CONCEPT PAPER ON

INTERNATIONAL FLOOD INITIATIVE

Earlier known as Joint UNESCO-WMO Flood Initiative (JUWFI)

Prepared by:
WMO-UNESCO Joint-Task Team
in collaboration with:
UNU and IAHS

Dedicated to the
UN International Decade for Action, "Water for Life" (2005 - 2015)

February 2007

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CONTENTS

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1. INTRODUCTION

1 Flooding, due to flash and riverine floods, coastal floods, snowmelt floods, ice jams and mud flows, is the most taxing of water-related natural hazards to humans, material assets, as well as to cultural and ecological resources. Annually, flooding affects about 520 million people and their livelihoods, claiming about 25,000 lives worldwide. The annual cost to the world economy, of flooding and other water-related disasters, is between $50 and $60 billion (1). At the same time, economic development activities in and around water bodies have contributed extensively to progress in both developed and developing countries. Agriculture-centered developing economies largely depend on the fertile flood plains for food security and their poverty alleviation efforts. Deltas of numerous river systems, which are also prone to riverine as well as coastal flooding, provide excellent opportunities for low-tech agriculture practices and serve as the bread bowls of these countries and provide for the livelihoods of millions. The wetlands in floodplains contribute to bio-diversity as well as providing employment opportunities. It is estimated that one billion people- one sixth of the global population, the majority of them among the world's poorest inhabitants -live today on the flood plains.

2. Some 96 percent of deaths related to all natural disasters in the past decade, including floods, occurred in developing countries (2). In Asia, the continent with the greatest potential flood hazard, between 1987 and 1997, floods claimed an average of 22,800 (1) lives per annum and caused an estimated $136 billion in economic damage. The adverse impacts of flooding are not restricted to the least developed nations. The 2002 floods in Europe claimed 100 lives and caused $20 billion in damage (1). However, it is the least developed nations that suffer both the adverse economic impact on development and high human toll from flooding.

3. With the frequency and variability of extreme floods events changing because of urbanization, coupled with the population growth in flood-prone areas, deforestation, potential climate change and rise in sea levels (3), the number of people vulnerable to devastating floods worldwide is expected to rise. Disaster risk reduction actions, in a non-stationary world, will therefore increasingly be required to build up the necessary capacity to cope with floods.

4. Despite the long and largely successful history of international and national efforts to develop structural and non-structural systems and practices to reduce risk associated with flood hazards, consideration of other factors, such as poverty, that force people to live in areas at risk of flooding have not necessarily been taken into account. These systems and practices have been mainly applied through largely isolated sectoral approaches. Exacerbating this situation is the lack of clear understanding of interdependence of development impacts on magnitude of flood hazard, shortage of resources and political will-factors that demand an enhanced coordination. As such, there is, therefore, a worldwide lack of integrated flood management approaches as well as inadequate application of those that are available.

5. It is within this context that a new perspective on flood management incorporating flood risk assessment needs to be developed- one that recognizes flood management as an integral part of water resource management taking into account economic and social welfare in an equitable manner without compromising the ecological sustainability of vital systems. Appropriate flood management approaches through investment and the redirection of resources offers significant economic benefits, as well as increased potential for the reduction in loss of life.

6. Being intimately aware of the significant achievements that have been made in flood management in recent years and also of existing opportunities to elaborate practical solutions to the above-mentioned context, UNESCO and WMO in close collaboration with the United Nations University (UNU), the International Association of Hydrological Sciences (IAHS) and the International Strategy for Disaster Reduction (ISDR) agreed to the launching of this International Flood Initiative. Other UN agencies dealing with various facets of flood management will also be invited to join the Initiative. The Initiative will develop a comprehensive suit of activities that will define the programme to be implemented under the Initiative.

7. The concept of the International Flood Initiative (IFI) embodied in this document builds on the successful record of cooperation between UNESCO and WMO and other partner organizations to conceptualize, design and implement flood mitigation and protection actions and activities within their individual areas of expertise. It will provide a stepping-stone for targeted joint activities aimed at building on the successes of the past, while addressing existing gaps in a holistic approach to the issue of floods.

8. The Initiative is based on the concept of integrated flood management and aims to ensure that an end-to-end process of flood management is put in place in a balanced manner, duly considering prevention and mitigation measures and the positive and negative impacts of floods. By applying the Integrated Flood Management approach that considers comprehensive risk management principles and approaches that aim at multi-hazard responses, IFI will foster the mobilization of resources and networks of the UN system, non-governmental organizations (NGOs), donor agencies, the insurance industry in order to assist communities and governments in developing culturally sensitive flood management strategies comprising of optimal structural and non-structural measures thereby targeting sustainable development.

9. This initiative will be a major UNESCO and WMO led contribution to meeting the Millennium Development Goals (MDGs), address the issues identified in Hyogo Framework of Action (2005-2025), and contribute to the UN International Decade for Action, “Water for Life” (2005 - 2015) (4) and UN Decade on Education for Sustainable Development. The Johannesburg Plan of Implementation of WSSD (5) also highlights the need to mitigate the effects of droughts and floods. The international community has committed itself to an innovative approach to addressing vulnerability and risk management that includes prevention, mitigation, preparedness, response and recovery. It is important to provide the means to carry forward and implement this commitment. The Initiative is a step in that direction and is foreseen to be implemented initially for a period of ten years coinciding with the above-mentioned decades and the timeframe for achieving MDGs.

10. The second section of this paper outlines the concepts behind the IFI, and begins by defining the integrated flood management as the integral and thematic approach of the Initiative. It also outlines the mission and objectives. In accordance with the intentions of the partnered organizations, the principles that will guide the implementation of the Initiative are also delineated.

11. The third section builds on this concept and focuses on the modes and mechanisms of implementation. The IFI strategic activities are put in place, followed by the IFI Initial Plan of Action, which sets in motion the intended first phase of the Initiative. A list of performance indicators that will monitor the initiative's progress is identified. The section concludes with a description of the institutional arrangements and the expected funding considerations.

12. It should be noted that the present IFI concept paper is an evolving process, and will therefore be reviewed on a regular basis in order to fully respond to constraints and opportunities that arise with time.

2. THE CONCEPT

2.1 Integrated flood management

13. Integrated flood management (IFM) (6) is a process that promotes a holistic, (rather than fragmented) risk-based approach to flood management. IFM aims at reducing the human and socio-economic losses from flooding and at the same time increasing the social, economic, and ecological benefits from floods and use of flood plains. It integrates land and water resources development, includes the institutional components of flood management, and recognizes the critical importance of stakeholder participation and cultural diversity.

2.2 The Mission of IFI

14. The IFI aims at implementing recommendations of the WSSD taking into consideration the physical parameters of flooding, its socio-economic conditions and the risk a society is prepared to take in order to achieve its development objectives.

Mission Statement

The International Flood Initiative promotes an integrated approach to flood management, at the same time, reducing social, environmental and economic risks that result in and from floods and increasing the benefits from floods and the use of flood plains.

2.3 Objectives of the IFI

15. The mission will be realized by focusing on an overall objective, a set of specific objectives and guiding principles.

2.3.1 Overall Objective

16. The overall objective of IFI is to build capacities in countries in order to gain and advocate better understanding and handling of hazards, vulnerabilities and benefits involved with floods by promoting all measures leading to that end by applying the following guiding principles:

- Living with Floods;
- Equity;
- Empowered participation;
- Inter-disciplinarity and trans-sectorality; and
- International and regional cooperation.

2.3.2 Specific Objectives

17. The specific objectives of the IFI are to enable the countries to:

- Improve data collection and analysis for flood management;
- Enlarge the knowledge-base in respect to risk and benefits of floods;
- Enhance the benefits of floods;
- Develop and improve institutional frameworks for flood management;
- Develop area-specific adaptation strategies;
- Develop approaches to assess and reduce vulnerability;
- Improve floodplain management in rural and urban areas;
- Optimize a mix of structural and non-structural approaches;
- Improve forecasting and early warning of floods for both rural and urban areas;
- Enhance effectiveness of forecast and people-centred early-warning systems;
- Improve community response to flood hazards;
- Enhance capacity to cope with floods under climate change;
- Develop approaches to public participation that are appropriate for different problem contexts and cultural settings;
- Enhance flood awareness and preparedness with a focus on rural settings;
- Include flood management aspects in school and university education;
- Improve in-service training on all aspects of flood management; and
- Develop financial mechanisms for transferring the risks and sharing the losses from floods.

2.4 Guiding Principles

18. The implementation will be guided by five principles:

2.4.1 Living with floods

19. 'Living with floods' recognizes that while it is not possible to completely eliminate floods, their negative impacts can be reduced through an understanding of flood risks and by working towards modifying this risk-generation process in a holistic manner. Flood risks are processes that result from a combination of flood hazards and societal vulnerabilities, hazard modification and amplification, vulnerability enhancement due to various social processes and factors. Such an approach should also recognize the community resource base and benefit from traditional knowledge and include training and incentives to reveal and utilize the benefits from floods.

20. Through proactive and multi-hazard approach the IFI will assist communities and governments in developing culturally sensitive and sustainable flood management strategies and harmonizing structural and non-structural measures for "living with floods". Cooperation with WMO programme on Natural Disaster Prevention and Mitigation will be established.

2.4.2 Equity

21. The distribution of costs and benefits of flood management must receive special attention. This has both ethical and legal dimensions. Equity issues arise between national borders and

jurisdictions (transboundary flood management), upstream and downstream riparian rights, rural and urban interests and generally those bearing the costs and receiving the benefits. Therefore, integrated flood management must promote policy processes and outcomes that are viewed as fair and legitimate among all the effected parties or stakeholders. The stakeholders also include future generations and thus flood management strategies must also promote intergenerational equity.

2.4.3 Empowered participation

22. The importance of empowering individuals and communities, who are directly affected by floods to deal with them through a participatory decision making process is now widely recognized as important to successfully implementation of integrated flood management throughout the world.

23. Thus the participation of all the stakeholders through appropriate institutions and innovative governance frameworks in a coordinated manner will be a key mechanism throughout all levels of flood related activities, noting that flood management is a part and parcel of social development. Cooperation with the UNESCO programme on Management of Social Transformation (MOST) will be established.

2.4.4 Inter-disciplinarity and Trans-sectorality

24. IFI will develop and enhance knowledge systems cutting through all flood related activities. These will include monitoring, network design, improvements in the statistical analysis of floods, real-time forecasting and flood modeling. In addition, the IFI will focus on assessing community vulnerabilities and risks, as well as their respective generating factors (including poverty, migration to urban centers and mega-cities, population growth, and lack of experience and norms). As such, managing floods requires skills that span technical, social, economical, political, and ecological disciplines as well as consideration for natural resource utilization that are interlinked within river basin unit. Interdisciplinarity will be the core philosophy of all the actions and activities undertaken by the IFI and carried out in a holistic manner in the context of the wholeness of river basins by managing the water cycle at catchment scale through promoting integrated land and water management to mitigate not only floods but droughts as well. All scientific knowledge including economic and social sciences, as well as new technologies, particularly remote sensing and Informational and Communication Technologies (ICT), will be harnessed in every step of the Initiative.

25. One of the major emphases of the IFI will be the integration of all stakeholders in flood management. Various development activities within a basin that affect and are affected by floods are carried out under different sectors and administrative jurisdictions. Interdisciplinary and intersectoral coordination and understanding is essential for designing and implementing institutional reforms and participatory stakeholder processes that promote fair and effective flood management policies. The IFI shall establish links between the scientific community, decision-makers inside and between governmental levels, the relevant UN bodies, national and international organizations, NGOs, and market actors. This multi-sectoral approach will increase the effectiveness of processes and acceptance of flood management decisions, therefore striving towards sustainability.

2.4.5 International and Regional Cooperation

26. International cooperation, particularly in trans-boundary watersheds where nearly 50% of lives are at risk, is important for effective flood management. Data, information and knowledge exchange and management will be facilitated through cooperative networks, such as the IHP National Committees, UNESCO Water Centers, National Hydrological and Meteorological Services (NHMSs), WMO Regional Training Centres, UN/ISDR and IAHS National Committees and other institutions, such as, UNU, UNESCO-IHE Institute for Water Education, International Centre for Water Hazards and Risk Management (ICHARM), International Institute for Applied Systems Analysis (IIASA), as well as initiatives such as Flow Regimes from International Experimental and Network Data (FRIEND), Hydrology for Environment, Life and Policy (HELP), Predictions in Ungauged Basins (PUB), Associated Programme on Flood Management (APFM) and International Flood Network (IFNet) will run cooperative programmes in technical and scientific capacity building. The development, promotion and transfer of appropriate technologies in flood management will also fall under this category of international cooperation.

27. The nature of the IFI requires close cooperation and coordination to be established with relevant UN entities, such as UN-Water, World Water Associated Programme (WWAP), World Climate Programme, the Commission on Sustainable Development (CSD) process, the follow up to the World Conference on Disaster Reduction [Kobe, Japan, 2005] as established through Hyogo Framework of Action, the UN Decade on Education for Sustainable Development and UN International Decade for Action, “Water for Life” (2005 - 2015) as well as with other intergovernmental processes such as New Partnership for African Development (NEPAD). Similarly, cooperation will be sought with the water related NGO community, such as World Water Council (WWC), Global Water Partnership (GWP), the World Water Forum series, as well as technical associations, such as IAHS, International Association for Hydraulic Engineering and Research (IAHR), International Commission on Irrigation and Drainage (ICID), International Water Resources Association (IWRA) and others. Particular attention will be given to the specific problems of the developing countries, primarily those in the Least Developed Countries (LDC) category, to enable them to effectively and fairly cope with flood hazards as a part of their national strategy for poverty alleviation. Enhanced cooperation with River Basin Commissions and various regional entities will be sought.

3. IMPLEMENTATION

28. As detailed in the previous section, the IFI will be implemented in an inter-disciplinary, participatory and cooperative manner, and will be characterized by projects of trans-sectoral scope. Such implementation will be carried out bearing in mind that flood management is an integral part of water resource management and should aim to increase the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital systems. This section builds on these concepts and outlines the strategic activities and a plan that will dictate the preliminary actions of the IFI. Following this, performance indicators that will support and monitor implementation are given. Finally, outlining the implementation of IFI would be incomplete without establishing herein the administrative and funding mechanisms.

3.1 Strategic Activities

29. The overall and specific objectives of the IFI in the preceding section have set forth the broad, long-term changes that will result from the implementation of the initiative. The

achievement of these objectives will ultimately depend on the successful implementation of five interlinked strategic activities aimed at building capacities in countries through: research, information networking, education and training, empowering communities with good governance, and technical assistance. Like the objectives, these strategic activities are guided by the afore-mentioned principles, and assessment of their progress will require monitoring and coordination.

- **Research** related to all aspects of flood management in an interdisciplinary manner will be carried out with a view to promote and support the sustainable development and management of river basins as well as serving the needs of local communities. This will require close cooperation at different scales between different sectors and research communities, such as hydrology, meteorology, engineering, geography, ecology, economy, sociology, anthropology, psychology, law, public administration and policy as well as risk and systems analysis. Close coordination and synergy with other on-going international programmes, such as those of IFNet, PUB, Global Earth Observation System of Systems (GEOSS), Global Energy and Water Cycle Experiment (GEWEX), International Geosphere-Biosphere Programme (IGBP) and others is foreseen.

- **Information networking** will be developed between various stakeholders, incorporating existing networks and/or disciplinary areas not networked yet in order to provide open access to data, information, knowledge and best practices. These will, inter alia, cover clearing house services for flood management related technologies, whether at household level or regional, and provide access to flood data as well as to multi-lingual international bibliographic databases containing all flood related information. Metadata networks to inter-link all the stakeholders connecting the technical, relief and insurance communities, will also be developed.

- **Education and training** related to all aspects of flood management will support the objectives by focusing on formal and non-formal education at all academic levels- from primary school on up to graduate courses. On-the-job training will also be a focus. Training activities such as these are intended for a wide audience and not only for the technical community. For example, it is foreseen that the scope of training will help educate community leaders, opinion makers, journalist and media professionals, while helping sensitize policy makers, diplomats dealing with international water issues, law makers, and politicians to flood management issues. The training agenda will be designed as part and parcel of the UN Decade on Educating for Sustainable Development (UNDESD). Various knowledge institutions part from the educational institutions of the UN system, such as UNU EHS, UNESCO-IHE Institute for Water Education, the UNESCO Water Centers, notably ICHARM, World Bank Institute, will be encouraged to take part in this endeavour.

- **Empowering communities with good governance** and ensuring participatory approaches in all decision-making will provide the final link towards achieving the initiative's objectives. This entails promoting and mobilizing individual and community resources. The aim will be to apply networking strategies and practices towards the benefit of good governance for flood management in both rural and urban communities. This will require close cooperation with institutes devoted to the research of social issues such as the UN as well as other relevant organizations.

- **Technical assistance** will provide help where needed and enable the needy to help themselves. Technical assistance activities will range from local support for enabling the community all the way up to assisting national governments to establish comprehensive national flood management plans, as a part of the national integrated water resources management strategy.

30. In order to design the details of IFI the following focal areas will be considered, which encompass both the afore-mentioned strategic activities as well as activities that correspond to the areas of competency:

- Vulnerability
  - Methodologies to account for multiple stressors
  - Estimating social, political, health, and ecological impacts
  - Estimating economic impacts including benefits of floods
  - Mechanisms (including financial) to increase coping capacity and resilience
  - Indicators
- Flood Risk Management
  - Multi-hazard analysis
  - Data for risk assessment
  - Hydrologic, hydraulic and economic modeling
  - Flood hazard mapping
  - Structural and non-structural measures
- Governance and participation
  - People networking
  - Institutional reform
  - Developing stakeholder processes
- People-centred early warning and emergency management
  - Effective forecasting and early warning
  - Effective communication
  - Preparedness
  - Response to warning

31. The timeframe of the IFI Initial Plan of Action (IFI-IPOA) is for ten years concurrent with the UN Decades. A framework for the implementation of the IFI-IPOA is provided in Annex A. Annex B provides examples of the expected products or outputs from the activities of the IFI covering various time frames. In accordance with the UN programming cycle, short-term is defined as a two-year programming and budget period, while medium-term signifies a six-year strategic planning period, and long-term covers the 10 years, that is the expected life span of IFI. Subsequent detailed plans of action concerning the above items will be developed through a consultative process among the IFI partners and the Member countries.

3.2 Performance indicators

32. Performance indicators to measure the success of the Initiative at the end of the decade will relate to the overall objective of the IFI and they will be developed in relation to the following:

(a) reduction in human flood casualties;
(b) reduction in flood economic losses;

(c) improvements in the benefits from flood plain use; and
(d) improvement in the functioning of flood plain ecosystems.

33. The indicators will be rescaled to reflect disaster magnitude and frequency, population movements and other drivers.

34. Qualitative performance indicators that could be monitored during the decade include:

(e) increase in coping capacity;
(f) improvement in institutional effectiveness and governance; and
(g) increase in stakeholder involvement.

35. In relation to the specific objectives of the Initiative, the performance indicators for activities under the initiative may include measures of:

- The availability of products (guidelines, workshops, courses, tools, etc.) developed under the Initiative;
- The uptake/application of products developed under the Initiative;
- The ability of the products to reduce the loss of life and property damage associated with flood disasters;
- Increased information available on social, economic and environmental aspects of flood events;
- Increased awareness of the social, economic and environmental aspects of floods;
- Enhanced flood preparedness and community response to flood hazards;
- Established effective forecasting and early warning systems; and
- Improved quality of flood warnings.

3.3 Administration

3.3.1 The International Flood Initiative Advisory Committee (IFI-AC)

36. In order to provide effective coordination at the international level an IFI Advisory Committee (IFI-AC) should be established comprising of elected representatives of the IHP Intergovernmental Council (through the IHP Bureau), the WMO Commission for Hydrology (through its Advisory Working Group), and the UNU, and ISDR. The Director of I-CHARM would act as its Secretary (See Section 3.3.2) and provide supporting services to the Committee. The IFI-AC members will report to their respective constituent bodies. The constitution and the terms of reference of the Advisory Committee are at Annex- I.

37. The IFI-AC will be supported by the Management Committee (IFI-MC) which will consist of representations from the secretariats of the constituent organizations as in the above paragraph and the representatives of the scientific community participating in the Initiative such as IAHS, IAHR, IIASA, river basin commissions, civil society, private sector and the insurance industry in an inclusive manner, to jointly implement the flood management agenda and action plans. The constitution and the terms of reference of the Management Committee are at Annex-II. The Advisory Committee and the Management Committees will meet in conjunction.

3.3.2 The IFI Secretariat

38. To coordinate the activities of the IFI, International Center for Water Hazard and Risk Management (I-CHARM), located at the Public Works Research Institute (PWRI) in Tsukuba, Japan will act as the secretariat for the initiative. The Secretariat would report to the IFI-AC.

3.4 Funding

39. It is essential to note that this Initiative is not entirely a new programme and in its initial stages the work plan will reflect existing and proposed activities being coordinated and directed towards common goals. That is, activities in the work plan will be those already proposed or possible under existing budgetary constraints.

40. Furthermore, in the case of WMO the activities that will be undertaken include those which also fall within other technical areas of WMO related to flood management (for example Quantitative Precipitation Forecasting, Radar Rainfall Estimation, etc.) and proposed under the new cross-cutting WMO Programme on Natural Disaster Prevention and Mitigation (DPM) that had been endorsed by the 13th session of the WMO Congress in May 2003.

41. Once formally established with a more detailed work plan, the IFI will be strongly placed to seek extra budgetary funding which will support a wider range of activities. Funding agencies, such as the World Bank, regional banks, donors and ODA's could all make valuable contributions while in turn could largely benefit from the IFI.

4. REFERENCES

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(3) IPCC, Climate Change 2001: The Scientific Basis. Contribution of Working Group 1 to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, United Kingdom and New York, 2001.

(4) United Nations General Assembly, Resolution A/RES/58/217

(5) United Nations, Dept. of Public Information, Johannesburg Declaration on Sustainable Development. The final text of agreements negotiated by Governments at the World Summit on Sustainable Development, Johannesburg, 2003.

(6) WMO, Integrated Flood Management Concept Paper, the Associated Programme on Flood Management, Geneva, 2004.

ANNEX I

ADVISORY COMMITTEE

INTERNATIONAL FLOOD INITIATIVE

Terms of Reference

(a) Provide a forum for the identification of the activities of the participating organizations that will comprise the International Flood Initiative;
(b) Guide the integration of these activities in a manner that reflects the principles of the International Flood Initiatives;
(c) Identify gaps and future requirements in relation to the objectives of the International Flood Initiative;
(d) Make recommendations to the participating organizations on additional activities that should be considered to be undertaken by those organizations; and
(e) Review and report back to their respective constituent bodies on the effectiveness of the International Flood Initiative against the agreed performance indicators.

Membership:

(a) Representative of the UNESCO IHP Inter-governmental Council;
(b) Representative of the WMO Commission of Hydrology;
(c) Representative of ISDR; and
(d) Representative of United Nations University.

Secretarial Support:

International Centre for Water Hazard Risk Management (ICHARM), Tsukuba, Japan.

ANNEX II

MANAGEMENT COMMITTEE

INTERNATIONAL FLOOD INITIATIVE

Terms of Reference

Manage the implementation of the activities under the International Flood Initiative.

Membership:

(a) Representative of the UNESCO IHP Secretariat;
(b) Representative of the WMO Secretariat;
(c) Representative of ISDR Secretariat;
(d) Representative of United Nations University Secretariat;
(e) Representative of ICHARM;
(f) Representative of IAHS;
(g) Representative of IAHR;
(h) Representative of IIASA; and
(i) Representative of Institute of Catastrophic Loss Reduction (ICLR).

Secretarial Support:

International Centre for Hazard Risk Management (ICHARM), Tsukuba, Japan.

ANNEX A (1/3)

FRAMEWORK FOR THE IMPLEMENTATION OF THE IFI

Topics		Initial Partners and Lead	Research	Education and Training	Information Networking	Empowering Communities	Technical Assistance
Vulnerability	Methodologies to account for multiple stressors	UNU	UNU, WWAP,IAHR	IAHR ,UNU,	IAHR ,UNU, WWAP		
	Estimating social, political, health, and ecological impacts		IAHR ,IHP, UNESCO-IHE	IAHR ,IHP, UNESCO-IHE	IAHR ,ISDR, IHP	ISDR,	ISDR
	Estimating economic impacts including benefits of floods		UNESCO-IHE,	UNESCO-IHE	UNESCO-IHE, ISDR	ISDR	ISDR
	Mechanisms (including financial) to increase coping capacity and resilience		IAHR ,UNU, ICHARM	IAHR	IAHR ,ISDR, UNU,		ISDR,
	Indicators		UNU, WWAP, ICHARM	UNU	UNU, WMO, WWAP, ISDR		ISDR

ANNEX A (2/3)

FRAMEWORK FOR THE IMPLEMENTATION OF THE IFI

Topics		Initial Partners and Lead	Research	Education and Training	Information Networking	Empowering Communities	Technical Assistance
Flood Risk Management	Multi-hazard analysis	IAHS, ICAHRM, UNESCO, WMO	IAHS, UNESCO FRIEND	WMO, IAHS, UNESCO FRIEND	WMO, IAHS, UNESCO FRIEND		WMO, IAHS
	Data for risk assessment		IAHR ,IAHS, UNESCO FRIEND, ICHARM	IAHR ,IAHS, UNESCO FRIEND, ICHARM	IAHR ,IAHS, UNESCO FRIEND, ICHARM, ISDR		IAHR ,ISDR, IAHS, UNESCO
	Hydrologic, hydraulic and economic modeling		IAHR ,IAHS, ICHARM, UNESCO	IAHR ,WMO, IAHS, ICHARM, UNESCO	IAHR ,WMO, IAHS, ICHARM, UNESCO		IAHR ,WMO, IAHS, UNESCO
	Flood hazard mapping		IAHS, ICHARM	IAHS, ICHARM	WMO, IAHS, ICHARM	WMO	WMO, IAHS
	Structural and non-structural measures		IAHR ,IIHP, (ICHARM)	IAHR ,IHP, WMO, ICHARM	IAHR ,(ICHARM)		IAHR ,WMO
Governance and participation	People networking			ISDR	ISDR, UNU,		
	Institutional reform			ISDR	ISDR, WMO		WMO
	Developing stakeholder processes			ISDR	ISDR		

ANNEX A (3/3)

FRAMEWORK FOR THE IMPLEMENTATION OF THE IFI-IPOA

Topics		Initial Partners and Lead	Research	Education and Training	Information Networking	Empowering Communities	Technical Assistance
People-centred early warning and emergency management	Effective forecasting and early warning	WMO, ISDR, ICHARM	IAHR ,UNESCO-IHE, IHP, UNESCO FRIEND, ICHARM	UNESCO-IHE, UNU, WMO, ICHARM IAHR	ISDR/PPEW, UNU, WMO, IAHR	ISDR/PPEW, WMO	IAHR,WMO
	Effective communication		ICHARM	WMO	ISDR/PPEW,	ISDR/PPEW,	
	Preparedness			UNU, (ICHARM)	ISDR/PPEW, (ICHARM)	ISDR/PPEW,	
	Response to warning			UNU, (ICHARM)	ISDR/PPEW,	ISDR/PPEW,	

ANNEX B (1/4)

EXPECTED OUTPUTS OF THE IFI RESEARCH AGENDA

Research agenda outputs		Agencies currently involved
Short term products	1. Risk assessment methodologies, risk management tools and risk communication (for objective and subjective risks)	IAHR, UNU, IAHS, WMO, ISDR, ICHARM
	2. Enhanced understanding, forecasting and management of flash floods in urban areas and arid zones as well as those resulting from dam break and dike break	IAHR, IAHS, WMO, ISDR, ICHARM
	3. Improved methodologies for estimating flood benefits and flood damages for various land uses (agriculture, urban, peri-urban, industrial)	IAHR
	4. Establishment for flood susceptibility indicators based on community vulnerability and resiliency	UNU
	5. Comparative assessment of institutional models for flood management	WMO
Medium term products	1. Methodologies for reliable inundation mapping	IAHR, IAHS, WMO, UNESCO, ICHARM
	2. Probabilistic laws for non-stationary extreme events under changing environment (climate variability and change, land use and population change)	(IAHR), IAHS, UNESCO
	3. Understanding trade-offs between structural and non-structural flood management measures under different socio-economic conditions	UNESCO
	4. Improvement of combined physical and stochastic distributed hydrologic models for more reliable real-time runoff forecasting	IAHR, IAHS, UNESCO
	5. Improved methodologies for estimating flood benefits and flood damages for various land uses (agriculture, urban, peri-urban, industrial)	UNESCO
	6. Tools for group based multi-objective decision making with multiple stakeholders	IAHR
	7. Comparative analysis of socio-economic incentives and instruments in flood management	
	8. Understanding flood anthropology for the description of traditional technologies (nature for nature) in flood management	UNESCO
	9. Improved communication strategies for effective flood warning and forecasting	(UNU), IAHR, WMO, (ISDR), ICHARM
	10. Enhanced understanding of psycho-social impacts of flooding on individual and family responses	
	11. Strategies for effective flood mitigation investment scheduling	

Long term products	1. Improved medium term flood forecasting incorporating medium and long term weather prediction	IAHR, IAHS, WMO, UNESCO
	2. Understanding trade-offs between structural and non-structural flood management measures under different socio-economic conditions	
	3. Tools (data assimilation, downscaling, remote sensing) for warning and forecasting of ungauged basins	(UNU), (IAHR), IAHS, UNESCO, ICHARM
	4. Tools for hydro-meteorology triggered land-slide prediction	WMO
	5. Improved management of floods caused by ice jams	WMO
	6. Procedures for ecologically sound flood management	
	7. New design criteria for non stationary flood computation	IAHS
	8. Strategies for effective flood mitigation investment scheduling	

ANNEX B (2/4)

EXPECTED PRODUCTS OF THE IFI EDUCATION AND TRAINING AGENDA

Training and education agenda products		Agencies currently involved
Short term products	1. Synthesized flood preparedness guidelines on flood emergency for communities (country specific)	WMO, ISDR
	2. Training courses and manuals for community leaders, decision makers, technical persons on various aspect of flooding, such as preparedness planning, flood fighting and flood recovery	UNU, (IAHR), WMO, UNESCO/IHP/IHE, ISDR, ICHARM
	3. Post evaluation conferences/lessons learned of case studies highlighting best practices on all aspects of flood issues	UNU, IAHS, ISDR
	4. International network of flood related institutions to cooperate on producing training materials for various users groups	UNU, ICHARM with IHE, ICHARM
Medium term products	1. Production of teaching material for training courses for various levels	IAHS, UNESCO/IHE, ICHARM
	2. Training courses and manuals for community leaders, decision makers, technical persons on various aspect of flooding, such as preparedness planning, flood fighting and flood recovery	UNU, WMO, UNESCO/IHE, ICHARM
	3. Post evaluation conferences/lessons learned of case studies highlighting best practices on all aspects of flood issues	UNU, IAHS
	4. International network of flood related institutions to cooperate on producing training materials for various users groups	UNU, (IAHR), ICHARM
	5. Popularized publications, books, videos and public education programs dealing with different aspects of flood preparedness, flood fighting and flood recovery in different cultural and socio-economic settings	WMO, UNESCO/IHP, ISDR
Long term products	1. Introducing the concept of living with floods in schools programs through text books and teaching materials	WMO, UNESCO/IHP, ISDR
	2. Curricula for undergraduate disciplinary programs and integrated curricula for interdisciplinary graduate programs promoting interdisciplinary thinking	WMO, UNESCO/IHE, ICHARM
	3. Enhanced public awareness through various international events on various aspects of flood management (campaign, media, web)	UNU, WMO, UNESCO, ISDR, (ICHARM)

ANNEX B (3/4)

EXPECTED PRODUCTS OF THE IFI
INFORMATION NETWORKING AGENDA

Information network agenda product		Agencies currently involved
Short term products	1. Global hydrological database on extreme flood events	IAHS, ICHARM
	2. Database for description of the various aspects of flood (physical, economic and social)	IAHS, ICHARM
	3. Open access multi-lingual CDS/ISIS-based international bibliographical database on flood literature and reports (published and informal)	IAHS, ISDR
	4. Open access and reviewed depositary of proven methodologies and tools for flood prediction, analyses and management	IAHS, WMO, ISDR
	5. Network between IFI and relief and humanitarian agencies	ISDR
Medium term products	1. Database of data-type relevant to the various aspects flood management	IAHS
	2. Compilation of available DEM data and other spatial datasets (land use) in the appropriate resolution for flood management	(IAHS)
	3. Open access international depository of flood related legal instruments, policies and comparative studies	WMO
	4. Cooperative network between IFI and insurance industry	UNU
	5. Network between IFI and relief and humanitarian agencies	ISDR
Long term products	1. Global hydrological database on extreme flood events	IAHS, ICHARM
	2. Compilation of available DEM data and other spatial datasets (land use) in the appropriate resolution for flood management	(IAHS)
	3. Cooperative network between IFI and insurance industry	UNU, ISDR

ANNEX B (4/4)

EXPECTED PRODUCTS OF IFI TECHNICAL ASSISTANCE

Technical assistance products		Agencies currently involved
Short term products	1. Help design cooperative agreements for flood related activities in transboundary watersheds	WMO
	2. Flood emergency management manuals and procedures	WMO, ISDR
	3. Flood Relief and recovery manuals and procedures	ISDR
Medium term products	1. Facilitation of jointly coordinated flood fighting in transboundary watershed	WMO
	2. Design and construction of appropriate methodologies for flood mitigation measures at local scale	WMO
	3. Assessment of individual and community flood vulnerability exposure	UNU (case by case)
	4. Provide assistance to the governments in designing national strategies for flood reduction	UNU (case by case), WMO
Long term products	1. Provide assistance to the governments in designing national strategies for flood reduction	UNU (case by case), WMO