World Meteorological Organization

ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT

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(2006-2007)

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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 the Netherlands.

The World Meteorological Organization (WMO) is a specialized agency of the United Nations. It coordinates the activities of the meteorological and hydrological services of 187 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 (2006-2007)

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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 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 (Sub-material I).

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 would be 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 first Annual Report of APFM Phase II, which documents the activities undertaken during the first reporting period - i.e. from 1 August 2006 to 31 March 2007. Some of the outputs and summarised

documents are given in Annex, 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

Policy series papers

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 II(a), II(b), II(c), and II(d)). The series of publications have been translated into various languages as shown below;

- Legal and Institutional Aspects of IFM (E, F, S)
- Environmental Aspects of IFM (E, F, S)
- Social Aspects and Stakeholder Involvement in IFM (E, F, S)
- Economic Aspects of IFM (E)

(Above publications are available from: http://www.apfm.info/advocacy/advocacy.htm)

The publication "Legal and Institutional Aspects of Integrated Flood Management" has also been translated into Serbian, based on interest from partners in the region, in particular the Yugoslav Association for Water Law. The translation was undertaken through a License Agreement without resource inputs from the APFM. Efforts are also on to get these publications translated into other languages through regional/national partners. "Legal and Institutional Aspects of IFM – Case Studies" (E) was also published compiling four case studies from India, Japan, Serbia and Switzerland to provide the legal and institutional arrangements in each countries related to flood management.

IFM Tools

During the process of compiling policy series papers, requirement of several tools to implement the concept of IFM in the field were identified. Therefore, an inventory of IFM Tools has been prepared (Sub-material III(a), III(b), and III(c)). 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 with varied details. 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 this period, which are "Basin flood management plan", "Environmental assessment for flood management" and "Flood loss assessment". These are developed by the TSU staff and are based on assessing readily available literature, and draws 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 would be part of the "Flood Management Tools Series" and disseminated on the APFM website. As the "Flood Management Tools Series" is not planned to undergo extensive peer reviewing, it would be given a distinctive branding that distinguishes the tools series from the "Flood Management Policy Series". These tools would be the living documents and would be updated based on experiences sharing.

2.1.1 Basin Flood Management Planning

This tool explains how to develop a basin flood management plan. It shows what kind of factors should be incorporated or taken into account in the planning process and what kind of analysis/assessments are to be undertaken to select the optimal options. It helps understand the requirement of IFM for basin flood management, which leads to identifying gaps in current practices towards an integrated approach to flood management. The user is encouraged to answer certain questions that are relevant in basin planning process. This process makes the reader more familiar with the issues. The tool is basically for the use of middle level policy makers and flood practitioners. It guides the basic procedure of basin flood management planning. Various steps related to the flood management planning such as national development vision/policy and enabling mechanism of planning are explained.

For the basin flood management planning, identification of existing flood risks and issues related to floods and flooding is required. The analysis of beneficial aspects and negative socio economic impacts of floods and flooding become the basic information to formulate a future vision, policy, strategy and action plan for flood management. Such process has to be undertaken with the cooperation of all stakeholders in a basin such as communities, public sector, local, district and national governments to comprehend the issues comprehensively. It starts with identification of all relevant stakeholders and is particularly important as it provides the communities with a chance to express their preferences and concerns.

Since Integrated Flood Management (IFM) forms a part of Integrated Water Resources Management (IWRM), basin flood management planning should align closely with the overall vision and policy of IWRM with focus on how flood issues should be dealt with. The process of basin flood management should preferable be incorporated in the planning process of IWRM.

The current version of the tool is attached as Sub-material III(a).

2.1.2 Environmental Assessment for Flood Management

The main objective of this tool is to explain various aspects of environmental assessment both at the strategic and project levels with special reference to flood management measures. This tool provides generic methodological approaches required to conduct Strategic Environmental Assessments (SEA) at the strategic level and Environmental Impact Assessments (EIA) at the project design and implementation level. It helps to identify, evaluate and documents environmental impacts of flood management measures from the earliest stages to the project design and implementation stage. Steps of environmental assessment implementation for flood management at both levels consist of screening, scoping, identification and prediction of impacts, mitigation, review, decision-making, implementation and monitoring. These have been explained and described within the flood management context.

SEA is a proactive tool to explore the unforeseeable consequences and prevent environmental damages right at the stage of developing policy, plan or programme. Benefits of applying SEA can be summarized as supporting integrated decision-making, contribution to sustainable development, reinforcing environmental assessment at project level. Application of SEA from initial stages of decision-making prevents irreversible environmental damage that may be discovered at the later stage.

EIA has been useful in identifying the environmental and social impacts of proposed projects prior to decision-making in order to predict environmental impacts at an early stage in project design and

implementation. Alternative proposals or minimization measures to prevent or reduce adverse impact must be examined and incorporated into the project plan. In EIA more widespread public consultation and participation is required as compared to SEA.

Benefits of applying EIA can be summarized as better environmental planning and design of a proposal, ensuring compliance with environmental standards, saving in capital and operating costs, increased project acceptance by the public. The current version of the tool is attached as Sub-material III(b).

2.1.3 Flood Loss Assessment

The tool on Flood Loss Assessment sets out to provide a lead-in on the available concepts and methods to assess flood losses. It would help the activation and facilitation of local and external help in the short term and the formulation of recovery plans as well as development planning and policy reform in the realm of flood management in the long run. The material seeks to contribute to a reduction of cases where flood loss assessments are undertaken arbitrarily due to a lack of readily applicable guidance and thus make flood management decision-making arbitrarily. As such the tool is considered useful for the:

- Flood managers, i.e. personnel from national and local specialized agencies, mostly with an engineering background;
- Public officials in charge of emergency response such as mayors; and
- Local groups and NGOs working in flood emergency response is categorised into four types.

It is important to realize that flood loss assessments are undertaken with a variety of objectives, and that the different purposes determine the process and the outcome. The Tool is divided into four sections depending on the objectives of flood loss assessments. The first section deals with the rapid assessment for emergency relief coordination during the flood. The second is assessment of damages in the first few weeks after floodwaters have receded with a view to inform and guide the recovery process - for example, in an insurance context, for allocation of recovery funds from national budget or for guidance to external aid agencies. The third section is a comprehensive assessment of flood losses 3 to 6 months after the flood to inform policy reform processes as well as the reconstruction efforts within national or sub-national planning. The fourth section deals with the use of flood loss data for flood risk assessment and for the appraisal of flood defence and mitigation options. The current version of the Tool is attached as Sub-material III(c).

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 activity to help initiating and promoting IFM in a country and region;
2. New field demonstration projects to show the 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 will be undertaken depending on the availability of APFM core funding. However, facilitation would be provided for the formulation of pilot project proposals to be implemented with third party funding.

2.2.1 Kenya

APFM assisted Kenyan Ministry of Water and Irrigation to develop a Flood Management Strategy in the Lake Victoria basin as a pilot project in Phase I of APFM. “Strategy for Flood Management for Lake Victoria Basin, Kenya”, APFM, in collaboration with the World Bank (WB), UNEP and Japan International Cooperation Agency (JICA), is now assisting Government of Kenya in implementation of the recommendations and proposed activities envisaged within the Strategy.

In this regard, WMO, JICA and Kenyan Ministry of Water and Irrigation organized a national workshop, also inviting WB and UNEP, in August 2006 for the launching of "JICA Study on the Integrated Flood Management for Nyando River Basin". The main objective of the workshop was to seek a synergetic approach to flood management in the Lake Victoria basin and to obtain inputs from stakeholders, policy makers and technical experts ensuring better cooperation and coordination amongst various stakeholders and technical and financial partners. The main recommendation of the workshop focused on the importance of community participation and the multi sectoral approach of flood management. There was emphasis on the need for a comprehensive approach ensuring stakeholder involvement and utilization of knowledge and experience gained so far.

APFM has contributed to the progress of the above mentioned JICA activity by helping them incorporate the IFM concept and strategy into their project. Partners' consultation meeting was held in January 2007 in Geneva attended by WMO, JICA and Kenyan Ministry of Water and Irrigation to discuss about the progress of the study and further requirement for the implementation of the Strategy. Permanent Secretary, Ministry of Water and Irrigation, attended on behalf of the Kenyan Government and expressed his appreciation of APFM's technical support and the coordination role among partners. He also appreciated APFM's initiative to establish a HelpDesk to provide technical advice and information to the countries in need. Several actions recommended in the Strategy were discussed and among them all, the importance of institutional reform was highlighted in order to facilitate the implementation of actions. Government of Kenya is looking at ways and means of addressing these recommendations and implementing them particularly those which concern the institutional arrangements to facilitate IFM project implementation through JICA and World Bank projects in Nyando and Nzoia river basins respectively.

APFM continues to provide inputs to the JICA training programme for the topic of IFM 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 Central and Eastern Europe

APFM's efforts in the Central and Eastern European Pilot Project set out to increase the preparedness and response capacity of local authorities and population in flash flood prone pilot communities in order to reduce the vulnerability of the affected population. Activities within the three pilot areas in Poland, Romania, and Slovakia were completed by summer 2006 and the undertaken activities and outcomes were presented in detailed reports for each of the three countries, contained in Sub-material IV(a).

A number of innovative practices for integrating available information products on the local level as well as flash flood warnings into the social fabric of the pilot areas have been developed together with approaches of adjusting institutional arrangements between the various levels of Government, to clarify their respective roles in flood warning and emergency response. The project also provided for the involved institutions to develop means of educating the public to increase awareness levels about flash flood risks and to improve their flood preparedness and response capacity.

The project provided opportunity for the National Hydrometeorological Services to reach out to affected communities and work with mayors and crisis management groups to improve the effectiveness of existing technological warning components. It has helped all actors to build a sense of trust and to understand the capabilities of the other. It has also laid open the limitations current state of the art level of flood forecasting systems have in coping with very short concentration times and how their effectiveness depends on level of risk awareness of the population. The project has provided a platform for multiple stakeholders and groups with different levels of expertise to try and address the challenges involved in reducing the vulnerability of the affected population. The role of national chapters of the GWP, namely in the project components in Romania and Poland, has greatly facilitated the implementation of the project and facilitated the involvement of a broad range of stakeholders.

From the outset of the pilot project, it was envisaged to provide feed-back derived from the three countries with pilot activities to the regional level. Based on the national reports and additional inputs from Romania and Slovakia, a synthesis report has been prepared by the Office for Local Government Collaboration in the Polish Institute of Meteorology and Water Management. The Synthesis Report with the working title "Guidance on Flash Flood Management – Recent experiences from Central and Eastern Europe" is attached as Sub-material IV(a). The draft synthesis report would form a central input to a regional workshop end of October/November 2007 in Poland, where experiences from other parts of Central Europe would be shared. Based on the outcomes of the regional workshop a guidance on flash flood management would be developed for mayors, provincial administrators and the National Meteorological and Hydrological Services, with the aim of enabling and motivating them to launch joint programmes for reducing the vulnerability of local communities to the impact of flash floods, within the overall water management and disaster management policies of the country.

2.2.3 Republic of Korea

Korea was hit by a big typhoon in July 2006, which caused serious flood damages and claimed over 60 lives. This disaster has been characterized by large debris flows and inundation downstream caused by aggradation of the channel bed, which involved the issue that relate to flood management, for example, land use management, forest management, emergency response, etc. Increasing such flood disasters in South Korea in recent years has drawn the attention of the South Korean Government to give a fresh look at its flood management policies. To address the issue and get multi-disciplinary inputs, WMO as one of the UN Institutions working on flood issues was invited by the Presidential Commission on Sustainable Development. An International Symposium on Sustainable Flood Management with various stakeholder ministries, departments, institutions and civil society groups was organised on 28 November 2006 in Seoul. APFM publications constituted the key background material for the Symposium. The APFM presentation elaborated the basic principles of Integrated Flood Management and pre-requisites to be addressed for its implementation, stressed the need for adopting a river basin approach to planning through multidisciplinary inputs and stressed the need for an active involvement of various stakeholders.

This symposium formed the first milestone in the consultation process with various stakeholders. It was a clear indication of intent of the government to move towards a sustainable flood management policy and brought forward various opinions and requirements for moving towards a sustainable flood management objective. APFM has advised the necessary step required to be taken by the government of Korea to ensure that the flood management policy development in an inclusive process APFM offered to support their effort.

2.2.4 Seychelles

In autumn 2006, the Ministry of Environment and Natural Resources of the Seychelles Government approached the APFM Technical Support Unit for assistance in dealing with the flood management tasks assigned to the Ministry. The Ministry is responsible for the coordination, implementation and oversight of all drainage management and flood issues, policies and projects nationally.

Flooding poses a great challenge to the national economy, population and authorities responsible for flood management on the Seychelles. There is a growing concern that the frequency and severity of disasters are increasing. The Seychelles Ministry of Environment is in the process of establishing a "Drainage Unit" with key responsibilities for flood management. The flood problem although largely confined to the coastal areas has to be addressed through an integrated approach within the entire watershed. Therefore, there is need to establish a national level coordination mechanism in order to incorporate flood risk issues into the overall policy for water resources management and the flood management.

APFM guided and supported a flood management workshop on the Seychelles in April 2007, which involved representatives of all relevant Ministries and Departments of the Seychelles Government, including the Director General, Land Transport Division and Chairman of Drainage Task Force, representatives of the

Department of Risk and Disaster Management, and the Seychelles Meteorological Services. The workshop provided a platform for needs assessment of the involved Departments for adopting an integrated approach to flood management. It resulted in the formulation of a Brief Project Note titled "Building Capacities for Sustainable Flood Management on the Seychelles", attached as Sub-material IV(b).

The above-mentioned proposal is intended to address the capacity building needs in related Government Departments for applying an integrated approach to flood management in the Seychelles. Such approach aims at maximizing the net-benefits derivable from the limited floodplain space available on the coastal fringes of the main islands of the Seychelles Archipelago while reducing the risks due to flooding. In choosing an optimal mix of structural and non-structural flood management measures such approach is based on the needs and abilities of all stakeholders as well as the status of fragile ecosystems, their services to the islands' society such as freshwater provision and the way those ecosystems are affected by floods.

The TSU is now working to generate interest of the international financial partners to provide funding for the development and implementation of the project proposal. The Project Brief has so far been provided to representatives of the African Water Facility and the Swiss Federal Office for the Environment.

2.3 CAPACITY BUILDING

For the implementation of IFM in the field, capacity building of stakeholders is essential. Capacity building is planned at various levels and the contents and methodologies will differ accordingly. During the Phase I of APFM, policy series papers have been developed to contribute to the efforts in enhancing the knowledge that will be required for flood management. In Phase II, APFM is further focussing on the capacity development activities utilizing the materials developed during Phase I and the ones being developed during Phase II. Training courses and materials are under preparation for a portfolio of training course on IFM, as described in the following.

2.3.1 Compilation of training material

The policy series papers are primarily aimed at flood managers, its purpose being to enable them to understand the full range of issues involved in flood management. At the same time, they provide useful information for policymakers, river basin managers, flood practitioners, legal experts, civil society, NGOs and national, state, district and local government officials responsible for disaster management. The introduction of these papers is considered as an entrance point to induce a multi-disciplinary approach to flood management. The slide presentation materials for Legal and Institutional, Environmental and Social aspects of IFM have been developed during this period. There are two kinds of material developed for each of the topic as described below and are attached as Sub-material V(a) and V(b).

1) Introductory power point slides
2) Detailed presentation slides

These presentations with complete notes would be made available on the web-site so that they can be used for self teaching and are also available for use to the trainers. These materials will be used at the training courses envisaged to be organized. Feed back from the trainers and trainees will be sought to further enrich the contents.

2.3.2 Training activities

JICA Training course in Japan

APFM delivered lectures on the Integrated Flood Management (IFM) in two training courses – "River and Dam Engineering III" and "Flood Hazard Mapping" organized by Japan International Cooperation Agency (JICA) for flood practitioners and water resources managers from government organizations of 15 countries in October and November 2007 respectively. The course "River and Dam Engineering III", 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, Egypt, Ethiopia, Laos, Myanmar, Nigeria, Panama, Philippines, Sri Lanka and Zambia. "Flood Hazard Mapping" under the supervision of the International Centre for Water Hazard and Risk Management (ICHARM) was attended by 16 trainees from Cambodia, China, Indonesia, Laos, Malaysia, Philippines Thailand and Vietnam. The lectures covered various aspects of flood management including environmental, social, legal and economic based on the issues within the context of flood management activities in participant's respective countries. APFM publications were used as a basic material to guide them into further details of each aspect. APFM pilot projects were also introduced, and explained to show real practices in the field.

APFM plans 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-disciplinarity approaches to flood management activities.

2.3.3 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.

In view of the shifting focus of the APFM towards field implementation of the IFM concept, 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 of Cap-Net in capacity building for Integrated Water Resources Management with its network of capacity building institutions, would be useful in developing this activity.

At a joint planning meeting in November 2006, the TSU and representatives of Cap-Net worked out a joint project for scaling–up action on integrated flood management through:

- improved access to quality information and knowledge on policy, strategy and action for Integrated Flood Management (IFM) at national, urban and community levels
- improved capacity of national resources centres to support training on Integrated Flood Management
- development of capacity at regional, national and sub-national levels for application of IFM approaches

The financial inputs of Cap-Net and APFM would be sufficient to deliver the following required outputs. The joint activity document titled "Integrated Flood Management for Sustainable Development", an APFM & Cap-Net collaborative capacity building programme for flood-prone countries, cities, and communities has been developed (Sub-material VI(a)). The activity has drawn positive responses from capacity building institutions from India, Bangladesh, Malaysia, French-speaking West Africa, Bolivia, and Latin America as potential partners for local adaptation of training materials and conduct of training. On the successful conclusion of the initial activities, third party funding would be sought for continuing the activity.

Materials for Educators and Children with Project WET

In matters of sustainability of programmatic outputs of the APFM, it seems necessary to transpose those outputs for use by the younger generation. This activity is targeted at providing scientific concepts for

children at an early stage to help avoid misconception about the nature of floods, available flood management options, thereby avoiding risky development behaviour. These outputs targeted towards the younger generation, can also aid specialized services and institutions in their outreach to the public. It is recognised that such activity cannot gain central attention within the work of the APFM, as it requires specialised presentation style.

"Project-WET: Water Education for Teachers" is a US based non-profit Foundation water education program and publisher. The program facilitates and promotes awareness, appreciation, knowledge, and stewardship of water resources through the dissemination of classroom-ready teaching aids. Project WET 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.

In agreement on the outputs to be planned for and has been reached and a Letter Proposal has been issued for fundraising as the activity is mostly from third-party financial partners. The Letter proposal is attached as Sub-material VI(b). The core of the proposal is the development of a number of educational materials under the working Title "Understanding Floods Education Program for Teachers and Youth". It will be printed and disseminated through Project WET's Education Delivery Network. The first two core publications of the collaborative effort include:

- *"Understanding Floods Educators Guide"* targeted at teachers for use as teaching material; and
- *"Understanding Floods KIDs (Kids In Discovery Series) Activity Booklet"* for children/youth ages 8-12.

A third element is being considered but as yet not taken up in form of learning materials for older students aged 16-18. Efforts are being taken by Project WET and TSU to find adequate funding for the rollout of the activity up to October 2007. The target date for launching the planned outputs is the 5th World Water Forum, to be held in 2009 in Istanbul, Turkey, within the Global Water Education Village.

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. The outputs of the APFM are presently published through the internet, mostly in form of downloadable copies (PDFs). It is recognized that providing the APFM's outputs in a more accessible and didactically well-developed manner through web-based learning would greatly enhance the outreach of the programme. Such web-based learning (or e-learning) options could be used both, independently or as preparatory elements of face-to-face trainings offered.

The TSU has been looking for a competent partner to implement such project. There are several groups around the world that have implemented e-learning projects with flood management content. The E-Learning System for Flood Practitioners named "FLOWS – Living with Flood Risk in a Changing Climate" developed at the Technical University of Hamburg-Harburg (TUHH) distinguishes itself from other projects as the content is open to the public, and has been developed by a project consortium involving various European Management Institutions encompassing best practices from a number of countries. Above all, the materials developed at TUHH follows the basic conviction of the IFM concept.

At an exploratory meeting with the head of the Institute for River and Coastal Engineering of TUHH in February 2007, the scope of collaborative efforts between WMO and TUHH has been set out. TUHH is open to provide the E-learning environment for content adaptations to the APFM and jointly publish it in revised version incorporating Integrated Flood Management Policy and practices.

Formulation of Master's degree programme with ICHARM

The International Centre for Water Hazard and Risk Management (ICHARM) has supervised one month training course for flood hazard mapping to provide high level of knowledge and skills to the technical managers or engineers who worked for the flood management in public sector. Based on this, and with regard to the recent increase of flood disaster and resulting need for capacity building to mitigate such disaster, ICHARM and Japan International Cooperation Agency (JICA) has decided to launch the master course for "Water-related Risk Management" this year, which is accredited by the national Graduate Institute for Policy Studies (GRIPS). This course is designed to provide the knowledge and experiences of risk management and improve the capacity of trainees to promote Integrated Flood management in each respective country. Students will be awarded of master degree after one year of intensive course works, research and on-site training. During the initiation process of this master course, APFM has contributed to the formulation of basic idea and structure of this course to be able to facilitate the trainees understanding of IFM. APFM will continuously support this activity under the overall cooperation between APFM and ICHARM for capacity building.

2.4 DATA BASE

Researchers, social scientists, hydrologists, engineers and development planners have been working over past couple of decades on various facets of flood management. There is no dearth 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 four databases on Flood Management Institutions, Literature, Policy and Law, and Flood Prone Areas. 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	110	345
Literature on Flood Management	49	207
Flood Management Policy and Legislation	27	140
Flood Prone Areas	22	27

Sub-material VII(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 in two formats: the PDF version, HTML version. The PDF version is updated at the newsletters page of the APFM website. The HTML version is sent to subscribers of APFM newsletters (number of subscribers is approximately 600 at the reporting time) via email. 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.11, 12, and 13) have been published (Sub-material VII(b)).

2.5.2 Conferences

International Conference on "Hydro-geological Hazards", Bucharest, Romania

In the past few years Romania has experienced numerous floods and flash floods, which overshadowed the historical floods of the 1970s in terms of material damages and human losses. The Ministry of Environment and Water Resources of Romania is in the process of adopting a new National Strategy for Management of Flood Risks based on an integrated approach. The International Conference on Hydro-geological Hazards held in Bucharest, Romania, from the 6 to the 8 November 2006 provided an opportunity to illustrate and advocate the concept of IFM and present the major outcomes and results of this joint WMO/GWP-Romania pilot project. The APFM has been working with Romania on the pilot project in the Cheia area to put the IFM principles into practice particularly with reference to flash floods.

Meeting of the Parties to the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Bonn, Germany

The APFM made a poster presentation on "Transboundary Flood Management" at the Fourth Meeting of the Parties to the UNECE Water Convention, held in Bonn, Germany, 20-22 November 2006. Importantly, the Meeting of the Parties adopted the *"Model Provisions on Transboundary Flood Management"*. The APFM has critically followed the development process of the above-mentioned Model Provisions as an observer in the Legal Board under the Convention. The participants were presented with the policy paper on the "Legal and Institutional Aspects of Integrated Flood Management". The Model Provisions set out riparian countries' obligations that can be included in legal instruments on transboundary waters or on flood management. For riparian countries wishing to jointly address flood issues with their co-riparians, these model provision can provide an important basis and starting point of cooperation and negotiations. It is important to note that the mandate of the Legal Board to develop those Model Provisions has been narrow in the sense that various other water-related instruments have earlier been developed on the level of the UNECE. Therefore an integrated approach can only be recognized if considering the full range of legal instruments developed on the platform of the UNECE (e.g. taking into account the UNECE Water Convention, its Protocols, The Aarhus Convention and other instruments). APFM has been making suggestion accordingly.

Parties also decided to focus their future joint work on water and climate change and to develop a *Strategy for the UNECE region on Water and Climate Adaptation*. The Strategy will address possible impacts of climate change on flood and drought occurrences, health related aspects as well as practical ways to cope with the transboundary impacts through adaptation. The APFM plans to continue its collaboration with UNECE in seeking where appropriate to mainstream the IFM policy concept into the outputs of the UNECE Water Convention.

The International Conference on Water and Flood Management, Dhaka, Bangladesh

APFM participated in the International Conference on Water and Flood Management, which was held from 12 to 14 August 2006 in Dhaka, Bangladesh. This conference focuses on the integrated approach to water and flood management that can address the needs of the development goals. APFM made presentation on "Integrated Flood Management for enhancing resilience of society toward socio-economic development", which focuses on social aspects of IFM expanding on risk management principle and stakeholder involvement in the IFM. The pilot project in Bangladesh, which was undertaken during Phase I of APFM, was also introduced to present the effectiveness of community approach to flood 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 concepts;

- 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 fulfill these objectives. All the publication and materials produced so far, information of latest events and data base of flood management are made available in the website. Since the launch of APFM website on December 2004, the number of visitors has steadily increased. During last reporting period, it becomes more than doubled as compared to 2005. 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 clearly an indicator, that visitors tend to revisit the page, as otherwise the peaks around events would recede back to original values.

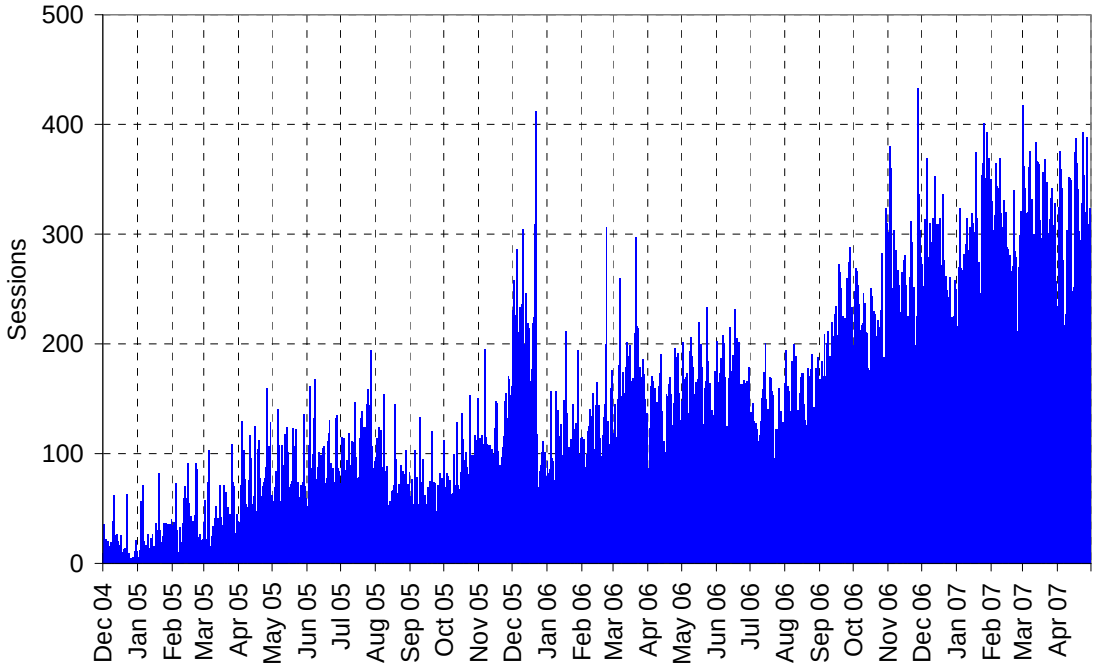


Figure 1. Sessions (from 1 December 2004 to 30 April 2007)

2.5.4 Dissemination of publication

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) 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. The number of countries, institutions, and publications in each publication, at the reporting time, is as follow (more detail information in Annex I);

	Number of countries	Number of institutions	Number of copies dispatched
Legal and Institutional Aspects of IFM	18	79	157
Social Aspects and Stakeholder Involvement in IFM	21	88	238
Environmental Aspects of IFM	26	104	285

2.6 LINKAGE TO OTHER ACTIVITIES

2.6.1 ICHARM

The International Centre for Water Hazard and Risk Management (ICHARM) is established at Public Works Research Institute (PWRI) in Tsukuba, Japan under the auspices of UNESCO on March 2006. The objectives of this centre are to promote research, training and information networking activities, focusing on the issues and problems related to water hazard and risk management. The centre will provide and assist implementation of best strategies to localities, nations, regions, and the globe to manage the risk of water related disasters. The centre is 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 with its activities 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, for example, delivering the lecture at the "Flood Hazard Mapping" training course supervised by ICHARM as explained at 2.3.2. 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-profiting 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 yearly agreements between the two parties that specify the activities and the contributions of resources for the activities (Sub-material VIII). 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 material into Japanese.

For further strengthening the relationship between WMO and JICE to build upon the gains of the existing collaboration and entering into a strategic partnership, both parties have agreed to establish a mechanism for providing necessary expertise and services for further development of the concepts and operational tools for the planning and implementation of IFM. Areas of cooperation should include:

(a) Development of the tools;
(b) Promote scientific research, in flood management and related areas through the promotion of joint studies;
(c) Strengthening the existing channels of cooperation and communication to further exchange of scientific knowledge, skills; and
(d) Publications of material on flood management and their transfer to the countries in need.

2.6.3 Collaboration with GRIP

A proactive approach to flood management requires identification of present and future risks, creation of policies based on the awareness of such risks and implementation of the policies. IFM requires analyzing flood risks. Risk assessment, the process of determining the nature and extent of risk by analyzing flood hazards and evaluating existing conditions of vulnerability, is the first step in a risk management program.

In collaboration with Global Risk Identification Program (GRIP), a joint initiative between UNDP and Provention Consortium, Flood Risk Assessment methodologies are proposed to be developed. The main objective of GRIP is an improved evidence base for disaster risk management to enable the application and prioritizations of effective disaster risk reduction strategies at the national, regional and global scales. The activities supported by GRIP consist of a set of projects, falling into five outcome areas:

1. Demonstration projects that integrate disaster risk analyses into decision-making in high-risk countries;
2. Capacity development for risk and loss assessment;
3. Improved risk assessments in high-risk countries;
4. An enhanced global database on disaster losses; and
5. Global Risk Update.

APFM proposes to work with GRIP to develop these methodologies and developing the capacities in the countries for flood risk assessment. Following are the expected outcomes of such a proposed collaboration:

Expected Outcome 1: Development of effective and reliable methodology for flood risk assessment - Hazard Assessment and Vulnerability Assessment
Expected Outcome 2: Comprehensive data base development to support Flood Risks Assessment
Expected Outcome 3: Application of flood risk assessment for river basin flood management plans
Expected Outcome 4: Capacity development and training needs to build scientific and institutional capacity for flood risk assessment and management
Expected Outcome 5: Demonstration projects for flood risk assessment and basin flood management planning in selected countries

2.6.4 Moscow State University

Opportunity for collaborative activity for the Russian speaking countries is being explored through the Moscow State University for Environmental Sciences which is developing a Capacity Building proposal under the EU TEMPUS scheme titled “Development of Training Courses and Centre on Integrated Flood Management and Inundation Risk Reduction”. The project is proposed to be implemented through a consortium of institutions, including relevant Central Government Agencies in Russia dealing with Water and Flood Management. APFM will be participating and present the IFM concept in a central conference of the Russian Water Sector, namely International Conference "Water Resources Systems Management in Extreme Conditions" that will be organised as a part of ECWATECH in May 2008. Given the possibility of the concept paper being made available in Russian by the Moscow State University, possibility would be explored to hold a workshop or session during the conference to set the agenda for IFM in Russia for the coming years.

3. PROGRAMME PERFORMANCE

3.1 PROGRESS OF ACTIVITIES

3.1.1 Tools to develop IFM strategy in the field

IFM Tools on "Basin Flood Management Planning", "Environmental Assessment for Flood Management" and "Flood Loss Assessment" are being developed to guide the flood practitioners in their efforts toward the implementation of IFM. The basic tenet and contents of these tools were specified and currently in the process of finalization. Progress under this activity can be assessed as 80 % of the planned.

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 driven by the joint cooperation and resources of various 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". WMO continues to support government of Kenya in this activity. In Central and Eastern Europe, synthesis report to reduce the vulnerability of local communities to the impact of flash floods in the world has been prepared. This will serve as an important input to the regional workshop and adopting it in the region.

Based on the web search, two countries have contacted APFM and sought advice and support for adopting IFM in their countries. APFM provided the technical inputs to the efforts of the Republic of Korea for reorientation of flood management policies in the country. APFM has also supported the efforts to initiate the IFM in Seychelles by organizing workshop and facilitate the process of active dialogue among institutions concerned. A platform for such a dialogue has been established. Number of actions are being identified to build the capacity in the country to facilitate the process. Achievement in the item is assessed at 100%.

3.1.3 Capacity building

The presentation materials have been developed 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. It will provide opportunities to introduce various aspects of IFM in the capacity building activities such as IFM training and it also can be used for self learning.

JICA training for "River and Dam Engineering III" and "Flood Hazard Mapping" was undertaken during reporting period and trainees were well appreciated the contents of the inputs from APFM. Several initiations were made to develop the partnership with other organizations such as Cap-Net, Project WET and TUHH to deliver the opportunities for capacity building. The promotion of cooperative activities will be continuously made to create the synergy of cooperation. Progress in this activity is assessed at 80%.

3.1.4 Data base

Data base has been continuously implemented for Flood Management Institutions, Literature, Policy and Law, and Flood Prone Areas. It will formulate one of the core parts of autodidactic mode of Help Desk (see 4.3 Help Desk).

3.1.5 Dissemination of Information and linkage to other activities

APFM participated in three international conferences during this period which provided excellent opportunity to disseminate our information, get the comments and suggestions to further develop our activities, and create network of knowledge base. Three APFM newsletters were disseminated to provide latest activities of APFM. Website is continuously updated and the number of daily visitors to APFM website has risen to 300 (average number of past three months from February to April 2007), and is continuously increasing. Printed form of APFM publications are disseminated to various training institutions and universities that have relevance to IFM and IWRM. The APFM has intensified its linkages with key partners through the cooperative development of activities. Several capacity building activities are currently undertaken with establishing the cooperative scheme with other institutions. Such linkage will be institutionalized e.g. through Memoranda of Understanding between WMO and respective partner, with the aim of creating strategic partnership to formulate planned IFM HelpDesk. This year, APFM has concluded MOU with JICE. Progress on this activity is assessed satisfactory.

3.2 FINANCIAL PERFORMANCE

During the reporting period, CHF 408,110 was contributed by Japan to APFM.

1st instalment from Japan:	CHF 206,130 (JPY 19,250,000)	July 31
2nd instalment from Japan:	CHF 101,620 (JPY 9,625,000)	Oct. 30
3rd instalment from Japan:	CHF 100,360 (JPY 9,625,000)	Apr. 03
(Total contribution)	CHF 408,110	
(Interest)	CHF 2,765	
(Total Income)	CHF 410,875	

The financial statement of the APFM Trust Fund with income and expenditure from July 2006 to 31st March 2007 including last instalment from Japan, as of 3rd April 2007 is given in the Table on page 18.

Against the available funds of CHF 410,875 (contribution plus interest), an expenditure of CHF 310,638 was made and a balance of CHF 97,472 is committed. Certain activities were undertaken through the regular WMO funds. The first year of APFM Phase II was launched on August, therefore the activities of this period is limited due to time constraints. Further, during the first period, 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 the implementation.

APFM (Phase II) TRUST FUND FINANCIAL STATEMENT
(as of 31 March 2007)

Income and Expenditure from July 2006 to March 2007

			CHF	
1-1.	**Opening balance**		**0**	**(a)**
1-2.	**Income**			
	Contributions (Including last installment made at 3rd April 2007)		408,110	
	Interest		2,765	
		Total Income	**410,875**	**(b)**
1-3.	**Expenditure (including support costs)**			
	Actual Expenditure (Liquidated)		196,382	
	Unliquidated (Future Obligation)		106,204	
	Requisition (Future Obligation)		20,573	
		Total Expenditure	**323,159**	**(c)**
1-4.	**Carry forward from this period**	**(a) +(b) – (c)**	**87,716**	**(d)**

Certified correct

Tomiji Mizutani
Chief, Budget Office
WMO

4. ACTIVITY PLAN

4.1 IFM TOOLS

TSU will develop four tools "Land use planning", "Urban flood management", "Community based organization in flood management" and "Flood reservoir operation and managed flows" during next period. Manual on "Flood hazard mapping" will also be taken up. Certain other tools would be adapted from existing literature available with partners.

4.1.1 Land use planning

There is a need to recognize the value of land-use planning and regulation as tools for flood management. The tool would describe the potential of land-use planning in flood management and try to develop a few cases to illustrate the steps required to be taken to harmonize land-use plans with flood management plans. Guidance on types of provisions required in building codes for various land uses would also be attempted. From an institutional and political perspective this harmonization represents a huge challenge and efforts would be made to bring out the most common pitfalls in the process and possible application of regulatory mechanisms with particular reference to the flood plains.

4.1.2 Urban flood management

Rapid urbanization in many parts of the world has resulted in increase of the flood risks in urban areas. Most of these are related to inadequate drainage capacities. This tool will explain the cause of urban flooding and how to alleviate these risks by applying structural and non-structural measures with close involvement of the communities. Attempt would be made to highlight the issues that need to be addressed in integrating spatial planning, drainage master plan and sewage disposal system.

4.1.3 Community based organization in flood management

Community participation in the disaster management is essential since individual and community ownership, commitment and concerted actions in disaster mitigation produce a wide range of appropriate, innovative and do-able mitigation solutions, which are cost effective and sustainable. This tool will address how community can organize itself to undertake such activities and their possible linkage with other disaster management authorities. Community Flood Management Committee (CFMC) experimented in South Asia pilot project and the outputs from the CEE pilot project on flash flood will form the basis for this tool.

4.1.4 Flood reservoir operations and managed flows

A change in the timing, frequency and magnitude of natural flow regime due to the operation of dams and reservoirs can have impacts in both terrestrial and aquatic habitats. Appropriate management of water releases can help mitigate adverse effect of modified water flow regime on natural ecological and morphological processes in a river, downstream flood plain wetland ecosystems and their dependent livelihoods. This tool will provide guidance the issues that need to be addressed while designing and operating reservoirs, thereby meeting the requirements of various users and uses along with the ecosystem needs and at the same time meeting flood management objectives.

4.1.5 Flood hazard map

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

- *Regulatory*: Land use regulation and building codes
- *Planning*: Impacts of urbanisation, 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 a flood map. It is only the first necessary step. The information regarding the risks needs to be communicated to the planners, flood managers and the public at large. Flood maps may be developed following various methodologies, but the final product should contain the necessary information that allows making sound decisions. Flood mapping manual would form an essential element of assessing flood risks and would be taken up during the next reporting period.

4.2 SUPPORT TO NATIONAL AND REGIONAL ACTIVITIES

4.2.1 Central and Eastern Europe

A Regional Workshop is planned to be organized in Poland in October 2007 on Flash Flood Management undertaken in Central and Eastern Europe. The workshop would bring together some 30-40 practitioners from the region, including crisis response authorities, mayors and the National Hydrometeorological Services from 9 countries of Central and Eastern Europe. The Synthesis Report of the Pilot Activities would form the central discussion point and help exchange experience on flash flood management, build future commitment for joint action to develop locally based strategies, action plans and warning systems in flash flood prone areas of the region. The concept for this workshop has been discussed in the Council Meeting of GWP CEE in April 2007 which has endorsed the proposal and encouraged its members to participate. GWP Secretariat in Stockholm (GWPO) through its Facilitation Fund is currently assessing possibility of supplementing the foreseen financial involvement of the APFM to allow broader involvement of countries in CEE, i.e. more countries and representatives of both NMHSs and mayor associations or similar group.

4.3 CAPACITY DEVELOPMENT

4.3.1 Development of training material

Vocational training materials together with Cap-Net

Development of IFM 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)*
  In the process of policy formation groups at several levels of administration play a role. On the one hand top-level policy makers would benefit from a broad exposure to the aims and principles of Integrated Flood Management. On the other hand, the actual drafters of the policy are usually to be found within ranks below the top policy level, i.e. in many instances water and disaster managers in "engineering dominated" water institutions.

- National NGOs active in community outreach projects in water or disaster management, and subsequently district/municipal level authorities as well as community leadership in floodprone areas, particularly rural areas. (*Community flood management course)*

  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.

- Municipalities of urban aglomerations, in particular units responsible for urban drainage, spatial planning, as well as warning and emergency services (*Urban Flood Management course)*

Materials for Educators and Children with Project WET

The core of the proposal is the development, printing and global roll-out through Project WET's Education Delivery Network, of a number of educational materials under the working Title "Understanding Floods Education Program for Teachers and Youth". The two core elements of the collaborative effort include:

- "*Understanding Floods Educators Guide"* for teachers use with students; and
- "*Understanding Floods KIDs (Kids In Discovery Series) Activity Booklet"* for children/youth ages 8-12.

Efforts are being taken by Project WET and TSU to find adequate funding for the rollout of the activity up to October 2007.

It is noted that in view of the planned target date for launching the two outputs for the 5th World Water Forum, to be held in March 2009, implementation of both elements would start beginning January 2008.

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

As concerns e-learning activities at TUHH, there are at this stage two available e-learning environments. One has been developed for "flood management practitioners" (spatial planners, water management experts) but also the general public and presents the outcomes of a European project named FLOWS (http://flows.wb.tu-harburg.de/index.php?id=135). The second e-learning tool has been designed for participants of a Summer School organized by TUHH, and therefore rather conforms to the needs of students in an academic context (http://daad.wb.tu-harburg.de/). Both of them are technically based on a Content Management System, i.e. can be edited and administered through the Internet and follow a basic structure with three main components: the Tutorial, the Knowledge Base, and the Virtual Trainer.

APFM and TUHH would work together on an adapted version of the e-learning tool for integrated flood management, that would be jointly published. Initial assessment suggests that the contents of such product would be based on the FLOWS version as the content had been developed for a professional audience (flood managers). The technical system should be based on the latest available technology for e-learning at TUHH. APFM would assess in-depth the adaptation needs of the content and would jointly develop a revised structure. Initial requirements for adaptation included enriching the case study to accommodate worldwide coverage provided by case studies. An IFM policy module would need to be added using the Flood Management Policy Series of APFM.

Revised content would be jointly agreed-on by APFM and TUHH through an informal editorial board. If and as required, additional partners could be invited to join that board with a particular view of adding value into the contents or outreach. Such e-learning environment would be made a "living system", i.e. the content would be added on a regular bases. A student of TUHH is expected to work for six months with WMO as an intern as of September, and would be tasked with the technical implementation of the revised e-learning tool for Integrated Flood Management. The joint E-learning platform is planned to be launched by August 2008.

4.3.2 Training courses

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" and "Flood Hazard Mapping". APFM will also organize IFM training along with JICA on "Integrated Flood Management for Nyando River Basin in the Republic of Kenya" as explained in 2.2.1.

Following training courses are planned jointly with Cap-Net

Cochabamba, Bolivia: A course on Integrated Flood Management for municipal water and flood managers from various cities of Bolivia is planned to be held in Cochabamba, Bolivia together with the Municipality of Cochabamba in November 2007. A national NGO in Bolivia and Cap-Net Member Institution, the Programa Manejo Integral de Cuencas (PROMIC) and the Centro AGUA of the Universidad Mayor de San Simón would be the local implementation partners for the training.

Pune, India: In the framework of regular Flood Management Training courses of the Indian National Water Academy, the APFM is planning to co-organize the planned flood management training course for various relevant governmental institutions in India in February 2008. In collaboration with Cap-Net India an effort would be made to invite and sponsor relevant Indian NGOs to the training course.

West Africa: West African countries, especially the French speaking part have indicated their interest to use the current wave of decentralization efforts in the region to stage urgently required trainings for Community-based and Urban Flood Management. Opportunity will be explored to stage a first training in form of a regional course for French-speaking countries or to stage national trainings in Guinea and Niger, based on requests received from those countries. Preliminary target date for this training is Spring 2008.

Bangladesh: Cap-Net counterpart in Bangladesh (Bangladesh Centre for Advanced Studies) has indicated interest organizing training courses at the National and Regional levels in the framework of the APFM utilising the expertise of Bangladesh Unnayan Parishad – BUP. Thereby creating synergies between the two possible institutions by planning these activities within the strategic outreach approach formulated after the National Workshop and Regional Workshop on the Community Approach to Flood Management in Bangladesh. Target Date for start of Training of Trainers courses is End 2007. Actual community trainings are planned to be staged closer to the start of the monsoon season (usually in June). These trainings for local communities is budget neutral for the APFM as the funding for this has been entirely committed through Cap-Net.

4.4 HELP DESK

4.4.1 Outline of Help Desk

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 **HelpDesk for Integrated Flood Management** (IFM HelpDesk).

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, it is proposed to establish the IFM HelpDesk during the second phase of APFM.

The IFM HelpDesk is *"a facility that will provide guidance on flood-related issues to countries that want to adopt the IFM concept in a 'hand holding' mode", i.e. in close partnership and tailored to the needs of the particular partner, with the aim of really helping the partners further in IFM implementation."*

The IFM HelpDesk, coordinated by WMO will be 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 activities for integrated flood management in the countries or river basins;
- Serve as a link between flood management practitioners or decision-makers in flood-affected countries and regions and required experts in various fields such as hydrology, institutional development, ecology, sociology and development economics, etc; and
- Serve as link between various technical and financial partners.

The IFM Help Desk is planned to be situated 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. As illustrated in Figure 1, the HelpDesk is planned to function in two modes: the autodidactic mode (Self Help) and the interactive mode (Get Help).

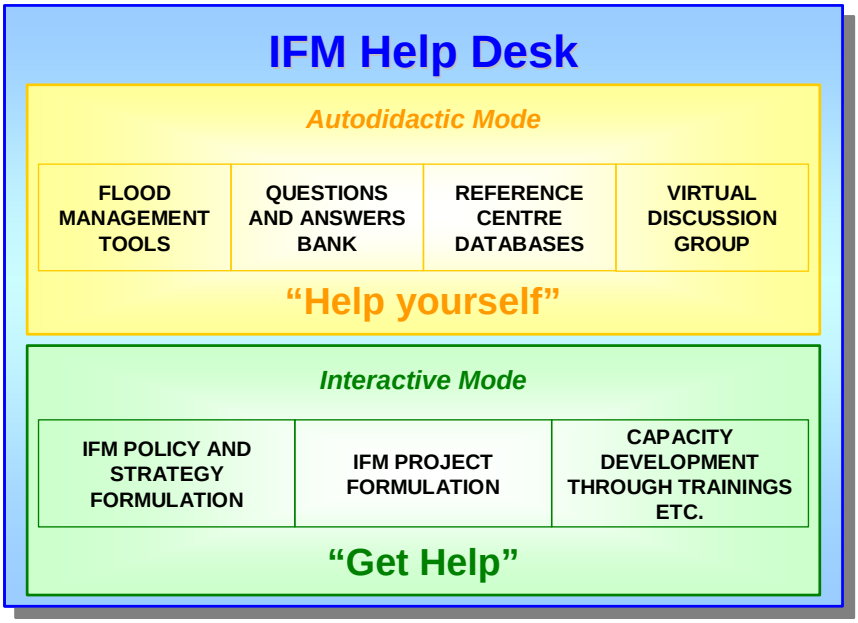


Figure 2. Overview of the IFM Help Desk

4.4.2 Help Desk Autodidactic mode (Self Help)

The Autodidactic mode will present the information required for supporting adoption and implementation of the IFM approach in a structured and user-friendly easy to use mode. It will be based on an internet platform and complemented by alternative means of information distribution. It is expected that the vast majority of users would be able to find guidance at this mode. The Autodidactic Mode consists of:

- Question and Answer Bank
- IFM Tools

- The Reference Centre on Flood Management[1]
- Virtual Discussion forum

IFM Tools are being developed in collaboration with WMO regular partners, APFM network partners and other interested institutions. As is explained at 4.1, a variety of tools will be developed during this phase of APFM. The research and development outputs from various EU funded projects such as FLOODSite, EXCIF and JRC would be used and adapted to suit the international needs and requirements.

In order to provide an immediate guidance on the webpage on a number of frequently asked questions, this sections should contain questions and answers related to a number of topics, such as on the nature of the concept of IFM, the functionality of the IFM HelpDesk, the contexts in which the concept is to be applied, and detailed knowledge of specific terms and issues (flood, flood management, structural and non-structural measures, Environmental Impact Assessment, etc). Based on the general conceptions and mis-conceptions a set of questions and answers would be developed. Basic framework of questions and answers would be developed during the period.

As is explained at 2.4, the Flood Management Reference Centre is being implemented and consists of four Databases on Literature, Law and Policy, Flood Management Institutions and Flood Prone Areas, which will be continuously undertaken during next period. This would guide the help seeker to locate/identify the institution, literature and other information.

The Virtual Discussion forum would provide the possibility of involving through the Internet, and as such in a cost-effective manner, various stakeholder groups into flood management policy debates. It will allow sharing of experiences, develop good practices for example related to flood management tools or related to current or past flood events. The content of the discussion may be documented by the APFM team and may even lead to the development of a new Flood Management Tool or recommended practices. It can also supplement discussions and outcomes of various international workshops and conferences. During next period, basic function of the forum will be made available on the website.

4.4.3 Help Desk Interactive mode (Get Help)

Institutions can approach the IFM HelpDesk for strategic advice on flood management policy, strategy and project formulation as well as capacity development for Integrated Flood Management. Through a coordination cell established within the Hydrology and Water Resources Department of WMO, and supported by the existing technical staff, an interactive section to the IFM HelpDesk would be established. Various stakeholders desirous of initiating IFM process in their countries or basins would be able to approach the IFM HelpDesk and get further technical guidance. Following series are proposed to be provided under this mode.

Service1: Policy and Strategy Formulation

WMO, as part of its mandate on flood management is committed to provide guidance and technical assistance to countries on requests related to flood management policy and strategy development. It would therefore form the core function of the APFM. This activity would be undertaken with support from the partner institutions such as Public Works Research Institute (PWRI), Tsukuba, Japan; International Water Law Research Institute (IWLRI), Dundee, Scotland; Asian Disaster Prevention Centre (ADPC), Bangkok, Thailand; and Technical University of Hamburg-Harburg (TUHH), Hamburg, Germany. While a certain number of such requests could be taken up by WMO under its core budget, extra-budgetary resources may also be required for which financial partners would be approached.

Service 2: Development of Project Proposals

[1] Components available at http://www.apfm.info/database.htm

Stakeholders with concrete ideas about an IFM project could request for IFM HelpDesk assistance in the formulation process of the project proposal. Various bi-and multi-lateral development partners provide resources within grant or loan schemes dedicated to natural resources management, disaster reduction, infrastructure development, etc. The IFM HelpDesk would provide technical support in initiating development of the Project Proposals for Integrated Flood Management for application under such schemes.

Service 3: Capacity Development

For institutions providing training in the fields of natural resource management, development planning or disaster management, initial guidance may be required on the available material, didactics, key learning objectives as well as possible target groups for training and awareness building. This could also lead to organisation of training courses by APFM in collaboration with its partners, especially CapNet (Capacity Building for Integrated Water Resources Management), the International Centre for Water Hazard and Risk Management (ICHARM), UNESCO IHE, Project WET (Water Education for Teachers) and a number of University Institutes with specific expertise.

During next period, basic mechanism of interactive mode will be further developed duly incorporating the support from partner institutions and experts to create the global network of Help Desk support system.

ANNEX I VISITORS TO WEBSITE

1. General visitor statistics (Traffic)

Table 1. Summary (1 April 2006 – 31 March 2007)

	Total	Average	
		Per Day	Per Session
Sessions	82,774	226.78	-
Page views	260,395	713.41	3.15
Bytes Transferred	28,240 MB	79.24MB	0.36 MB

Average length of session: 00:02:51

Table 2. Summary (1 December 2004 - 31 March 2006) *Reference

	Total	Average	
		Per Day	Per Session
Sessions	45,668	93.97	-
Page views	168,536	346.78	3.69
Bytes Transferred	10,910 MB	22.99 MB	0.25 MB

Average length of session: 00:04:32

Glossary;

- **Sessions:** A Session is a defined quantity of visitor interaction with a website.
- **Page views:** page is defined as any file or content delivered by a web server that would generally be considered as a web document. Each time a file defined as a page is served, a page view is registered.
- **Bytes Transferred:** A byte is a unit of information transferred over a network (or stored on a hard drive or in memory). It is very important for site owners to be aware and understand that website and server performance is heavily affected by the amount of bytes transferred and web hosting providers often charge according to this measure.

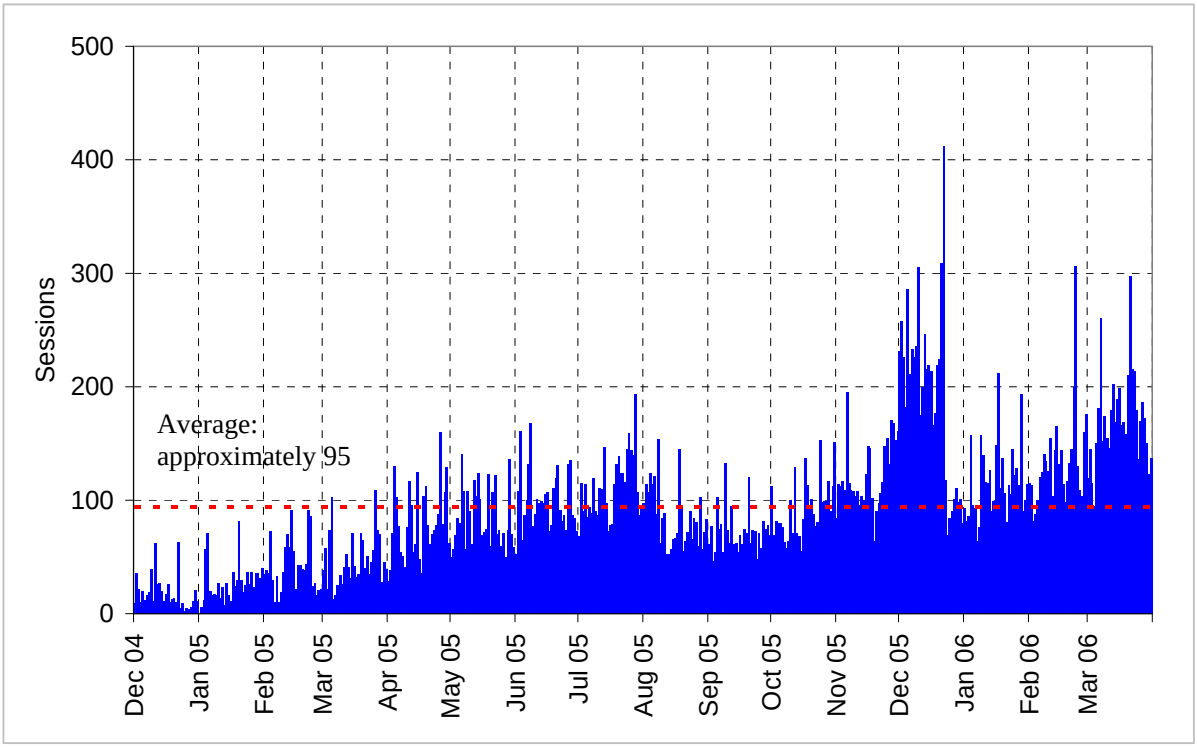


Figure 1. Sessions (from 1 December 2004 to 31 March 2006)

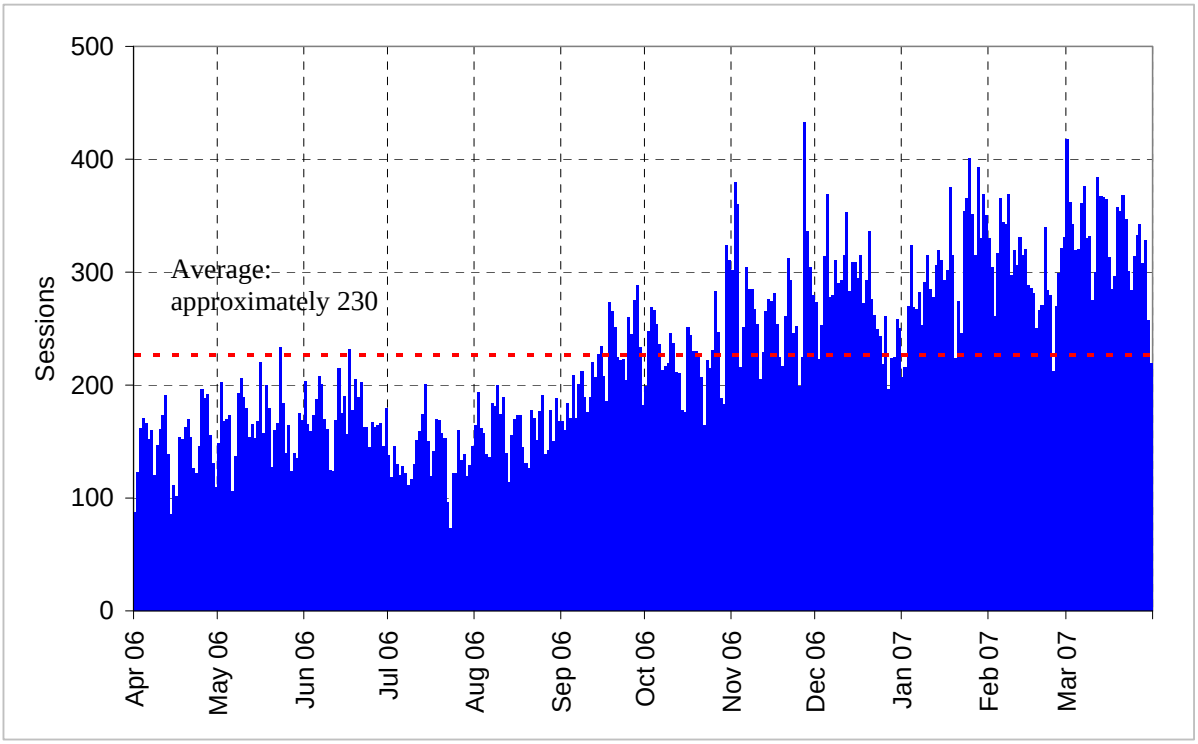


Figure 2. Sessions (from 1 April 2006 to 31 March 2007)

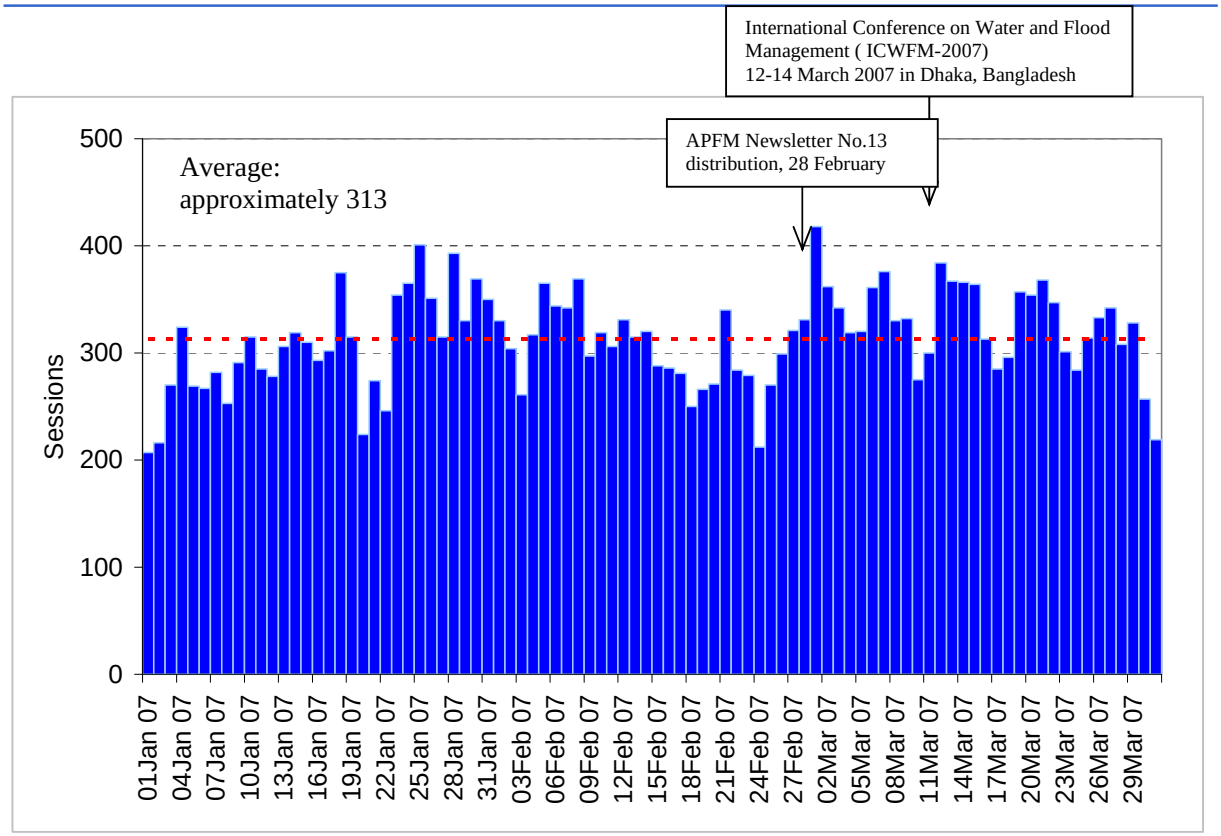


Figure 3. Sessions (from 1 January 2007 to 31 March 2007)

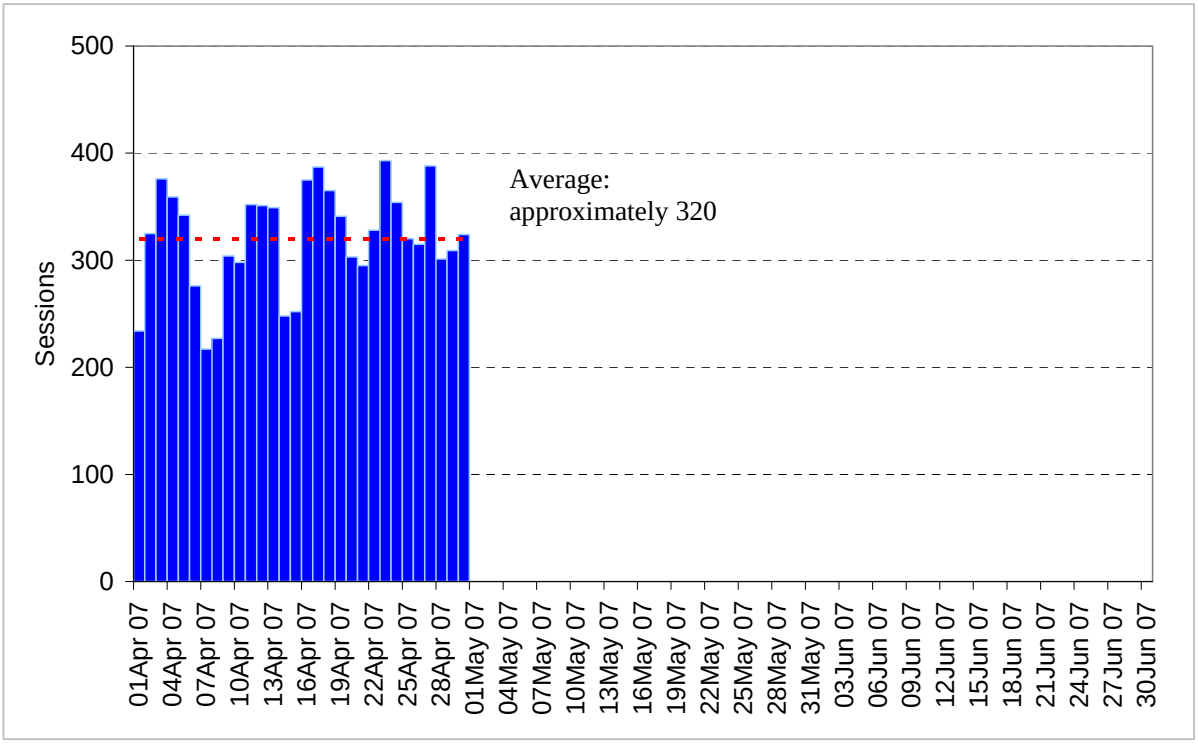


Figure 4. Sessions (from 1 April 2007 to 30 April 2007)

2. Files downloaded

- ”Concept paper (English)” is the most downloaded.
- Case studies and Manuals in South Asia tended to be downloaded many.

Table 3. Top 20 of downloads on the APFM website

	Link	Page names / File names	Requested	Percent
1	/pdf/concept_paper_e.pdf	Concept paper (English)	1,787	3%
2	/pdf/case_studies/cs_bangladesh.pdf	Case study in Bangladesh	1,701	3%
3	/pdf/case_studies/bangladesh.pdf	Case study in Bangladesh (Extended summary)	1,540	3%
4	/pdf/case_studies/usa_mississippi.pdf	Case study in USA (Mississippi River) (Extended summary)	1,518	3%
5	/pdf/case_studies/cs_usa_mississippi.pdf	Case study in USA (Mississippi River)	1,450	2%
6	/pdf/case_studies/cs_india.pdf	Case study in India	1,366	2%
7	/pdf/case_studies/india.pdf	Case study in India (Extended summary)	1,189	2%
8	/pdf/case_studies/pakistan_chenab.pdf	Case study in Pakistan (River Chenab) (Extended summary)	1,143	2%
9	/pdf/case_studies/turkey.pdf	Case study in Turkey (Extended summary)	1,094	2%
10	/pdf/concept_paper_s.pdf	Concept paper (Spanish)	1,054	2%
11	/pdf/pilot_projects/manual_india.pdf	Mannual on Community Approach to Flood Management in India	1,024	2%
12	/pdf/case_studies/cs_ethiopia.pdf	Case study in Ethiopia	1,006	2%
13	/pdf/case_studies/ethiopia.pdf	Case study in Ethiopia (Extended summary)	972	2%
14	/pdf/ifm_legal_aspects.pdf	Legal and Institutional Aspects of Integrated Flood Management	972	2%
15	/pdf/case_studies/cs_pakistan_chenab.pdf	Case study in Pakistan (River Chenab)	939	2%
16	/pdf/pilot_projects/manual_bangladesh.pdf	Manual for Community - Based Flood Management in Bangladesh	936	2%
17	/pdf/strategy_kenya_e.pdf	Strategy for Flood Management for Lake Victoria Basin, Kenya	894	1%
18	/pdf/case_studies/cs_cameroon.pdf	Case study in Cameroon	891	1%
19	/pdf/case_studies/canada.pdf	Case study in Canada (Extended summary)	823	1%
20	/pdf/case_studies/cs_pakistan_nullah.pdf	Case study in Pakistan (River Nullah)	814	1%

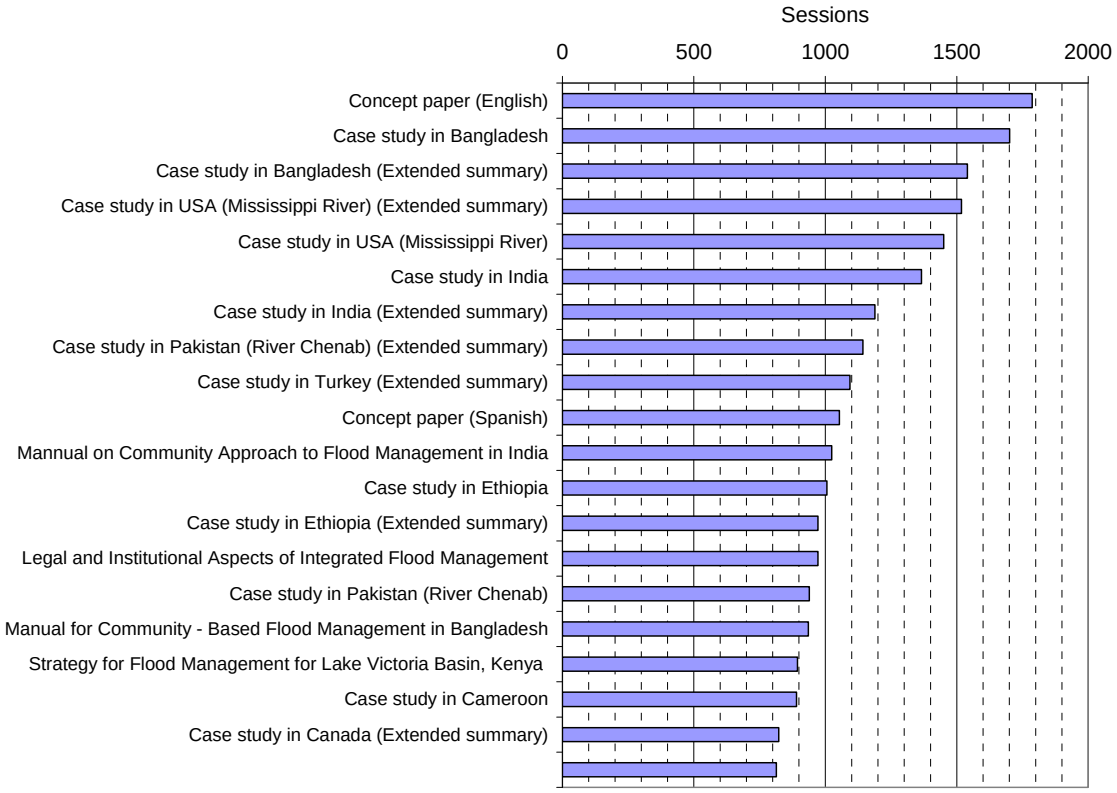
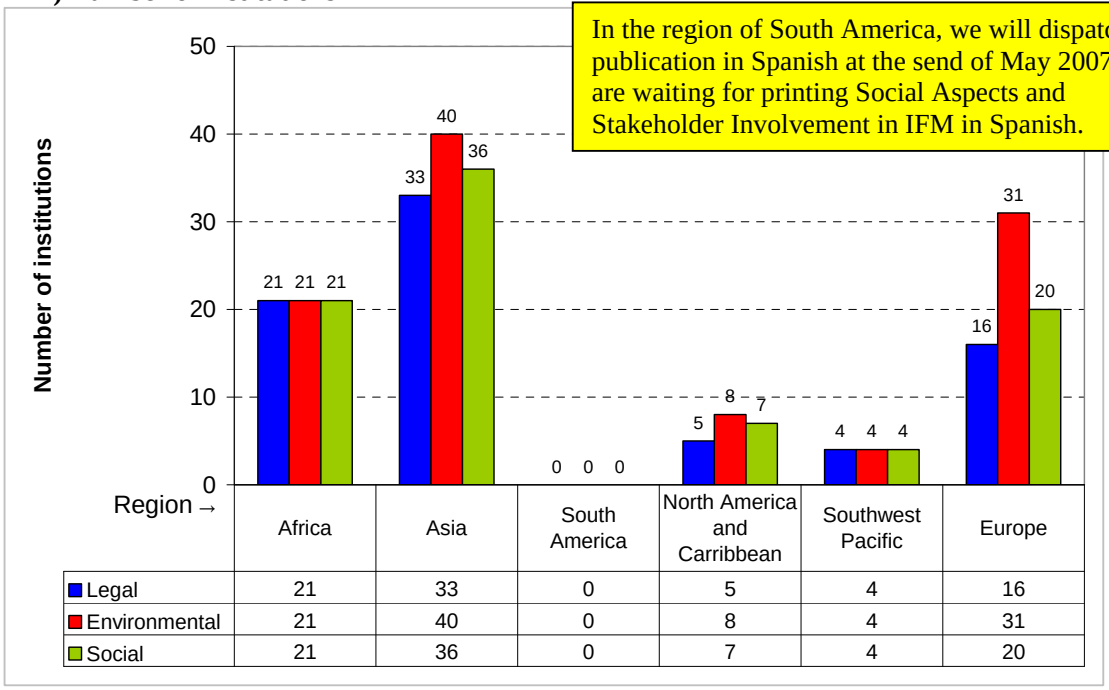


Figure 5. Top 20 of downloads on the APFM website

ANNEX II DISSEMINATION OF PUBLICATIONS

1) Number of institutions

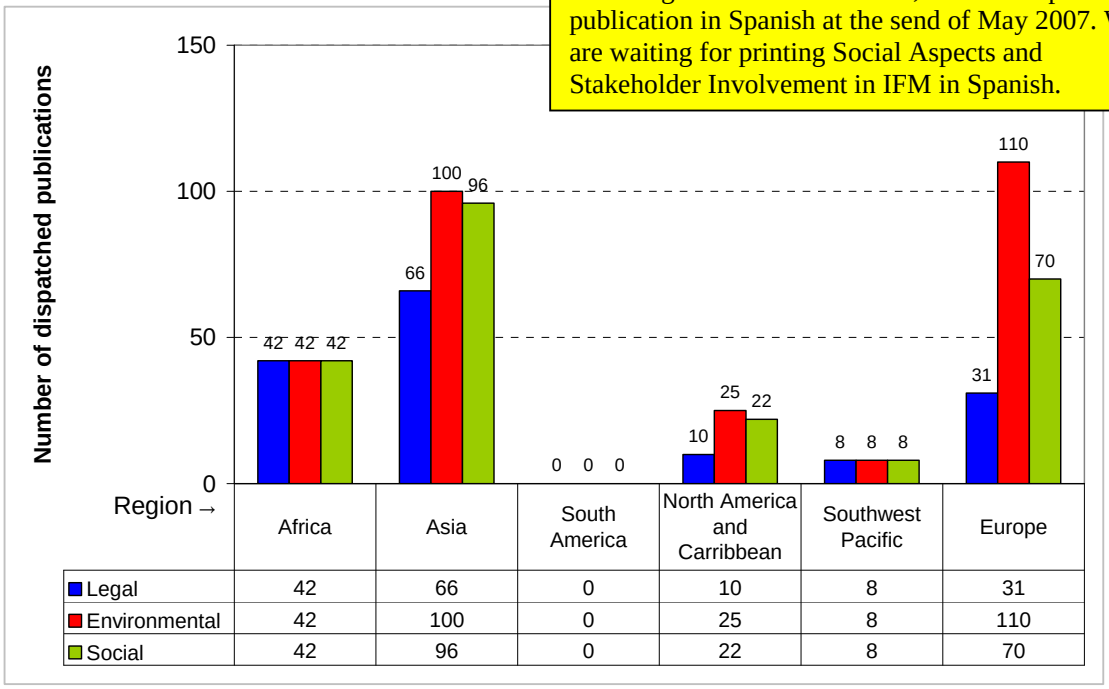
In the region of South America, we will dispatch the publication in Spanish at the send of May 2007. We are waiting for printing Social Aspects and Stakeholder Involvement in IFM in Spanish.



	Africa	Asia	South America	North America and Carribbean	Southwest Pacific	Europe
Legal	21	33	0	5	4	16
Environmental	21	40	0	8	4	31
Social	21	36	0	7	4	20

2) Number of dispatched publications

In the region of South America, we will dispatch the publication in Spanish at the send of May 2007. We are waiting for printing Social Aspects and Stakeholder Involvement in IFM in Spanish.



	Africa	Asia	South America	North America and Carribbean	Southwest Pacific	Europe
Legal	42	66	0	10	8	31
Environmental	42	100	0	25	8	110
Social	42	96	0	22	8	70

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

Figure 1. Number of institutions and publications that APFM publication has been dispatched