27 April 2016

International Flood Initiative Strategy 2016-2022

1. Context

Flooding is one of the greatest water-related environmental disasters known to us—its human, material and ecological costs are staggering. After 1980, in particular, floodsa account for about two thirds of all natural disaster victims around the world. The number of people vulnerable to devastating floods is expected to continue to rise due to large-scale urbanisation, population growth in flood-prone areas, deforestation, climate change and rising sea levels. New disaster risk reduction approaches are needed to build the necessary capacity to address these challenges.

On the other hand, floods are natural phenomena that contribute to the biodiversity and sustainability of ecosystems and to many human activities. Both developed and developing countries have benefited from economic development in areas prone to flooding. Close to one billion people—one-sixth of the global population, the majority of them among the world's poorest inhabitants—now live on flood plains. Developing countries with mainly agricultural economies depend largely on their fertile flood plains for food security and poverty alleviation. The deltas of many river systems favour low-tech agricultural practices and provide livelihoods for millions. The wetlands in flood plains contribute to biodiversity and also create employment opportunities.

The International Flood Initiative (IFI) made its official debut in January 2005 at the World Conference on Disaster Reduction (WCDR) in Kobe, Japan following endorsement by the the 16th session of the IHP Intergovernmental Council (September 2004, Paris) and the 12th session of WMO CHy (October 2004, Geneva) respectively. It is a joint initiative of international organisations including UNESCO's International Hydrological Programme (IHP), World Meteorological Organization (WMO), the United Nations Office for Disaster Reduction (UN/ISDR), United Nations University (UNU), the International Association of Hydrological Sciences (IAHS), the International Association for Hydro-Environment Engineering and Research (IAHR), the Institute for Catastrophic Loss Reduction (ICLR) and International Institute for Apploed Systems Analysis (IIASA), originally created by UNESCO, ICLR and IIASA. The IFI secretariat is located in the International Centre for Water Hazards and Risk Management (ICHARM), Tsukuba, Japan, and coordinates the IFI activities. Based on the joint efforts including the supportive actions from the U.N. International Decade for Action, "Water for Life" (2005-2015) (UNESCO/WMO 2007), the IFI has been working to conceptualise, design and implement flood mitigation and protective actions and activities, using contributions from participatory organisations. Being intimately aware of the achievements that have been made in flood management in the past decade, the IFI has also tried to foster the mobilisation of resources and networks of the U.N. system, nongovernmental organisations and so on in order to assist communities and governments in developing culturally sensitive flood management strategies and thereby addressing sustainable development, such as through the IFI flagship project "to support benchmarking flood risk reduction at global, national and local levels" since 2013.

The post-2015 framework (Sendai Framework) for DRR was adopted at the Third World Conference on DRR in March 2015 in Japan, which represented a unique opportunity for countries to adopt a concise, focused, forward-looking and action-oriented DRR framework (UNISDR 2015). States also reiterated their commitment to DRR and the building of resilience to disasters to be addressed with a renewed sense of urgency in the context of sustainable development and poverty eradication and, as appropriate, to be integrated into policies, plans, programs, and budgets at all levels and considered within relevant frameworks. National targets and indicators will contribute to the achievement of the outcome and goal of this framework. The framework gives the first of these four priorities for action as: "Understanding disaster risk". These are actions which: promote the collection, analysis,

management and use of data; the assessment of disaster risk; the use of geospatial information; and disaster-related education, dissemination and awareness raising, indicatively emphasising the role of science and technology. By expressing sincere appreciation to the valuable contributions from IFI partners in its initial decade, it is the time for the IFI to provide a stepping-stone for the implementation of the Sendai Framework (UNISDR 2015) by revitalising its activities aimed at building on the successes of the past and leassons learned, while addressing existing gaps in implementing a holistic approach to flood management strategies comprising optimal structural and nonstructural measures and thereby mainstreaming disaster risk reduction and addressing sustainable development.

Among the Sustainable Development Goals (SDGs, UN 2015), IFI has a pivotal role to play for Target 11.5, which explicitly states water-related disasters.

- Target 11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.

Discussion is ongoing in order to disaggregate the indicator 11.5.1 by type of loss (e.g. number of deaths, missing people and number of people displaced) and type of disasters (floods, droughts, tsunamis, earthquakes, landslides etc.), as well as the addition of another indicator monitoring the direct economic loss due to disasters.

The goals necessary to monitor the targets related to floods contained in the Sendai Framework (UNISDR 2015) and in the SDGs (UN 2015) are already present in the Strategy of IFI. Moreover the work of IFI for the Flood-related goals may also serve as an example of monitoring methodology for other disasters.

Surely the IFI platform plays a crucial role in all the targets in Goal 6 and targets 1.5 and target 13.1.

- Goal 6: Ensure availability and sustainable management of water and sanitation to all.
- Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.
- Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

The Paris Agreement as an outcome of the 21st session of the UN Climate Change Conference of Parties (COP-21), adopted on 11 November 2015 welcomes both 2030 Agenda and Sendai Framework, IFI (may/can/has a capacity to) contribute to the Item (c) and (d) of the Paragraph 7 of the Article 7 and Article 8, of the COP-21 which are;

(c) Strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decisionmaking;

(d) Assisting developing country Parties in identifying effective adaptation practices, adaptation needs, priorities, support provided and received for adaptation actions and efforts, and challenges and gaps, in a manner consistent with encouraging good practices;

Article 8 No. 1 Parties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset event and the role sustainable development in reducing the risk of loss and damage. The new initiative for climate risk early warning systems was launched at the COP21 (CREWS 2015).

This new strategy is to update the original IFI concept (UNESCO/WMO 2007) in 2007 toward solid and strategic actions to support and implement those arguments for development and disaster risk reduction.

2. What is Integrated Flood Management?

Integrated Flood Management (IFM) is a process promoting a holistic risk-based approach to flood management that aims at maximising the net benefits from the use of flood plains and minimising loss of life from flooding. IFM integrates land and water resources management with respect to flood management within the broader context of integrated water resources management (IWRM). IFM includes institutional actors at all levels of flood management and recognises the critical importance of stakeholder participation and cultural diversity in planning and implementation.

Required new approaches across sectors and disciplines

A broad range of interdisciplinary and multisectoral inputs are needed to develop the means to reduce the risks associated with flood hazards. Despite efforts to produce new approaches, many factors that force people to live in flood-prone areas, such as poverty and land management, have not been taken into account. Current measures are often only applied in single sectors. This problem is further exacerbated by the lack of a clear understanding of how the impacts of development, the magnitude of flood hazards, the shortage of resources and political will—factors that require enhanced coordination and engagement across disciplines—interact with each other. We need a new approach that recognises flood management as a critical part of the broader context of IWRM. The approach also needs to take into account social and economic welfare and to ensure that resources are shared in an equitable manner without compromising ecological sustainability. Flood management—through investment and the redirection of resources—offers significant economic benefits and potentially reduces loss of life.

3. IFI Mission Statement

The International Flood Initiative (IFI) promotes an integrated approach to flood management to take advantage of the benefits of floods and the use of flood plains while reducing the social, environmental and economic risks.

A Joint Initiative

UNESCO and WMO, building on past cooperative successes, launched the IFI in January 2005 to address existing management gaps through a holistic approach and to provide a platform for further collaborative efforts. The IFI is also working in close collaboration with the UNU, the IAHS and the ISDR. U.N. agencies working on other aspects of flood management will also be invited to contribute to the initiative.

The international community has committed itself to finding new approaches to managing risk and addressing vulnerability, which includes prevention, mitigation, preparedness, response and recovery. The IFI is working towards these goals and will serve as an important evolutionary link in the transition between the implementation of the SDGs (UN 2015), as well as the Sendai Framework (UNISDR 2015) activities. Likewise, the IFI aims to promote the concept of integrated flood management by emphasising the benefits that can be derived from floods while reducing flood losses. Referring to the Tokyo Statement (IRDR 2015) regarding a new science and technology that consolidates DRR and sustainable development, the IFI will need to:

- adopt a common methodology on data collection and economic analysis of disasters that can be practiced by national and local platforms to realise evidence-based policy making on disaster risk reduction that can be practiced globally,
- enhance numerical preassessments of damages by various hazards based on interdisciplinary knowledge to formulate preventive policies and strategies, and
- fully share these valuable “best practices” of disaster risk reduction that are based on scientific findings.

Objective
The initiative will enable countries to:
Database
• Improve data collection and analysis for flood management;
• Encourage timely sharing of information related to transboundary water related disasters; and
• Broaden the knowledge-base with respect to the risks and benefits of floods.

Science & technology
• Develop approaches to map, assess and reduce vulnerability and risk;
• Improve flood forecasting and early warning for both rural and urban areas;
• Increase the effectiveness of forecasts and people-centred early warning systems;
• Optimise a mix of structural and nonstructural approaches; and
• Improve in-service training in all aspects of flood management.

Capacity building
• Enhance the capacity to better manage floods under climate change;
• Incorporate flood management into school and university curricula;

Financial mechanisms
• Develop financial mechanisms for transferring risks and sharing losses from floods; and
• Augment the use of the benefits of floods.

Local, national, regional initiatives
• Build on and improve institutional frameworks for flood management including transboudary disasters;
• Develop area-specific adaptation strategies;
• Improve flood plain management in urban and rural areas;
• Improve community approaches to flood management; and
• Develop participatory approaches to be used in a variety of contexts and cultural settings.

The IFI strategic structure is shown in Figure 1.

4. IFI's guiding principles

Living with Floods
The negative impact of floods can be reduced by better understanding the risks and modifying how they arise in a holistic manner. Flood risks are processes that result from a combination of flood hazards, exposure, and societal vulnerabilities. This approach also draws on resources at the community level and its traditional knowledge on floods, as well as providing training and incentives to use the benefits from floods. The initiative will thus help communities and governments develop culturally sensitive and sustainable flood management strategies.

Equity
The distribution of costs and benefits of flood management has both ethical and legal dimensions. Equity issues arise because of national borders and jurisdictions (transboundary flood management), upstream and downstream riparian rights, rural and urban interests, and more broadly, between those bearing the costs and those receiving the benefits. Integrated flood management must promote policy outcomes that seem fair and legitimate to all stakeholders. As these also include future generations, strategies must also promote intergenerational equity.

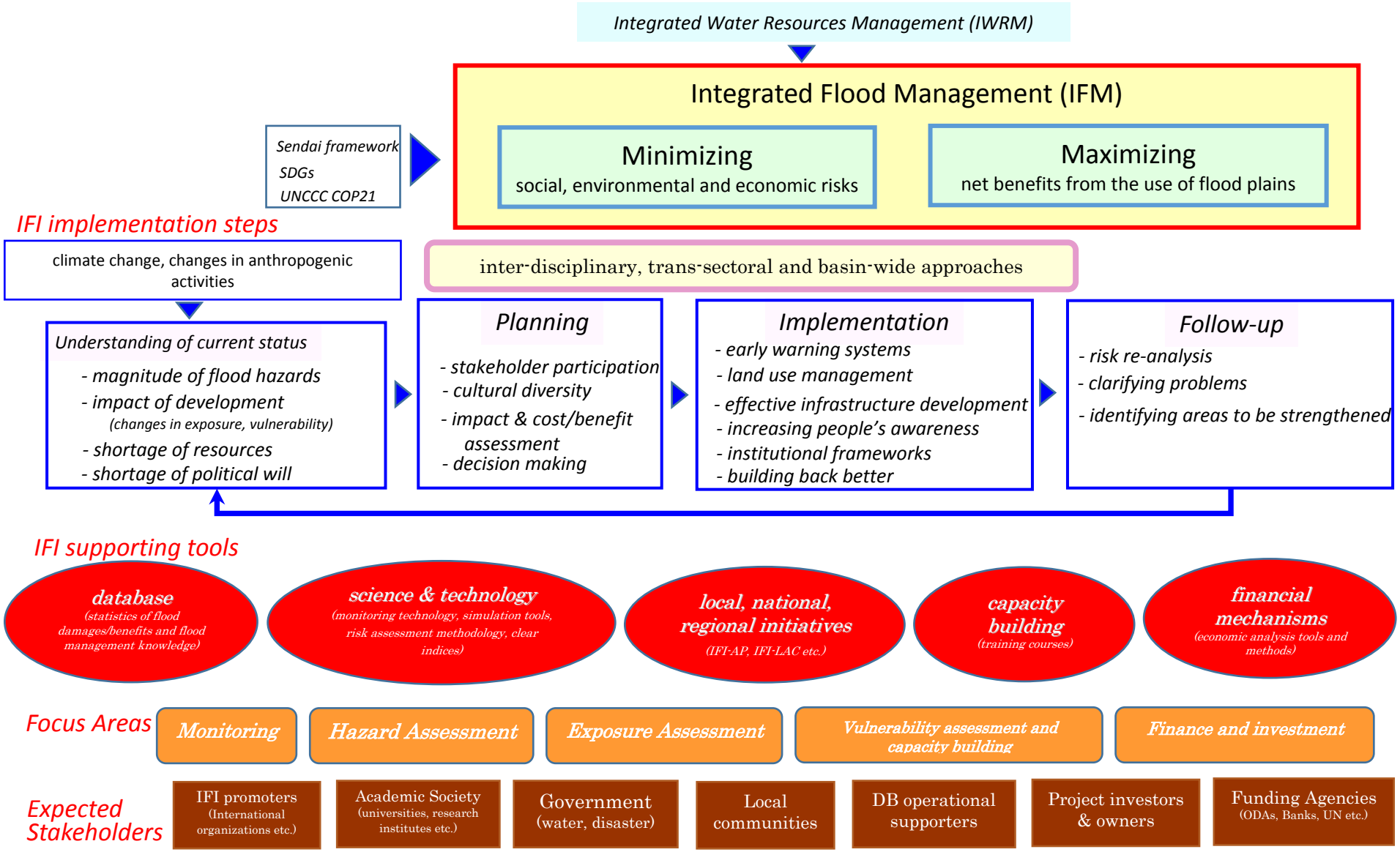

Figure 1: IFI Strategic Structure 2016-2022

Empowered participation

The importance of empowering individuals and communities that are directly affected by floods through participatory decision-making is now widely seen as vital to successful integrated flood management. Thus the coordinated participation of all stakeholders—through appropriate institutions and innovative governance frameworks—will be a key mechanism at all levels of flood-related activities. The initiative will partner with UNESCO's Management of Social Transformation (MOST) programme to ensure implementation of this guiding principle in its projects.

Interdisciplinarity and trans-sectorality

The IFI will develop and enhance knowledge systems on all flood-related preparatory activities, such as monitoring, network design, improving statistical analysis of floods, real-time forecasting and flood modelling. The initiative will also focus on assessing community vulnerabilities, along with their respective causes—e.g. poverty, migration to urban centres and megacities, population growth, and lack of experience and norms. As such, an interdisciplinary and holistic approach will be the core philosophy of the initiative. All scientific knowledge, including the social sciences, and new technologies, particularly remote sensing and Information and Communication Technologies (ICT), will be harnessed at every step. The initiative will emphasise the integration of all stakeholders in flood management plans. As development activities within a basin are usually carried out under different sectors and administrative jurisdictions, coordination is essential for designing institutional reforms and participatory stakeholder processes that promote fair and effective flood management policies. The IFI will establish links among the scientific community, decision-makers at all levels of government, relevant U.N. bodies, organisations, NGOs, and the private sector. This multisectoral approach will increase the effectiveness of processes and the acceptance of flood management decisions.

International and regional cooperation

The exchange and management of data, information and knowledge will be facilitated through cooperative networks, such as UNESCO's IHP National Committees and Water Centers under the auspices of UNESCO, National Meteorological and Hydrological Services (NMHSs), WMO's Regional Training Centres and related initiatives such as Typhoon Committee (TC), Advisory Working Group (AWG), the Hydrology and Water Resources Programme of WMO through its Technical Commission for Hydrology (CHy), in particular the WMO Flood Forecasting Initiative (WMO-FFI), and UN/ISDR and IAHS National Committees. Other institutions, such as UNU, UNESCO-IHE Institute for Water Educations, ICHARM, the International Institute for Applied Systems Analysis (IIASA), the Global Runoff Data Centre (GRDC) and initiatives such as Flow Regimes from International Experimental and Network Data (FRIEND), Hydrology for Environment, Life and Policy (HELP), IAHS Panta Rhei (everything flows), the WMO/Global Water Partnership (GWP) Associated Programme on Flood Management (APFM), the International Flood Network (IFNet), and the World Hydrological Cycle Observing System (WHYCOS) will cooperate in technical and scientific capacity building. Committee for the organization of International Conferences on Flood Risk (ICFM) offered and successfully linked IFI to the program of these conferences. First IFI session was at the 4th ICFM in Toronto (2008) followed with the special IFI sessions at the 5th ICFM in Tokyo (2011) and 6th ICFM in Sao Paolo (2014) and plans for special IFI session at 7th ICFM in Leeds (2017). Since ICFM was closely supported by UNESCO and WMO it was seen as one of the major outlets for presentations of IFI activities. The development, promotion and transfer of appropriate technologies in flood management will also fall under this category.

The initiative requires close cooperation and coordination with the relevant U.N. entities, such as UN-Water, UN-ESCAP, World Water Assessment Programme (WWAP), World Climate Programme, the Commission on Sustainable Development (CSD) process, the follow up to the World Conference on Disaster Risk Reduction as established through the Hyogo Framework of Action, the U.N. Decade on Education for Sustainable Development and the U.N. International Decade for Action, "Water for Life" (2005-2015), and other intergovernmental processes such as the New partnership for African

Development (NEPAD) and the African Ministeral Council on Water (AMCOW) . Cooperation will also be sought with the water-related NGO community, such as the World Water Council (WWC), the Global Water Partnership (GWP), the World Water Forum series, as well as technical associations, such as the International Association of Hydrological Sciences (IAHS), the International Association for Hydro-Environment Engineering and Research (IAHR), the International Commission on Irrigation and Drainage (ICID), and the International Water Resources Association (IWRA). Particular attention will be paid to the problems of developing countries, primarily those in the Least Developed Countries (LDC) category, to enable them to cope fairly and effectively with flood hazards as part of their national strategy for poverty alleviation. Further cooperation with the River Basin Commissions and other regional bodies will be sought.

5. Strategic activities

The initiative will focus on research, education and training, information networking, promoting good governance and providing technical assistance. It will guide actions at the regional or inter-regional levels for cooperation for flood disaster risk reduction in order to foster more efficient planning, create common information systems and exchange good practices and programs for cooperation and capacity development, and to adopt and implement national and local disaster risk reduction strategies and plans. All these actions will be across different scales with targets, indicators and timeframes, aimed at preventing the creation of risk, reducing existing risk and strengthening economic, social, health and environmental resilience. Additionally these actions will further provide the necessary scientific information and background in support of possible DRR targets in the Post-2015 development agenda, especially in "Understanding disaster risk," one of the four priorities for action in the Sendai Framework (UNISDR 2015).

Research focused on the interdisciplinary aspects of flood management will promote and support sustainable development and management of river basins and serve the needs of local communities. This will require close cooperation sectors and research and synergies with current international programmes.

Information networking that incorporates both existing networks and areas not yet networked will provide open access to data, knowledge and best practices. These will, inter alia, provide data classification and conceptual clustering of related knowledge for flood management-related technologies, at the household or regional level, as well as access to flood data and international bibliographic databases in several languages. Metadata networks that link the technical, relief and insurance communities will be developed.

Education and training will focus on education at all academic levels—from primary school to graduate seminars. On-the-job training will be available not only to the technical community, but also to a broader audience, which includes lawmakers, politicians and all stakeholders. Knowledge institutions within the U.N. system will be encouraged to take part in this endeavour.

Empowering communities with good governance and participatory approaches in decision-making will provide the final link in achieving the initiative's objectives. This entails mobilising individual and community resources in order to apply networking strategies improving the governance of flood management in both rural and urban communities.

Technical assistance will develop local capacity and provide help where it is needed. Technical assistance activities will range from local support for empowering communities to helping national governments establish comprehensive national flood management plans, as part of the overall national integrated water resources management strategy.

6. Stakeholders and focus areas for IFI activities

By taking advantage of the comprehensive expertise/experts' network provided by the IFI members and strengthening complementary activities between them, a synergic and inter-disciplinary approach will be implemented to target the focus areas of: 1) flood hazard assessment, 2) exposure assessment, 3) vulnerability, current coping capacity, building resilient communities and preparedness assessment to identify remaining risks and finally 4) follow-ups and monitoring of the whole process of disaster risk reduction.

National and international stakeholders
- Governments need to empower national platforms so that they can practice evidence-based disaster risk reduction as part of sustainable development.
- The scientific community needs to enhance the forecasting and visualisation capabilities of new risks and the associated potential social impacts in order to prevent further disasters due to the intensification of hazards.
- The disaster management community and the Earth observation community need to collaboratively enhance their capability to monitor existing risks and associated social impacts and to mitigate disasters due to the augmentation of vulnerabilities.
- Scientific communities on disaster risk reduction, Earth environment and health need to bring practitioners and researchers together in collaborative efforts to improve disaster resilience.
- The international community needs to set up a process of encouraging existing and future programs and initiatives to create research networks and practices for promoting evidence-based disaster risk reduction for sustainable development.

Progress of activities undertaken in the focus areas below will be quantified through a Monitoring and Evaluation (M&E) process that is an integral part of IFI. The focus areas show how to support national platforms to practice evidence-based DRR through monitoring, assessment, capacity building, synthesis, advice, communication and engagement. Regular follow-ups of all activities through this M&E seek to identify the gaps where further actions are required. The M&E process strives to quantify to which extent improvements are possible in the areas of flood loss reduction, deriving benefits from floods, coping capacity and the resilience of communities at risk, as well as the outreach-effectiveness of the programme through the availability and application of products developed by the IFI, such as guidelines, workshops, and courses.

Focus Areas

Flood Hazard Assessment
• Multihazard analysis
• Data for hazard assessment
• Hydrologic and hydraulic modelling
• Flood hazard mapping
• Effective forecasting and early warning
• Indicators

Flood Exposure Assessment
• Data for risk assessment
• Hydrologic, hydraulic and economic modelling
• Flood mapping
• Indicators

Vulnerability assessment and capacity building
• Effective communication
• Preparedness
• Response to warnings

• Methodologies to account for multiple stressors such as integrated research with droughts
• Estimating social, political, health, and ecological impacts
• Flood mapping
• Indicators

Finance and investment
• National and local platforms through data collection and economic analysis
• Estimating economic impacts including the benefits of floods
• Mechanisms (including financial) to increase coping capacity and resilience
• Structural and nonstructural measures
• Indicators

Monitoring
• Data collection and sharing and standardisation as a key action area
• Statistics
• Risk monitoring

Synthesis
• Clear and unambiguous scientific views on current state of knowledge and the ways to reduce significant human and economic losses for international policy use

Communication and engagement
• Interdisciplinary and transdisciplinary programs
• Coordination between governments and science and technology communities at national, regional and global levels
• Involvement of international and regional agencies to help at regional level for flood management
• International scientific advisory functions offering effectiveness assessments
• Organization of special sessions at the international conferences dealing with flood risk management

7. Outcome of the IFI activities

The output of the IFI activities will facilitate and enable the preparation, by widely understandable procedures, of regional, national and local maps of flood risk areas; profiles of country and local area risks in terms of the number of affected people; and the assessment of potential economic damage quantities. To reach these outputs, it is key to develop appropriate methodologies to identify flood hazards, quantify initial exposure, and risks remaining after the implementation of mitigation measures, as well as benchmarking risk and creating risk profiles. The consensus of such methodologies will support mainstreaming DRR for flood management at regional, national and local decision making processes. As such, the IFI activities will create information and databases to facilitate decision-making and monitoring of flood risk reduction in order to:

- ✓ make leaders understand the status of flood risk in countries and offer them decision alternatives;
- ✓ help practitioners to plan and implement effective flood management strategies;
- ✓ support the progress toward achieving the SDGs (UN 2015) and the relevant global development targets on water and disasters;
- ✓ provide scientific tools for monitoring the progress of the Sendai Framework (UNISDR 2015); and
- ✓ achieve the above in a seamless and effective manner.

The primary outcomes of each of the IFI activities contributed by participating organisations are demand-driven networking and related documentations of best practices at different scales for: 1) flood hazard assessment, 2) exposure assessment, 3) vulnerability, current coping capacity, building

resilient communities and preparedness assessment to identify remaining risk, and finally 4) follow-ups and monitoring of the whole process of disaster risk reduction as a benchmark. Communication and collaboration on the country/community/basin scale for benchmarking is expected to identify the gaps and seek best practice methodologies, which leads to a scientific back-up for decision-making and maintaining DRR knowledge on regional and inter-regional scales.

8. Administrative mechanism

The operations of these IFI activities will be performed through resources consisting of each voluntary partner's in-kind and financial contribution along with in-kind contribution from ICHARM, the IFI secretariat. ICHARM will support the functions as the IFI secretariat through:

- Serving as the point of contact for the IFI secretariat;
- Routing incoming communications to the IFI Partners and coordinating follow up communications as required;
- Maintaining, updating and upgrading the IFI website and related information as required;
- Organising meetings (if necessary) for the continuous improvement of the IFI activities, higher exposure in relative international conferences and follow up actions taken; and
- Providing logistics in the form of office space and utilities for IFI.

The implementation plan for this IFI strategy will be developed and updated by the IFI partners as a living document. The critical points for the timeframe to be agreed upon can be discussed during the International Conference on Flood Management (ICFM), held every three years. Visible outputs, informal meetings, including telephone conferences, will be arranged if necessary. As the IFI activities are identified as a part of the IHP-VIII Theme 1, the IHP VIII timeframe (2014-2021) and accompanying milestones can be a good opportunity to check and monitor the progress and activities of the IFI, which will be regularly reported to IHP bureau and Council. Along with these international outputs, the regional outputs should support and link with inter-regional outputs. Given the background of the IHP VIII period, the IFI implementation plan is to be arranged and updated through the IFI website.

REFERENCES

IRDR (Integrated Research on Disaster Risk) (2015). *Tokyo statement*, the Tokyo Conference on International Study for Disaster Risk Reduction and Resilience in Tokyo, Japan, on January 14-16, 2015, available at http://monsoon.t.u-tokyo.ac.jp/AWCI/TokyoConf/en/ (checked on 3 September 2015).

United Nations (2015). Transforming our world: the 2030 Ageenda for Sustainable Development, the United Nations General Assembly Seventieth session Agenda items 15 and 116, A/70/L.1.

UNESCO/WMO (2007). Concept paper on International Flood Initiative, earlier known as joint UNESCO-WMO Flood Initiative (JUWFI), WMO-UNESCO Joint Task team in collaboration with UNU and IAHS dedicated to the UN International Decade for Action, "Water for Life" (2005-2015).

UNISDR (2015). Sendai Framework for Disaster Risk Reduction 2015-2010, adopted at the Third UN World Conference in Sendai, Japan, on March 18, 2015, available at http://www.wcdrr.org/preparatory/post2015 (checked on 3 September 2015).
