together with experts from other departments and NGOs participated in the training programme. A key issue of the training had been to introduce the concept of IFM into existing flood management and mitigation plans and to identify necessary measures to implement IFM in river basin planning, master plans and making it a part of institutional planning and operating procedures that require amendments with respect to the legal basis as well as flood management with respect to environmental issues, amongst others. Aiming to test IFM practices in the context of flood management in Malaysia, participants agreed to develop and implement pilot projects. Back-to-back with the training course a seminar was organized in which around 200 participants from central government, federal states of Malaysia, local authorities, NGOs, consulting companies and universities were present on the occasion. In lively interactions between the presenters and participants, the requirements for the implementation of the IFM approach from legal and institutional, environmental, social and economical aspects were introduced by the APFM Technical Support Unit (TSU) and resource persons of Cap-Net and discussed.

### ***Introductory seminar on IFM, Turin, Italy***

On 9 November 2009, an introductory seminar on Integrated Flood Management was organized in Turin (Italy), in the premises of the Regional Museum of Natural Sciences. In response to a request submitted by the Piedmont regional authorities. Purpose of the seminar was to present the IFM concept to a broad audience composed by officer of the regional administration in charge of environment, land-use planning, flood forecasting and civil protection as well as other professional practitioners’ (engineers, geologists) involved in the same activities, and already familiar, by training and working experience with engineering, hydrological and ecological aspects of flood management. After a general introductory presentation of the multidisciplinary requirements for IFM, the theoretical presentation was complemented by the description of case studies of implementation of IFM principles in Switzerland (by Mr. R. Loat from the Swiss Federal Environmental Office) and by a presentation on the uncertainties of hydrological modelling (by Dr. L. Franzi, visiting professor of the Turin Polytechnic University and Dr. D Rabuffetti, from the Piedmont Regional Agency for Environment Protection). The presentations were followed by an animated question and answer session in which various topics were further debated, such as legal implication of forecasting uncertainties,

flood risk mapping, perception of flood hazards in the media and in the public, social implications of land use planning for flood management, legal aspects of flood forecasting.

### ***IFM training workshop for the Nile Basin Countries, Nairobi, Kenya***

Collaborated with FOEN, Cap-Net, NBCBN (Nile Basin Capacity Building Network) and UNESCO-IHE, the Training of Trainers (ToT) workshop on IFM was held in Nairobi, Kenya from 23 to 27 November 2009. The ToT was hosted by ICPAC (IGAD Climate Prediction and Application Center) with the support of KMD (Kenya Meteorological Department). Considering the importance of flood issues in the Nile Basin countries, WMO in response to a request from NBCBN agreed to organize in close collaboration with partners this ToT within IWRM concept for the Nile Basin. The ToT workshop was developed to familiarize participants from Nile Basin countries with the concept of IFM and prepare them to identify possible paths of actions towards implementation of the concept in their own field of work. It provided participants with in depth views of the social, economic, environmental and institutional dimensions of flood management and will allow them to develop an integrated perspective on floods, floodplains and development process in their own countries. Around 30 experts from Burundi, DRC, Egypt, Eritrea, Kenya, Rwanda, Sudan, Tanzania and Uganda agreed to coordinate the establishment of a group of experts to develop a programme for promoting and applying the IFM approach in the countries, as the focal point in each country.

## **2.4 FLOOD MANAGEMENT REFERENCE CENTRE**

Researchers, social scientists, hydrologists, engineers and development planners have been working over a number of years on various aspects of flood management. There is a wide number of research findings, good practices and strategies. However, these activities have been carried out by the specialists in disciplinary isolation with little or no cross-disciplinary interactions. The result is that the available information tends to be confined to the realms of particular discipline without ready accessibility so essential for an interdisciplinary approach. The reference centre plays a vital role in establishing linkages among various disciplines, institutions, and actors involved in flood management. The Flood Management Reference Centre consists of three databases on Flood Management Institutions, Literature, Policy and Law. These databases are being continuously updated. The number of entries and countries in each database, at the reporting time, is as follow;

	Number of countries	Number of entries
Institutions and Agencies involved in Flood Management	112 (112)	388 (383)
Literature on Flood Management	45 (45)	263 (241)
Flood Management Policy and Legislation	50 (50)	232 (228)

\* The numbers in brackets are those reported for the annual report 2008-2009  
Flood prone Areas database had to be discarded because of technical problems and is no longer available.

Sub-material V (a) provides a detailed picture on the coverage of topics, regions and countries.

## **2.5 DISSEMINATION OF INFORMATION**

### **2.5.1 Newsletter**

APFM Newsletters have been published since June 2002 to disseminate APFM activities. The newsletter is disseminated both in PDF and html formats. The PDF version is loaded on the newsletters page of the APFM website. The HTML version is sent via email to subscribers of APFM newsletters (number of subscribers is approximately 921 at the reporting time; the number of approximately 121 subscribers has been increased since last Annual Report Phase II (2008-2009)). The subscribers can also download the PDF version as a



printable format. Generally, “outcomes” of events and conferences which APFM participates in or organizes can be obtained at the events page of the APFM website. During the reporting period three newsletters (No.20, 21, and 22) have been published (Sub-material V (b)).

### 2.5.2 Conferences

#### ***Global Platform for Disaster Risk Reduction, Geneva, Switzerland***

The HelpDesk for Integrated Flood Management was officially launched at the Global Platform for Disaster Risk Reduction on 17 June 2009. In their key note addresses Michel Jarraud, Secretary-General of the World Meteorological Organization and Margareta Wahlström, Assistant Secretary-General for Disaster Risk Reduction, United Nations welcomed the establishment of the IFM HelpDesk and stressed the importance of an integrated approach to flood management in disaster risk reduction, specifically by addressing the underlying socio-economic conditions that exacerbate flood risks. His Excellency, Mr. Shinichi Kitajima, Ambassador of the Japanese Permanent Mission to the United Nations in Geneva introduced the comprehensive experience in flood management in Japan and expressed the willingness of his government to support the IFM HelpDesk. A panel discussed on how the IFM HelpDesk contributed to the reduction of disaster risks including climate change was held during which panel members expressed their expectation from the IFM HelpDesk.

#### ***World Climate Conference-3***

A special side event for the IFM HelpDesk was held on 1st September 2009 during the World Climate Conference-3 (WCC-3). WCC-3 was convened to provide nations with the opportunity to jointly consider and appropriate global framework for climate services that would help every country access and apply climate information. The event was moderated by Dr. Eugene Stakhiv, US Army Corps of Engineers, with five panellists representing academia technical experts, policy makers and development agencies. The main theme of panel discussion was “Role and Potential of Climate Information in support of Flood Management and the Role of the IFM HelpDesk”. The discussion recognized that climate variability and change may affect current flood management practices and call for innovative approaches. The event provided an excellent opportunity to promote HelpDesk services and activities.

#### ***World Water Week***

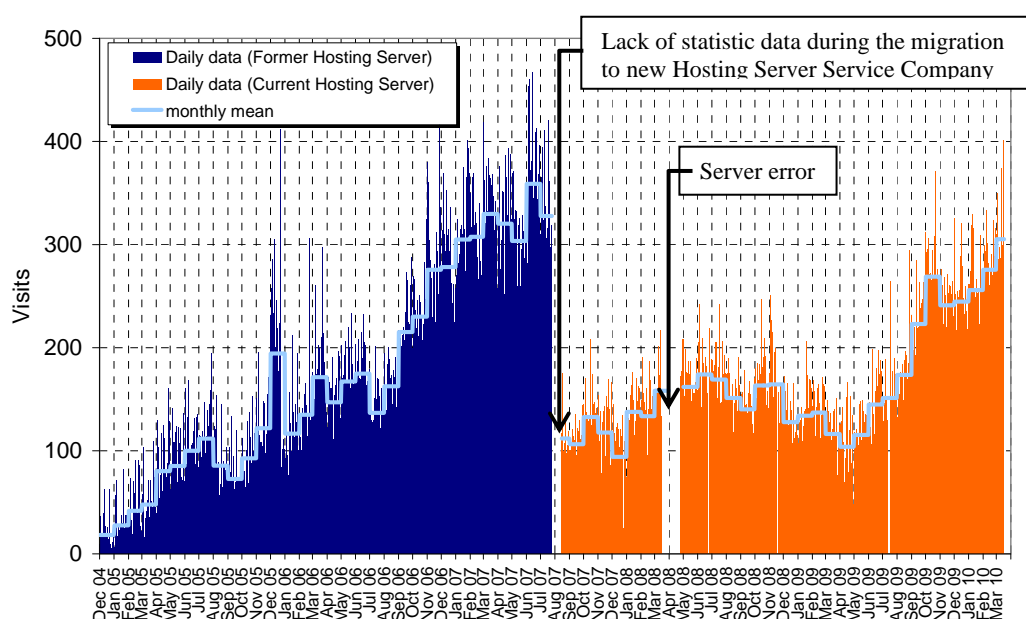
As part of the Annual Stockholm World Water Week, a side event titled “Country Assistance for Robust Flood Management Policies: The HelpDesk for Integrated Flood Management” was organized together with the partners of GWP, Cap-Net/UNDP, the Stockholm International Water Institute (SIWI) and the Dundee Centre on Water Law, Policy and Science. The side event helped to further raise awareness amongst water professionals about the available support mechanism under the HelpDesk for countries and river basin organizations. As part of the ‘Water and Climate Days’ the APFM joined Cap-Net and a series of further actors in organizing a seminar “Integrated Water Resources Management (IWRM) as a practical approach to climate change adaptation”. During the seminar the newly available Training Manual and Facilitator’s Guide on the same topic was published. This training manual is available to assist capacity builders in developing training and educational programmes on the use of IWRM tools and instruments for adaptation to climate change impacts. The material is intended to increase our understanding of climate change impacts and what we can do now through better water resources management.

### 2.5.3 Website

During the Phase I of APFM, the APFM website was established as the central access point for information on flood management in order to:

- promote the IFM concept;
- disseminate APFM activities in adopting IFM, such as field demonstration projects (i.e. pilot projects) and compilation of good practices and lessons learned from various regions of the world;
- provide for reference centre on flood management (i.e. a set of databases); etc.

The APFM website is continuously updated to meet these objectives. All publications and materials produced so far, information of latest events and flood management reference centre are made available on the website. Since the launch of APFM website in December 2004, the number of visitors have been steadily increasing. As seen in the figure below, the gap of the number of visitors in July 2007 was due to differing statistical solutions applied from different companies hosting the APFM server. (TSU had changed the hosting server company because it had identified a new company which had a better hosting server service, at a cheaper overhead cost.). Several peaks of hits have been observed after major events such as international conferences and issue of new APFM newsletters. The steady rise in number of visitors is a clear indicator, that visitors tend to revisit the page, as otherwise the peaks around events would recede back to original values.



**Figure 1: Sessions (from 1 December 2004 to 18 March 2010)**

#### 2.5.4 Dissemination of publications

During the reporting period, the publications of Flood Management Policy Series (Legal and Institutional Aspects of IFM, Social Aspects and Stakeholder Involvement in IFM, Environmental Aspects of IFM and Economic Aspects of IFM) in English were delivered to several universities and institutions with curriculum relevant to Integrated Water Resources Management (IWRM) or Integrated Flood Management (IFM). The publications are also delivered to NGOs and government organizations. French version and Spanish version of publications are under dispatch to French and Spanish speaking countries. At the international conferences or workshops these publications are also distributed. APFM CD which includes all APFM website contents were also distributed. The following table shows the number of countries, institutions, and publications in each publication, at the reporting time.

	Number of countries	Number of institutions	Number of copies dispatched
Legal and Institutional Aspects of IFM	134 (133)*	429 (415)	1,191 (962)
Social Aspects and Stakeholder Involvement in IFM	135 (134)	439 (439)	1,229 (1,050)
Environmental Aspects of IFM	134 (134)	455 (423)	1,315 (1,003)



Economic Aspects of IFM	37 (31)	61 (49)	438 (176)
-------------------------	---------	---------	-----------

\* the numbers in brackets are those reported for the annual report 2008-2009

## 2.6 LINKAGE TO OTHER ACTIVITIES

### 2.6.1 ICHARM

The International Centre for Water Hazard and Risk Management (ICCHARM) has been established in March 2006 at the Public Works Research Institute (PWRI) in Tsukuba, Japan under the auspices of UNESCO. The Centre provides and assists implementation of best strategies to communities, nations, regions, and the globe to manage the risk of water related disasters. The Centre also serves as the secretariat of the International Flood Initiative (IFI), in which UNESCO and WMO are the key participating organizations. WMO is closely collaborating through APFM and is also represented in its Board of Governors. Since the establishment of the centre, ICHARM has been developing its activities and APFM has contributed to ICHARM by providing IFM inputs. Recognizing the importance of incorporating IFM concept into the activities of IFI and ICHARM, greater synergy is being developed through cooperative activities by APFM and ICHARM.

### 2.6.2 JICE

The Japan Institute of Construction Engineering (JICE), a Japanese non-profit foundation, conducts comprehensive, effective research and development of new construction technologies with a view to improve construction engineering practices. One of their focus being flood management and water resources development including coastal management, WMO and JICE have recognized mutual interest in promoting integrated approaches to flood management, through cooperative activities in developing concepts and operational tools for implementation of IFM and thereby contribute to the prevention and mitigation of natural disasters. JICE has been working with WMO and supporting APFM based on comprehensive agreement signed on May 2007 and yearly agreements between the two parties that specify the activities and the contributions of resources for the activities (Sub-material VI (a)). Since then, valuable collaboration has been made between the JICE and WMO, particularly in the preparation of advocacy materials to disseminate IFM concepts to policy makers, flood managers, disaster management authorities, local administrations and NGOs and through translation of these materials into Japanese.

### 2.6.3 Swiss Federal Office for the Environment

The collaboration between the APFM and the Swiss Federal Office for the Environment (FOEN) has been substantially strengthened during the reporting period. FOEN has been working with WMO and supporting APFM based on comprehensive agreement signed on 16 July 2008 and yearly agreements between the two parties that specify the activities and the contributions of resources for the activities (Sub-material VI (b)). Being recognized that Switzerland has a long and successful experience in dealing with floods and other related natural hazards through an integrated and holistic approach, FOEN and WMO have mutual interests in promoting integrated approaches to flood management, through cooperative activities in order to: help assimilate and implement the principle of IFM within Integrated Water Resources Management; provide guidance on flood-related issues to countries that want to adopt the IFM concept including formulation of flood management policies; facilitate technical inputs into flood management projects and programs implemented in the countries; and share experience in IFM implementation. The partnership is intended to strengthen the operations of the APFM in support of flood prone countries, both financially and technically. The scope of activities in the reporting periods includes development of IFM tools, implementation of the Help Desk shown in the section 2.7, training and workshops in IFM, and expertise for activities such as guidelines on flood mapping.



## **2.7 IFM HELP DESK**

### **2.7.1 Outline of IFM Help Desk Concept**

There is an overwhelming need to facilitate the adoption of the IFM approach at the field level, and the capacities at the international level to provide competent, impartial and balanced guidance backed with adequate human and financial resources needs strengthening in form of a clear and accessible mechanism. The experience in the field of IWRM has shown that acceptance of IWRM philosophy has not automatically translated into its implementation at the field level. One critical success factor identified is the lack of a clear knowledge base. It is realized that there is need for an international institution, which can be approached by a country requiring working guidance on comprehensive issues of flood management in an integrated manner. In order to help in adopting IFM approaches on the ground, Integrated Flood Management HelpDesk (IFM HelpDesk) was established in 2009. The IFM HelpDesk is a facility that provides guidance on flood management policy, strategy and institutional development related to flood issues to countries that want to adopt the IFM concept. It is based on close partnership with the country and tailored to their specific needs, with the aim of assisting in IFM implementation.

The IFM HelpDesk, coordinated by WMO is based on a multi-disciplinary network of institutions with required expertise in various facets of Integrated Flood Management. The IFM HelpDesk will:

- Provide quick access to relevant flood management information;
- Provide guidance and momentum for reform in favour of IFM in countries or river basins in developing long-term flood management policies, strategies and institutional arrangements;
- Serve as a link between flood management practitioners and decision-makers and multi-disciplinary scientific expertise and best practice in various fields such as hydrology, river engineering, legal and institutional development, ecology, sociology and development economics.
- Provide a continuous and sustainable capacity development mechanism in support of IFM implementation.

During the reporting period relevant constituent bodies of WMO took the following steps in relation to the establishment of the IFM HelpDesk:

#### **WMO Congress**

WMO Congress during its Fifteenth Session “appreciated the activities under the Associated Programme on Flood Management, which had helped achieve the objective of disaster risk reduction and provided technical support to countries in flood management policy formulation. It welcomed the establishment of the Help Desk services as a tool for providing support on flood management policy issues in collaboration with other partners.” Under Resolution 20 (Cg-XV) Congress decided “That WMO should continue its advocacy for a widespread adoption of an Integrated Flood Management approach at the basin, national and international levels”

#### **WMO Executive Council**

WMO Executive Council recognizing at its sixtieth session the “growing demand for continued scientific and technical inputs of the hydrological, meteorological and climatological communities into flood management policies and practices. It appreciated the efforts being made by the Secretariat through the implementation of the Associated Programme on Flood Management to support the countries in developing flood management strategies.”

#### **WMO Commission for Hydrology**

Under Res. 4 (CHy-XIII) the Commission decided “To assist setting up of a HelpDesk for Integrated Flood Management for the benefit of Members in the areas of flood management policy and strategy, and capacity building in support thereof.”



The IFM Help Desk is hosted in WMO but depends on a strong decentralized network of experts and specialized institutes. This is necessary because integrated flood management depends on various inputs and Tools, excellence of which cannot be provided by one single organization. And the IFM HelpDesk functions in two modes: the autodidactic mode (Self Help) and the interactive mode (Get Help).

The target audience of the IFM HelpDesk includes the following groups:

- National, provincial and local government agencies involved in decision making charged with a role in flood management (policy makers, flood management practitioners, development planners, disaster managers, National Hydrological and Meteorological Services, etc.);
- River Basin Organizations;
- Bi- and Multi-lateral Organizations involved in Technical and Financial Cooperation;
- Non-Governmental Organizations, in particular those working with flood affected communities;
- Voluntary Organizations and Community-based Organizations ; and
- Universities.

Requests from the latter two groups would need to be considered in light of number of requests received and the political environment in which proposals for intervention by the IFM HelpDesk are made.

### 2.7.2 Institutional arrangements and mechanism for the IFM HelpDesk

The TSU places emphasis on the establishment and consolidation of the support base of the IFM HelpDesk, namely, those partner institutions expected to actively support the operation of the IFM HelpDesk. This set of partners is derived from the expected needs under the IFM HelpDesk, as well as the experience made by TSU in collaborating with various partners throughout the project term of the APFM. The approach taken in establishing the support base is based on the recognition that a small group of partners that have proven to be in the position to effectively deliver together in IFM policy and implementation should be established first. Based on the operational capacity of the IFM HelpDesk after its launch, additional partners would be considered for integration into the IFM HelpDesk Support Base. The formal process of becoming a IFM HelpDesk Support Base Member consists of signing a “Letter of Engagement”. This instrument is designed to formalize to a certain degree the relationship between the APFM and the respective partner and to ensure a minimum contribution in-kind or otherwise to the IFM HelpDesk.

Sub-material VII provides the IFM HelpDesk Framework Document and the (sample) Letter of Engagement.

The current list of IFM HelpDesk Support Base Partners as of April 2010 is listed below; and a separate list shows the status of activities to engage other potential Support Base Partners as of March 2010:

#### IFM HelpDesk Support Base Partners

- Asian Disaster Preparedness Centre (signed on 17 June 2009)
- Cap-Net/UNDP (signed on 19 March 2009)
- Czech Hydrometeorological Institute (signed on 17 June 2009)
- DHI Groups (signed on 18 August 2009)
- Deltares (signed on 19 March 2009)
- Global Water Partnership (signed on 27 March 2009)
- Hamburg University of Technology (signed on 30 June 2009)
- International Association of Hydrological Sciences (signed on 19 March 2009)
- JICE (signed on 7 December 2009)
- Japan Water Agency (signed on 30 April 2010)
- Korea Water Forum (signed on 17 June 2009)
- Korea Water Resources Association (signed on 17 June 2009)
- The International Centre for Water Hazard and Risk Management (signed on 21 March 2009)



- Stockholm International Water Institute (signed on 18 August 2009)
- UNESCO-IHE (signed on 19 March 2009)
- University of Dundee (signed on 18 August 2009)
- University of Nice Sophia Antipolis (as part of EUROAQUAE, signed on 25 March 2009)
- UNOSAT (signed on 31 March 2009)

#### Other potential partners

- AGRHYMET
- Australian Bureau of Meteorology
- Centro de Estudios y Experimentacion de Obras Publicas (in process)
- International Association of Hydraulic Research
- Institute for Water Resources US Army Corps of Engineers (in process)
- Nile Basin Capacity Building Network
- RAMSAR
- Regional Centre on Urban Water Management (in process)
- UN/ISDR
- UNECE
- University of Idaho (in process)

It is important to note that some of those partners are foreseen as technical partners and some as technical and financial partners. Further, efforts would need to be made to broaden the linkages of the IFM HelpDesk to bi- and multilateral development agencies.

### 2.7.3 Operational Status of the IFM HelpDesk

Since the official launch of the IFM HelpDesk at the UN-ISDR Global Platform on Disaster Risk Reduction on 17 June 2009, the number of requests for “Get Help” part and the state of response is shown below.

Request No.	Name Institution Country	Request Category	State of response	Status
1	Elohor Freeman Oluowo University of Benin Nigeria	Capacity Development	A request for training information. TSU provided training modules with necessary website.	Completed
2	EDUARDO MARIO MENDIONDO Sao Carlos School of Engineering-Univ of Sao Paulo, Brazil	Capacity Development	A request for the collaboration with the university. TSU proposed a training course/workshop waiting for response come.	In process
3	Carlo Troisi Arpa Piemonte Italy	Capacity Development	A one day introduction to IFM was held in November 2009 - See 2.3.2	Completed
4	Amel Azab NBCBN Egypt	Capacity Development	A ToT Workshop was held in November 2009 in Nairobi - See 2.3.2	Completed
5	GBABRA YORUBA Ministry of environment, Bayelsa State Nigeria	FM policy, Law and Strategy	Responded to a question of the status on drainage plan in the Niger-Delta region was sent with necessary information of further HelpDesk assistance.	Completed
6	David Dulo Victoria Institute for Research on Environment and Development Kenya	Capacity Development	The organization of a training activity has been put on hold until resources have been mobilized.	In process





7	Fred Wilson Kyosingira Directorate of Water Resources Management Uganda	FM policy, Law and Strategy; Capacity Development	A workshop proposed has been finished for the development of national IFM implementation plan. Pending reply from Mr Kyosingira	In process
8	Jan Yap Malaysia	Pilot Project	The possibility of a pilot project in Malaysia on IFM has been advanced by Mr Yap. Currently waiting for further information about this proposal	In process
9	Farid Aiywar International Federation of Red Cross – SADC region SADC	Capacity development	A request for a training on IFM for IFRC disaster managers has been received from the IFRC SADC regional chapter. Coordination for the training course is currently going on with the IFRC headquarters in Geneva	In process
10	Birhanu Zemadim Birhanu Bahir Dar University Ethiopia	Capacity development	Request to assist in the facilitation of a training course being organized by CapNet.	In process

An important effort in APFM's outreach efforts has been to promote the availability of the IFM HelpDesk to the water and disaster management community. During 2009 further efforts were undertaken to make the availability of the IFM HelpDesk known to a wider community as potential beneficiaries from HelpDesk services. The World Water Week in Stockholm and the World Climate Conference-3 were used as additional forums to make the IFM HelpDesk known to the water professionals in form of side events. The period between June 2009 and spring 2010 was the period in which the operation of the HelpDesk would be fine-tuned with the aim of being fully operational at the end of the APFM Phase II. The central domain name for the HelpDesk is "[www.floodmanagement.info](http://www.floodmanagement.info)", which helps visitors to remember its name easily.



### **3. PROGRAMME PERFORMANCE**

#### **3.1 PROGRESS OF ACTIVITIES**

##### **3.1.1 IFM Concept Paper, Flood Management Tools Series and Flood Management Policy Series**

IFM Concept Paper has been updated as the third edition. IFM Tools on “Flood emergency planning”, “IFM as an adaptation tool for climate change: case studies” and “Flash flood management” have been developed to guide the flood practitioners in their efforts toward the implementation of IFM. Progress under this activity can be assessed as planned. Elements of the IFM Concept Paper and Flood Management Policy Series have been taken up in a number of additional languages; especially the IFM Concept Paper has been translated into Russian during the reporting period.

##### **3.1.2 Support national and regional activities**

During this reporting period, APFM has continuously supported the outreach process of the pilot projects undertaken during Phase I to enhance its effectiveness and promote further implementation of the IFM in the field within the planned and available resources. The outreach process is primarily depending on the joint cooperation and resources provided by collaborating organizations and countries. The Strategy in the Lake Victoria basin is now being followed up by JICA under “Study on Integrated Flood management for Nyando River Basin in the Republic of Kenya”. Some more field demonstration projects were developed and will be implemented in collaboration with the other partners in Mali, Zambezi basin and Mauritania.

##### **3.1.3 Capacity building**

IFM Training Course materials have been further refined and web-published based on the contents of flood management policy series papers prepared during Phase I with a view to facilitate presentation of the concept by the trainers at training workshops and thereby support enhancing people’s understanding of the issues and the multidisciplinary nature of flood management. The materials provide opportunity to introduce various aspects of IFM in the capacity building activities such as IFM training and it also can be used for self-learning. Training of Trainers courses were conducted for South East Asia and the Ibero-American countries.

The “Flood Manager E-learning” system was developed and would be made freely available online in 2010 in collaboration with TUHH. The system would be expanded in the future on an opportunity and needs basis.

Several institutional partnerships especially those with Cap-Net, Project WET and TUHH have started to bear fruitful results and synergies for capacity building activities related to flood management. JICA training for “River and Dam Engineering III” was undertaken during reporting period and trainees were well appreciated the contents of the inputs from APFM. The promotion of cooperative activities will be continued to create the synergy of cooperation, e.g. under the umbrella of the UN-Water Decade Programme on Capacity Building. Progress in this activity is assessed as satisfactory.

##### **3.1.4 Flood Management Reference Centre**

The Flood Management Reference Centre has been continuously strengthened especially the databases for Flood Management Institutions, Literature, and Policy and Law. The Question and Answer Section was published during the reporting period on several levels, namely Q&A related to the IFM Concept and the functioning of the HelpDesk. The Flood Management Reference Centre and the Q&A Sections have become parts of autodidactic mode of IFM Help Desk (see 2.7 Help Desk).



### 3.1.5 Dissemination of Information and linkage to other activities

APFM participated in three international conferences during the reporting period which provided excellent opportunity to disseminate information, get the comments and suggestions to further develop our activities, and raise opportunity for future activity. Three APFM newsletters were disseminated to provide latest activities and progress under APFM. The APFM Website is continuously updated and the number of daily visitors to APFM website continues to rise. Printed form of APFM publications are disseminated to various training institutions and universities that have relevance to IFM and IWRM.

### 3.1.6 Establishment of the HelpDesk for Integrated Flood Management

The formation of the institutional partnerships under the Helpdesk for Integrated Flood Management formed a major part of the efforts during the reporting period. After a workshop with all intended partners, formal institutional partnerships in form of a Letter of Engagement have been taken up. This effort is well underway with formal agreement completed with 17 key institutions and a similar number expected to sign within the course of the next months. The development of the webpage of the helpdesk has proceeded satisfyingly in terms of integrating the necessary access to information and request forms for the target group. Within the first months of operation of the HelpDesk a collaborative work space for the support base partners has been setup based on the initial experience gained with incoming requests and the joint follow up of support base partners. Promotional activities have focussed on the World Water Week and World Climate Conference-3, the regional IFM training courses and conferences attended by WMO staff such as the Mekong Flood Forum. Progress in this activity is assessed as satisfactory.

## 3.2 FINANCIAL SUPPORT AND PERFORMANCE

The financial statement of the APFM Trust Fund with income and expenditure from April 2009 to March 2010 is summarized including last instalment from Japan and Switzerland, is given in the Tables on the next page. The statement does not include the last instalment from Switzerland after April 2010.

### 3.2.1 Financial support

During the reporting period, CHF 450,090 was contributed by Japan and CHF 100,000 by Switzerland to APFM as a direct financial support. In addition, Switzerland, Spain, Italy and USAID contributed to APFM activities through indirect financial supports. The general contribution from HWR was included for income of this period.

1 <sup>st</sup> instalment from Japan:	CHF 307,607 (JPY 26,950,000)	December 16
2 <sup>nd</sup> instalment from Japan:	CHF 93,655 (JPY 7,700,000)	March 31
3 <sup>rd</sup> instalment from Japan:	CHF 46,828 (JPY 3,850,000)	March 31
(Total contribution from Japan)	CHF 448,090	
3 <sup>rd</sup> instalment from Switzerland for 2008-09	CHF 20,000	July 1
1 <sup>st</sup> instalment from Switzerland:	CHF 80,000	December 10
(Total contribution from Switzerland)	CHF 100,000	*not including the last instalment after April 2010
(Interest minus bank charge)	CHF 218	
(Total Income)	CHF 548,308	*not including the last instalment after April 2010



### 3.2.2 Financial performance

Against the available funds of CHF 528,308 (contribution plus interest) plus carryover of CHF 214,883 (including CHF 20,000, the instalment from Switzerland on 1 July 2009 for contribution to 2008/2009), an expenditure of CHF 314,809 was made and a balance of CHF 428,382 is committed. The instalment after April 2010, CHF 40,000 from Switzerland will be also committed into a balance. A number of activities were undertaken through the regular WMO funds. Activities were mainly focused on the initiation of capacity building activities through creating cooperative schemes with other institutions. Support to national and regional activities was provided as requested, which is likely to pick up momentum and require resources for implementation.

Along with the APFM Trust Fund, the APFM activities were supported from WMO regular budget and the other trust funds. The formulation of the “Guidelines on Flood Mapping”, of which the second expert group meeting had been held in December 2009, has been supported directly from WMO regular budget (CHF 46,637). Staff of the Hydrology Branch of the Climate and Water Department of WMO also support APFM activities.

**APFM TRUST FUND FINANCIAL STATEMENT**  
(as of 31 March 2010)

**1. Income and Expenditure from April 2009 to March 2010**

		CHF
1-1.	Opening balance	194,883 (a)
1-2.	Income	
	Contributions	548,009
	Interest	299
	<b>Total Income</b>	<b>548,308 (b)</b>
1-3.	Expenditure (including support costs)	
	Actual Expenditure (Liquidated)	337,896
	Unliquidated (Obligation)	-16,963
	Requisition (Future Obligation)	-6,124
	<b>Total Expenditure</b>	<b>314,809 (c)</b>
1-4.	Carry forward from this period	<b>(a)+(b)-(c) 428,382</b>

*Certified*

U.S.

140410



## **4. ACTIVITY PLAN FOR THE PERIOD 2010/2011**

### **4.1 IFM TOOLS AND IFM CONCEPT PAPER**

TSU will continue developing five tools “Flood proofing”, “River restoration and wetland conservation”, “Transboundary aspects”, “Guidelines on Flood Mapping” and “Flash flood management”. Other tools would be adapted from existing literature available with partners.

#### **4.1.1 Flood proofing (in planning)**

As part of wider flood management strategy, living with floods becomes an important component. The building codes and regulations along with the land use controls can contribute to minimize losses of life and property by adapting housing standards and methods of construction. Flood proofing is one of structural measures which enhance resilience of semi-structural measures to mitigate or minimize the damaging impact of flooding by avoiding exposure to floodwaters. These policies should be managed comprehensively in the context of adaptive management for flood and be made accessible to the widest possible range of flood-affected communities. The supportive legal, institutional and environmental frameworks are indispensable. The tool developed in this category will provide an overview of good practices and lessons-learned on flood-adapted land use and housing.

#### **4.1.2 River restoration and wetland conservation (in process)**

After contract has been made with an external expert,, the tool development would be soon processed with the cooperation of Global Water Partnership, and more inputs through collaboration with Japanese Ministry of Land Infrastructure, Transport and Tourism (MLIT) for their decade’s efforts of Technical Criteria for River Works,. Switzerland is expected to contribute to the tool through its experiences and recent achievements in restoring river systems. Efforts would be made to work with outside expert like RAMSAR through GWP would be explored.

#### **4.1.3 Transboundary aspects (in process)**

The experiences from the UNECE region on transboundary flood risk management were issued in the end of 2009 based on an ECE workshop on Transboundary Flood Risk Management on 22-23 April 2009. Since this publication was highly focused on EU countries, the tool will include more materials based on experiences of selected major international river basins outside Europe and published as one of the APFM tool series.

#### **4.1.4 Guidelines on Flood Mapping (in process)**

Based on high quality materials contributed by co-authors to the Editorial Board, the Board will review the contributions and towards the development of an advanced draft version of the tool. The editorial board consists of representatives of FOEN, WMO and technical universities playing a key role in the preparation process. The Guideline will be finalized through an external review process by the end of 2010. Substantive guidance material on this subject with an international and development sensitive perspective is in high demand. Elements of the guidelines would also be used in future training courses on integrated flood management, particularly to provide practical tools in the context of risk assessment.

#### **4.1.5 Flash flood management (in process)**

This tool introduces a variety of options for the implementation of non-structural measures which can reduce risks of flash floods. Flood forecasting and warning are expected to play an important role in flash flood management though there are difficulties to provide accurate and timely warnings, together with spatial



planning, flood proofing, flood hazard mapping, local participatory approach and proper legal framework to integrate flood management planning and spatial planning. A first version of the tool has been drafted, and the final version is planned to be published later in the second half of 2010.

## **4.2 SUPPORT TO NATIONAL AND REGIONAL ACTIVITIES**

### **4.2.1 Conferences and Seminars**

#### ***International Disaster and Risk Conference IDRC Davos 2010), Davos, Switzerland, 30 May to 3 June 2010***

This meeting signifies the central global meeting to focus on the array of risks society is facing today and on effective strategies to manage and reduce these risks and disasters. The side event proposal has been accepted under the title “Flash Flood Prediction and Management” and would be held on 1 June 2010 in Davos, Switzerland with participation of the mayor of Mitsuke-city, Japan. Extremely short time scales for forecasting and prediction of flash floods and uncertainties in defining the area of event are a scientific and operational challenge for meteorological and hydrological services that provide early warning to disaster management agencies and the general public. The session would provide an excellent platform for interaction and the exchange of good practices between scientists and forecasters from national meteorological and hydrological services as well as professionals dealing with the management of floods, including flash floods. The session is expected to identify activities in science and research, forecasting and management of flash floods that can be taken up by concerned organizations and agencies to work towards improvement of forecasting prediction and management of flash flood as an essential component of integrated flood management.

### **4.2.2 Kenya**

A Master plan formulated in 2008 covers both structural and non-structural measures from short-term (by 2012) to long-term (after 2021). Under support of JICA, the five pilot projects were completed in 2008 and further project (2009-2011) for integrated flood management at 24 communities in Nyando River basin along Lake Victoria has just initiated from 2009. These projects emphasize community participation and transparency of decision making. APFM will participate in the proposed workshop to be organized by JICA to support the practical phase of their flood management through disseminating IFM tools and IFM HelpDesk, which are planned to adopt the IFM principles applicable to each field. Such activities can contribute to the applicability of the IFM concept.

### **4.2.3 Flood Impacts Assessment in Mali**

A working plan has been established jointly with national water directorate of Mali, detailing the activities to be carried out in 2010 for project implementation. The first step will be the collection of data on recent flood events from hydrological characteristics to estimate impacts on the agricultural sector. Data will be collected in the Ségou region, which has been chosen for both its importance in the agricultural production in Mali and for its representativeness of the various flood types that occur in the country. A data base will be created and upon analysis of the data the impacts on different socio-economic and environmental settings will be undertaken and a vulnerability analysis will be conducted. The development of a early warning system and the implementation of specific actions to reduce vulnerability will follow.

### **4.2.4 Flood Management in Guinea**

A brief project proposal for IFM in Guinea has been formulated under the title “Enhancing flood preparedness of settlements at risk” with the National Directorate for Hydraulics – DNH within the Ministry of Hydraulics and Energy as the implementation partner. The proposal has been submitted to the African



Water Facility for possible funding. This option will be further pursued and additional financial partners identified as required.

#### **4.2.5 Flood Management in Mauritania**

A project proposal for Flood forecasting and management in Mauritania, developed by an external WMO consultant, is being reviewed by the TSU. Once the project proposal will be accepted by local authorities, funding will have to be secured from external resources.

#### **4.2.5 Flood management in Zambezi Basin**

Based on the process for confidence building among countries in the Zambezi River Basin for real-time sharing of flood information initiated in 2009 and the established road map, activities would be implemented under the project until December 2010 (and tentatively up to 2012) in pursuit of the aims of IFM.

#### **4.2.6 Flood management in Ukraine**

Based on a request by United Nations Development Programme (UNDP) in Ukraine, APFM plans to technically support the formulation of a flood management and mitigation project in Ukraine. After initial consultation a project brief is expected from UNDP. The process would be fully steered by UNDP so timelines are at this stage unclear.

#### **4.2.7 IFM policy support for Afghanistan**

Based on a request received from an advisor to the Afghan Ministry of Energy and Water, TSU will engage in a policy making process in Afghanistan as a supplement to the already existing policies on IWRM. Process coaching and technical inputs would be the first pursued efforts. Depending on the further process the effort may result in a broader engagement. The process is currently on hold due to the unclear political situation.

#### **4.2.8 International Federation of Red Cross – SADC region**

A workshop will be organized in the course of 2010 for disaster management officers of the IFRC sub-regional office, to introduce to them the concept of IFM in view of future cooperation. Further planning is required.

### **4.3 CAPACITY DEVELOPMENT**

#### **4.3.1 Development of training material**

##### ***Vocational training materials together with Cap-Net***

The “Collaborative Work Programme” of Cap-Net and WMO on Integrated Flood Management would be updated for the activity after 2010 on the allocation of activities and budget expected after the AC/MC Meetings.

Development of IFM Training Material in the framework of collaboration with Cap-Net is being undertaken on two topics for different target groups, after completing urban flood management course, namely

- Water/flood managers or policy makers at national level (*IFM Policy Course*)  
Based on the development by the end of last reporting period, the final consolidation of the training material will be considered in collaboration with Cap-Net.
- National NGOs active in community outreach projects in water or disaster management, and subsequently district/municipal level authorities as well as community leadership in flood prone areas, particularly rural areas. (*Community flood management course*)

The efforts to serve the Bangladesh Centre for Advanced Studies (BCAS) as a partner would be continued through the development of training material for community flood management. For the IFM Policy course,



materials have been created in form of lesson plans, presentations or course readers in English and Spanish. A course in Mauritania in 2009 served as an opportunity to provide the first short course on IFM in French language. For the South East Asian Region after holding a Training of Trainers in February 2009, a fully fledged training package for trainers, facilitators and trainees was being prepared by CKNet-INA with funding from Cap-Net and the World Bank. Based on the first experiences with using the materials a fully fledged global training package according to the standards applied by Cap-Net would be published.

#### ***E-learning in collaboration with Technical University of Hamburg-Harburg***

After completing the IFM Modules, APFM and TUHH would continue to work together on an adapted version of the e-learning tool for integrated flood management, which would be jointly published at the launch of HelpDesk. Such e-learning environment would be made a “living system”, i.e. the content would be added on a regular bases.

### **4.3.2 Training courses**

#### ***Uganda***

Following a request received in March 2010, APFM will organize a national training course on IFM in Uganda. The training will be finalized to the development of a proposal for implementation of IFM at the national level, to be presented during an high level session to the local authorities.

#### ***Planned training courses in collaboration with JICA***

APFM will continue to organize the Integrated Flood Management (IFM) module in the trainings organized by JICA for “River and Dam Engineering III” under the overall cooperation between APFM and ICHARM for capacity building.

#### ***Planned training courses in collaboration with Cap-Net***

**Mekong Basin:** During the 2010 Mekong Flood Forum, TSU explored whether Member countries of the Mekong River Commission (Cambodia, Lao PDR, Thailand, Vietnam) are interested in a regional IFM workshop with possible follow up workshops through the national MRC committees. In light of an indication of interest, collaboration with established regional entities such as ADPC will be sought.

**Uruguay and Argentina:** Several workshops on Integrated Flood Management for Latin America are planned in Uruguay (in May 2010) and in Argentina (April 2010). The workshops would be organized as national training events for practitioners. This is a follow up of the workshop organized in Lima, Peru 2008. These courses would be budget neutral to the APFM, as funding could be secured through a dedicated fund managed by WMO on behalf of the Spanish Government for the Ibero-American countries though April 2010 course will be funded by local university

#### ***Hindu Kush Himalaya***

A training course involving Bangladesh, Bhutan, China, India, Nepal and Pakistan is under consideration in cooperation with ICIMOD as regional partner in the Hindu Kush Himalayan region. Consultations undertaken with ICIMOD in November 2009 had been positive

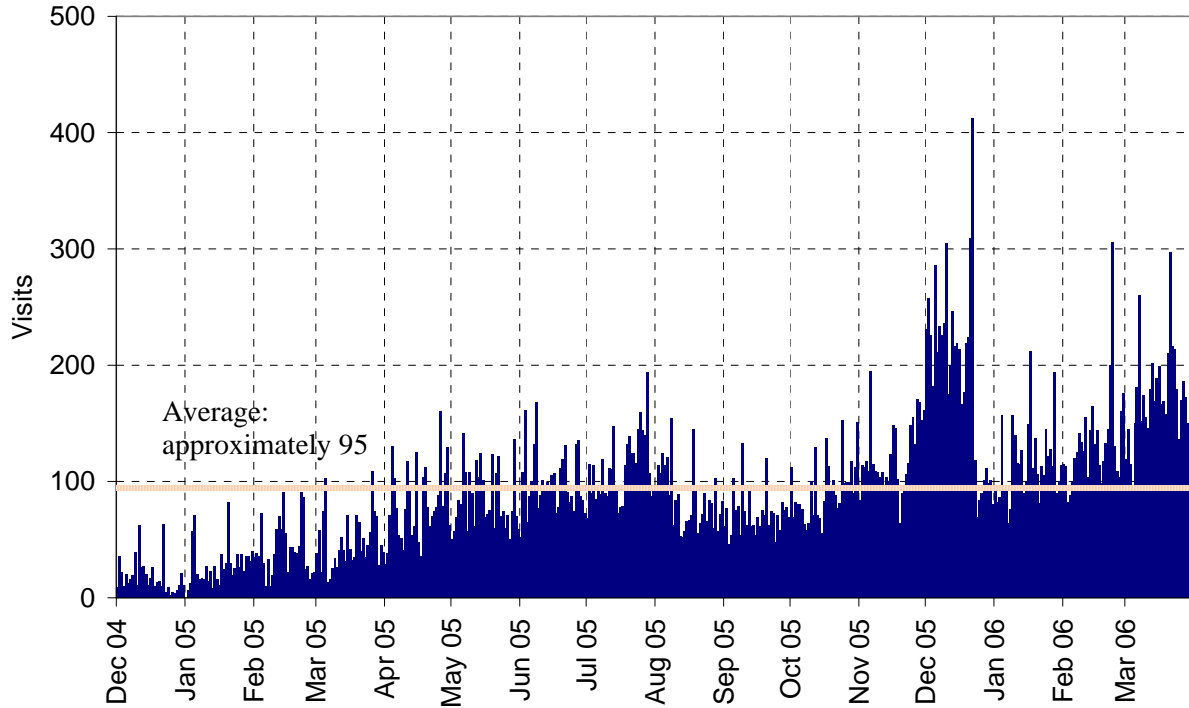
### **4.4 IFM HELP DESK**

After the official launch of the IFM HelpDesk in June 2009, further efforts would need to be undertaken to make the availability of the IFM HelpDesk known to the foreseen beneficiaries. Close collaboration with all support base partners in the fine tuning of the functionality of the IFM HelpDesk would keep being pursued. The process of interacting with the support base partners and quality control of outputs will need further tuning in the beginning of operation. Further efforts will be undertaken to strengthen the direct linkages to the financial partners for follow up of projects and strategies developed under the IFM HelpDesk.

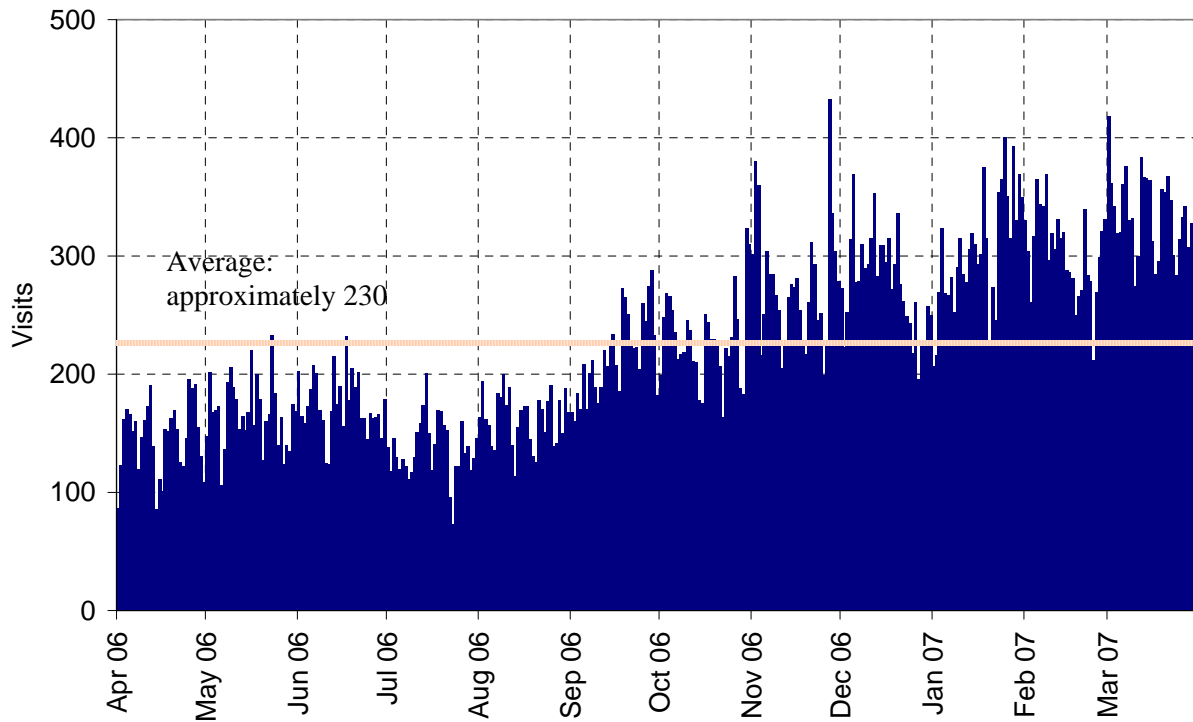


**ANNEX I VISITORS TO WEBSITE**

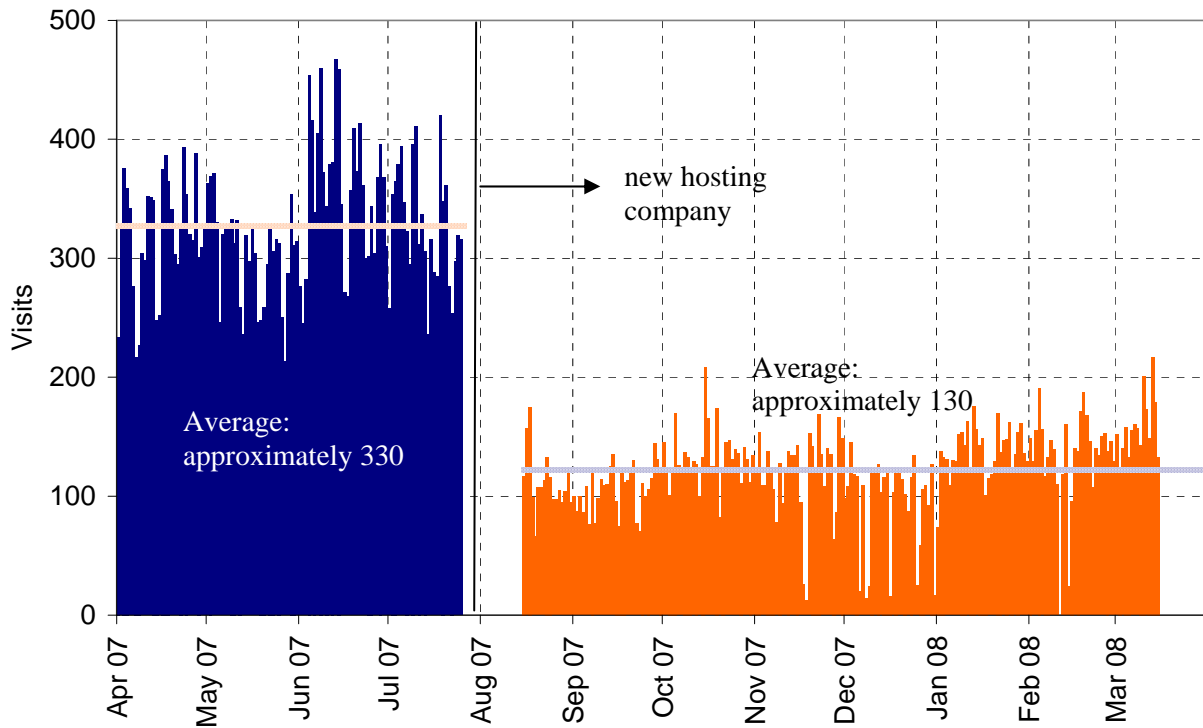
**1. General visitor statistics (Traffic)**



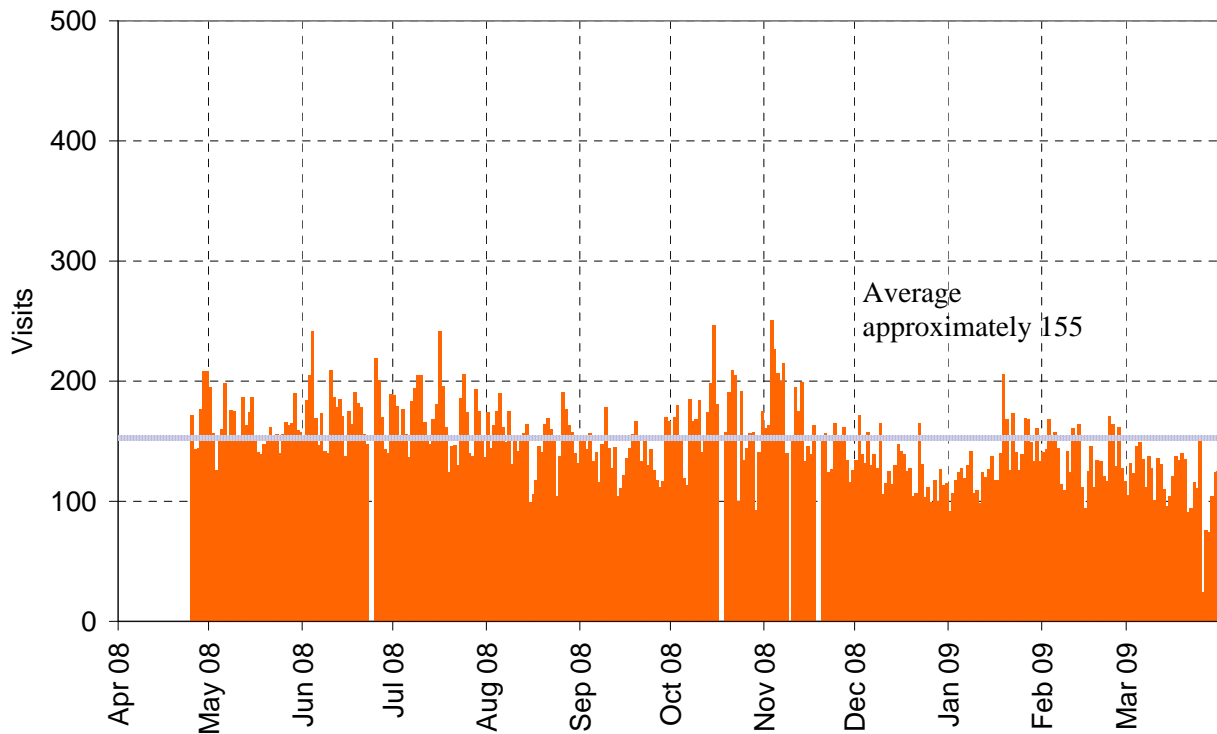
**Figure 2: Sessions (from 1 December 2004 to 31 March 2006)**



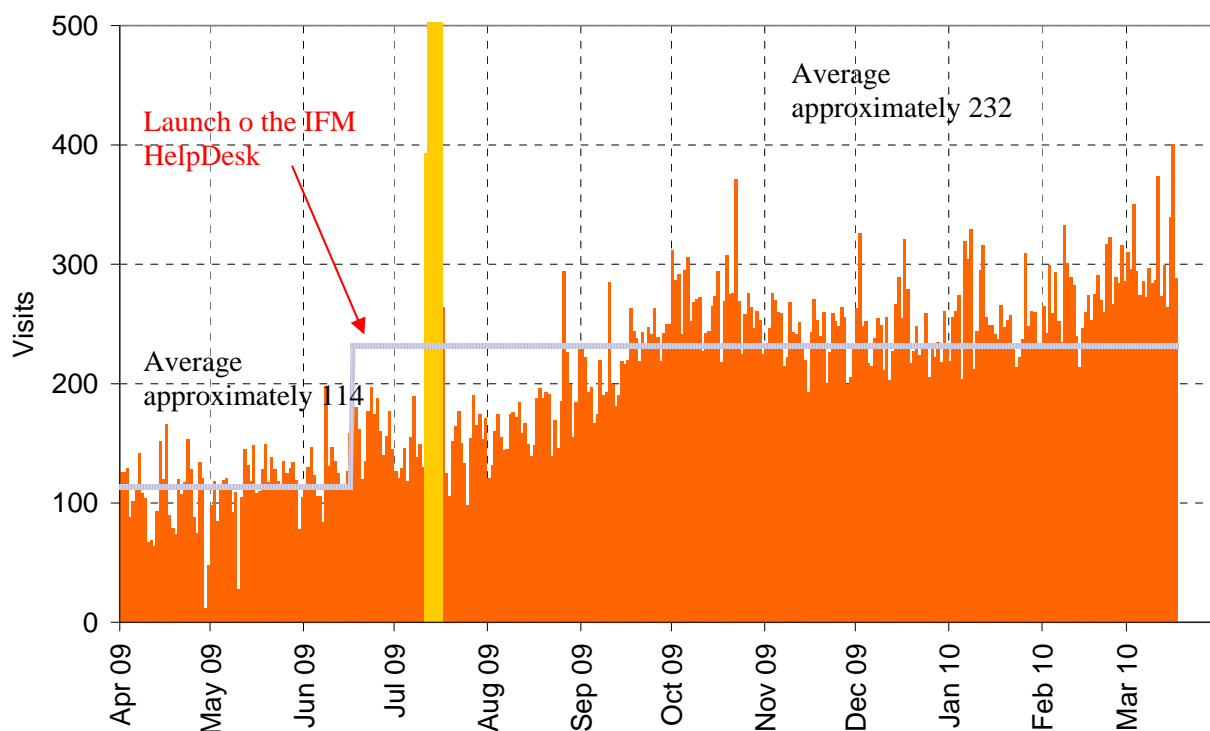
**Figure 3: Sessions (from 1 April 2006 to 31 March 2007)**



**Figure 4: Sessions (from 1 April 2007 to 31 March 2008)**



**Figure 5: Sessions (from 1 April 2008 to 31 March 2009)**



**Figure 6: Sessions (from 1 April 2009 to 18 March 2010)**

**2. The number of access (PDF files only)**

1) from Apr 2009 to Mar 2010 (as of 18th) \*hosted by New company

**Table: Top 10 of page views (PDF files only) on the APFM website (monthly data)**

**April 2009**

Rank	Hits	item	URL
1	2444	Urban Flood Management (Sp Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf
2	1520	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
3	1410	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
4	1064	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
5	869	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
6	660	Case Study in Bangladesh	/pdf/case_studies/cs_bangladesh.pdf
7	629	Manual for Community-based Flood Management in Bangladesh	/pdf/pilot_projects/manual_bangladesh.pdf
8	549	Case Study in Mexico	/pdf/case_studies/cs_mexico.pdf
9	469	FM Policy Series; Economic Aspects of IFM (En)	/pdf/ifm_economic_aspects.pdf
10	374	FM Policy Series; Environmental Aspects of IFM (Sp)	/pdf/ifm_environmental_aspects_Sp.pdf

**May 2009**

Rank	Hits	item	URL
1	2102	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
2	1716	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
3	1501	Urban Flood Management (Sp Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf
4	1456	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
5	915	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
6	706	Manual for Community-based Flood Management in Bangladesh	/pdf/pilot_projects/manual_bangladesh.pdf
7	652	Case Study in Bangladesh	/pdf/case_studies/cs_bangladesh.pdf
8	569	Urban Flood Management (En Low quality)	/pdf/Urban_Flood_Management_En_low.pdf
9	557	FM Policy Series; Legal Aspects of IFM (Sp)	/pdf/ifm_legal_aspects_Sp.pdf
10	517	Urban Flood Management (En High quality)	/pdf/Urban_Flood_Management_En_high.pdf



## June 2009

Rank	Hits	item	URL
1	2997	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
2	2132	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
3	1168	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
4	985	Urban Flood Management (Sp Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf
5	794	FM Policy Series; Legal Aspects of IFM (En)	/pdf/ifm_legal_aspects.pdf
6	777	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
7	749	Case Study in Mexico	/pdf/case_studies/cs_mexico.pdf
8	733	FM Policy Series; Social Aspects in IFM (En)	/pdf/ifm_social_aspects.pdf
9	620	FM Policy Series; Legal Aspects of IFM (En) Case Studies	/pdf/ifm_legal_aspects_casestudies.pdf
10	560	FM Policy Series; Environmental Aspects of IFM (En)	/pdf/ifm_environmental_aspects.pdf

## July 2009

Rank	Hits	item	URL
1	2204	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
2	1904	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
3	1834	Urban Flood Management (Sp Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf
4	1485	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
5	1075	FM Policy Series; Legal Aspects of IFM (Sp)	/pdf/ifm_legal_aspects_Sp.pdf
6	658	Case Study in Bangladesh	/pdf/case_studies/cs_bangladesh.pdf
7	656	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
8	648	FM Policy Series; Environmental Aspects of IFM (Sp)	/pdf/ifm_environmental_aspects_Sp.pdf
9	644	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/19_example_in_Peru.pdf
10	620	FM Policy Series; Legal Aspects of IFM (En) Case Studies	/pdf/ifm_legal_aspects_casestudies.pdf

## August 2009

Rank	Hits	item	URL
1	2090	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
2	1712	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
3	1453	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
4	793	Urban Flood Management (Sp Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf
5	778	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
6	631	FM Policy Series; Environmental Aspects of IFM (En)	/pdf/ifm_environmental_aspects.pdf
7	589	IFM Tools; The Role of Land Use	/pdf/ifm_tools/Tools_The_Role_of_Land_Use_Planning_in_FM.pdf
8	588	IFM Tools; Flood Loss Assessment	/pdf/ifm_tools/Tools_Flood_Loss_Assessment.pdf
9	588	IFM Tools; Reservoir Operations and Managed Flow	/pdf/ifm_tools/Tools_Reservoir_Operations_and_Managed_Flows.pdf
10	527	Urban Flood Management (Sp High quality)	/pdf/Urban_Flood_Management_Es_high.pdf

## September 2009

Rank	Hits	item	URL
1	3428	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
2	2346	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
3	1410	Urban Flood Management (Sp Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf
4	1109	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
5	1052	Urban Flood Management (En High quality)	/pdf/Urban_Flood_Management_En_high.pdf
6	936	Case study in Turkey	/pdf/case_studies/turkey.pdf
7	889	IFM Tools; The Role of Land Use	/pdf/ifm_tools/Tools_The_Role_of_Land_Use_Planning_in_FM.pdf
8	861	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
9	842	IFM Tools; Reservoir Operations and Managed Flow	/pdf/ifm_tools/Tools_Reservoir_Operations_and_Managed_Flows.pdf
10	725	FM Policy Series; Environmental Aspects of IFM (En)	/pdf/ifm_environmental_aspects.pdf

## October 2009

Rank	Hits	item	URL
1	3755	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
2	2672	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
3	2088	Urban Flood Management (Sp High quality)	/pdf/Urban_Flood_Management_Es_high.pdf
4	1472	FM Policy Series; Environmental Aspects of IFM (En)	/pdf/ifm_environmental_aspects.pdf
5	1266	Urban Flood Management (En High quality)	/pdf/Urban_Flood_Management_En_high.pdf
6	1253	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
7	1064	FM Policy Series; Social Aspects in IFM (En)	/pdf/ifm_social_aspects.pdf
8	1017	FM Policy Series; Economic Aspects of IFM (En)	/pdf/ifm_economic_aspects.pdf
9	962	FM Policy Series; Environmental Aspects of IFM (Fr)	/pdf/ifm_environmental_aspects_Fr.pdf
10	935	Case Study in Mexico	/pdf/case_studies/cs_mexico.pdf

## November 2009



Rank	Hits	item	URL
1	4860	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
2	4440	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
3	2231	Urban Flood Management (Sp High quality)	/pdf/Urban_Flood_Management_Es_high.pdf
4	1527	Urban Flood Management (En Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf
5	1364	FM Policy Series; Environmental Aspects of IFM (Sp)	/pdf/ifm_environmental_aspects_Sp.pdf
6	1275	Case Study in Bangladesh	/pdf/case_studies/cs_bangladesh.pdf
7	1176	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
8	1120	FM Policy Series; Environmental Aspects of IFM (En)	/pdf/ifm_environmental_aspects.pdf
9	1108	IFM Tools; Reservoir Operations and Managed Flow	/pdf/ifm_tools/Tools_Reservoir_Operations_and_Managed_Flows.pdf
10	998	IFM Tools; Environmental Assessment	/pdf/ifm_tools/Tools_Environmental_Assessment_for_Flood_Management.pdf

### December 2009

Rank	Hits	item	URL
1	4682	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
2	2214	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
3	1422	IFM Tools; FM in a changing limate	/pdf/ifm_tools/Tools_FM_in_a_changing_climate.pdf
4	1290	Urban Flood Management (En High quality)	/pdf/Urban_Flood_Management_En_high.pdf
5	1110	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
6	1092	Case Study in Bangladesh	/pdf/case_studies/cs_bangladesh.pdf
7	1081	Urban Flood Management (Sp Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf
8	1029	IFM Tools; The Role of Land Use	/pdf/ifm_tools/Tools_The_Role_of_Land_Use_Planning_in_FM.pdf
9	1026	Urban Flood Management (Sp High quality)	/pdf/Urban_Flood_Management_Es_high.pdf
10	957	FM Policy Series; Legal Aspects of IFM (En)	/pdf/ifm_legal_aspects.pdf

### January 2010

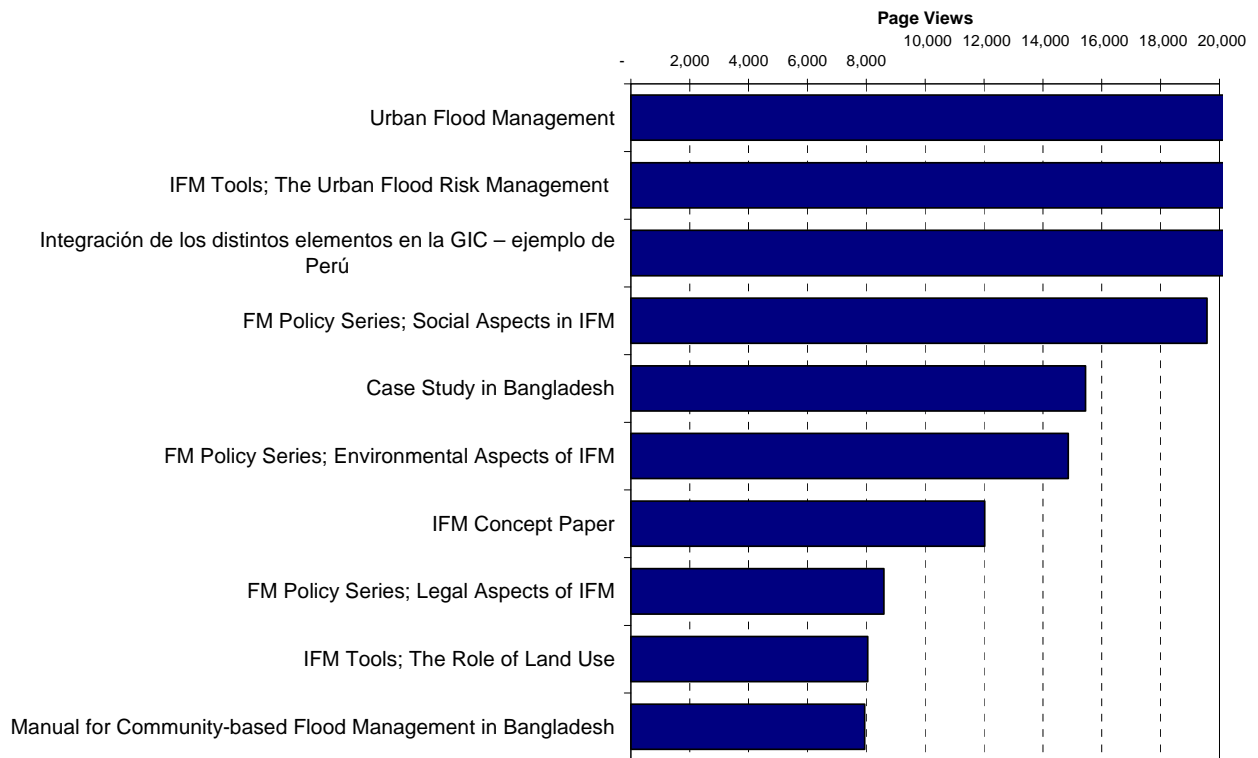
Rank	Hits	item	URL
1	3588	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
2	1648	Case Study in Bangladesh	/pdf/case_studies/cs_bangladesh.pdf
3	1597	Urban Flood Management (Sp High quality)	/pdf/Urban_Flood_Management_Es_high.pdf
4	1260	IFM Tools; The Role of Land Use	/pdf/ifm_tools/Tools_The_Role_of_Land_Use_Planning_in_FM.pdf
5	1227	Manual for Community-based Flood Management in Bangladesh	/pdf/pilot_projects/manual_bangladesh.pdf
6	1091	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
7	1044	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
8	883	IFM Tools; The Role of Land Use	/pdf/ifm_tools/Tools_Reservoir_Operations_and_Managed_Flows.pdf
9	824	IFM Tools; Reservoir Operations and Managed Flow	/pdf/Urban_Flood_Management_Es_low.pdf
10	798	Case Study in Bangladesh	/pdf/case_studies/bangladesh.pdf

### February 2010

Rank	Hits	item	URL
1	3577	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
2	1847	Urban Flood Management (Sp High quality)	/pdf/Urban_Flood_Management_Es_high.pdf
3	1513	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
4	1453	Case Study in Bangladesh	/pdf/case_studies/cs_bangladesh.pdf
5	1292	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
6	1103	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
7	1063	IFM Tools; FM in a changing limate	/pdf/ifm_tools/Tools_FM_in_a_changing_climate.pdf
8	981	Manual for Community-based Flood Management in Bangladesh	/pdf/pilot_projects/manual_bangladesh.pdf
9	832	IFM Tools; The Role of Land Use	/pdf/ifm_tools/Tools_The_Role_of_Land_Use_Planning_in_FM.pdf
10	818	Urban Flood Management (En Low quality)	/pdf/Urban_Flood_Management_En_low.pdf

### March 2010

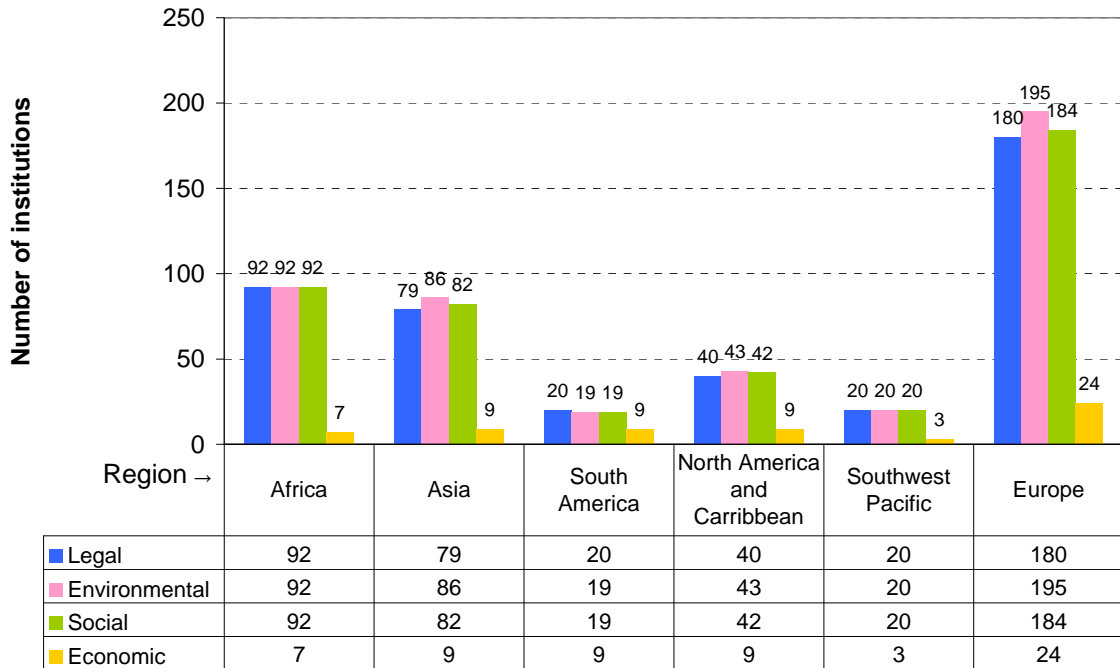
Rank	Hits	item	URL
1	2415	IFM Tools; The Urban Flood Risk Management	/pdf/ifm_tools/Tools_Urban_Flood_Risk_Management.pdf
2	1274	FM Policy Series; Social Aspects in IFM (Sp)	/pdf/ifm_social_aspects_Sp.pdf
3	1018	IFM Concept Paper (En)	/pdf/concept_paper_e.pdf
4	875	Case Study in Bangladesh	/pdf/case_studies/cs_bangladesh.pdf
5	831	Integración de los distintos elementos en la GIC – ejemplo de Perú	/pdf/peru_workshop/20_example_in_Peru.pdf
6	704	Manual for Community-based Flood Management in Bangladesh	/pdf/pilot_projects/manual_bangladesh.pdf
7	660	IFM Tools; The Role of Land Use	/pdf/ifm_tools/Tools_The_Role_of_Land_Use_Planning_in_FM.pdf
8	653	FM Policy Series; Economic Aspects of IFM (En)	/pdf/Urban_Flood_Management_Es_high.pdf
9	559	IFM Tools; The Role of Land Use	/pdf/ifm_economic_aspects.pdf
10	535	Urban Flood Management (Sp Low quality)	/pdf/Urban_Flood_Management_Es_low.pdf



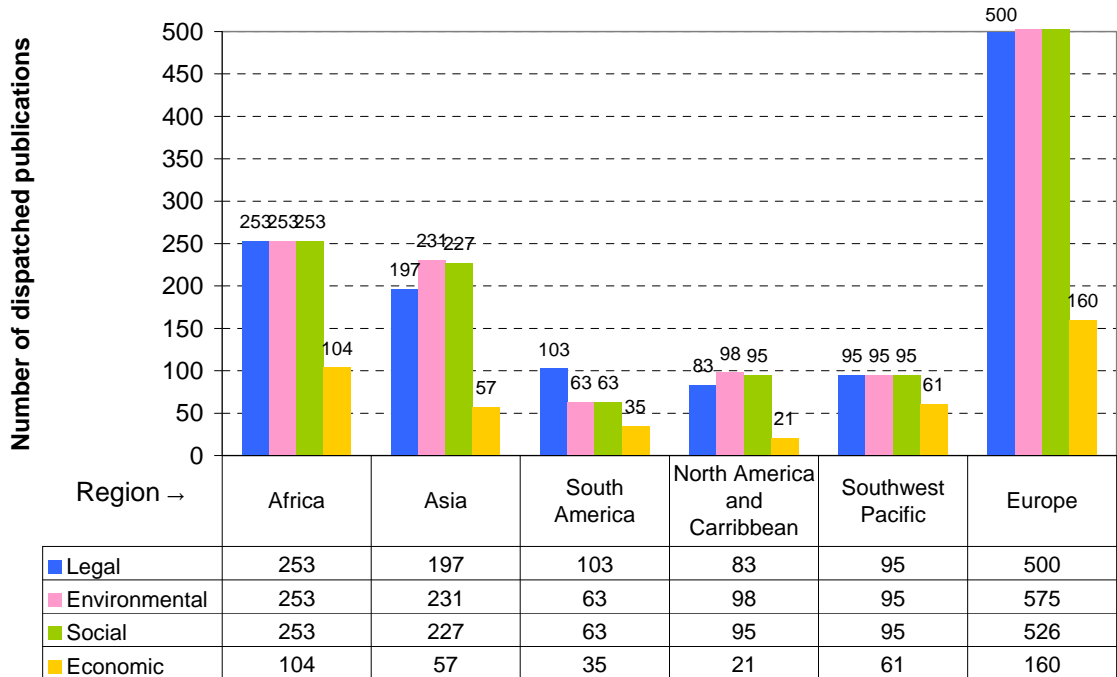
**Figure 6: Top 10 of access (PDF files only) on the APFM website (monthly average)**

## ANNEX II DISSEMINATION OF PUBLICATIONS

### 1) Number of institutions



### 2) Number of dispatched publications



Legal: Legal and institutional Aspects of Integrated Flood Management  
 Environmental: Environmental Aspects of Integrated Flood Management  
 Social: Social Aspects and Stakeholders Involvement in Integrated Flood Management  
 Economic: Economic Aspects of Integrated Flood Management

**Figure 7: Number of institutions and publications that APFM publication has been dispatched**