

## **UNESCO Strategic and High-Level Meeting on Water Security and Cooperation**

(Nairobi, 11 - 13 September 2013)

### **FINAL REPORT**

#### **OPENING SESSION**

1. The UNESCO High-Level and Strategic Meeting on Water Security and Cooperation was held from 11 to 13 September 2013 at the Kenya School for Monetary Studies in Nairobi, Kenya, to promote international cooperation on freshwater, including the planning of joint activities within the scope of the eighth phase of the International Hydrological Programme (IHP-VIII). The three-day meeting began with a high-level panel discussion and was followed by a meeting of the Working Group established by the IHP Intergovernmental Council at its 20<sup>th</sup> session to strength the involvement of Member states with the aim to enhance their contribution and cooperation to implement the IHP-VIII. The agenda of the meeting is presented in Annex I.
2. Over one hundred and sixty participants from about fifty countries attended the meeting, including several Ministers of Water and Environment from African countries, other senior diplomats, representatives of UNESCO and the IHP Intergovernmental Council, directors of several water-related centres under the auspices of UNESCO as well as several UNESCO Chair-holders, water experts and partners of IHP. Also present were about ten representatives of international and national media agencies. The full list of participants is presented in Annex II.
3. The opening ceremony was Chaired by Ms Gretchen Kalonji, Assistant Director-General for Natural Sciences (ADG/SC), UNESCO, and moderated by Mr Johannes Cullmann, Chairperson of the UNESCO International Hydrological Programme (IHP) Intergovernmental Council. Mr Jovan Despotovic, IHP Vice-Chairperson and Ms Alice Aureli, IHP Secretariat, acted as rapporteurs. Ms Kalonji thanked the Government of Kenya for its assistance in organizing the meeting and recognized the excellence of its contributions to UNESCO and to the international scientific community. Ms Kalonji further noted the efforts of the other organizations responsible for the organization of the meeting, including the IHP Secretariat of Germany, the Government of Flanders, the Kingdom of the Netherlands, the International Centre for Water Hazard and Risk Management and the Stockholm Water Institute. Ms Kalonji outlined the themes of the meeting, including the need for a high-level perspective on water security and water cooperation, the associated challenges and opportunities, and the role of water in the post-2015 development agenda.
4. Mr Johannes Cullmann highlighted that the need for water cooperation would continue to increase in Africa, and that efforts to improve the management of water must include both horizontal and vertical cooperation. Mr Cullmann shared his vision of what he hoped would be achieved by the meeting: to move from the talking about water cooperation into the undertaking of water collaboration between countries.
5. Ms Irina Bokova, UNESCO's Director-General, by a video message, noted that the theme of the meeting was at the heart of the International Year on Water Cooperation, and that water cooperation goes beyond scientific and technical matters and contributes to fighting poverty and protecting the environment, saving children from disease and strengthening human dignity through sanitation. She also mentioned that water cooperation is fundamentally about peaceful relations between states and across regions. Ms Bokova also recalled that the meeting would provide a

platform for discussions about IHP-VIII and how to achieve stronger water security. Ms Bokova emphasized that in light of on-going efforts surrounding the post-2015 development agenda, these exchanges were timely, and that water sustainability must have a central place in this new global development agenda. Ms Bokova reminded that joint solutions for sustainability must include cutting-edge research across disciplines while also taking into account traditional knowledge.

6. Mr Eric Odada, of the UN Secretary-General's Advisory Board on Water and Sanitation (UNSGAB) spoke of UNSGAB's strong promotion of water security, access to water and sanitation and integrated water resources management and expressed his satisfaction that these themes were addressed during the IYWC. Mr Odada offered his view on the three necessary conditions for successful water cooperation: (i) a truly integrated approach for water resources management, taking into account climate change and the needs of the energy and agricultural sectors; (ii) cooperation at the international level on the use of transboundary water resources, including technical solutions and hydrodiplomacy as complementary approaches; and (iii) cooperation among all actors, especially the public and private sectors and civil society organizations. Mr Odada furthermore indicated that UNSGAB is strongly advocating for a stand-alone goal on water in the post-2015 agenda that goes beyond the universal access to water and sanitation to also address wastewater management, water efficiency and integrated water resources management.

7. Ms Mary Khimulu, former Permanent Delegate of Kenya to UNESCO, addressed the Ministers about the important progress that UNESCO category 2 centres are making in building capacity for water experts in Africa, mentioning the Centres in Egypt, Kenya, Libya, Nigeria, South Africa and Sudan. Ms Khimulu furthermore explained how category 2 centres support the initiatives of UNESCO's Member States and then detailed the procedure by which an institution may obtain the category 2 centre status, including approval by UNESCO's Executive Board and then by the General Conference. Ms Khimulu moreover recognized the contributions of the UNESCO Secretariat in establishing these category 2 centres.

8. Mr Jan Eliasson, Deputy Secretary-General of the United Nations, by video message, reiterated the importance of water cooperation for the maintenance and promotion of peace and stability in the world. He noted that in view of the scarce resources available, the main aim of the international community should be to make water a reason for cooperation, not one for conflict. He further noted that transboundary water resources can lead to strained relations between states, as each state has its own separate national, political and economic interests in the use of the shared water resources. Furthermore, he underlined the importance of renewed efforts for the achievement of the MDG target on water and sanitation, especially with regards to the latter. Mr Eliasson noted that effective policies, better education and stronger science linked to decision making are needed, and that the available resources should be directed to areas where they are most needed. He welcomed UNESCO's leadership and efforts in this regard and looked forward to enhanced cooperation in the field of water in the future.

9. Mr Michel Jarraud, Chair of UN-Water and Secretary-General of the World Meteorological Organization, by video message, informed the participants that cooperation is at the heart of the mandate of UN-Water, the United Nations inter-agency coordination mechanism for all freshwater and sanitation related matters. Mr Jarraud recalled that water appeared prominently in the outcome document of the Rio+20 Conference and he furthermore underlined its role in many other global challenges, including food security, climate change, environmental sustainability and urbanization. Mr Jarraud declared that the responses to these complex challenges require a multi-disciplinary approach, including cultural, educational, scientific expertise, as well as ethical, social, legal and economic considerations. With this in mind, UN-Water designated UNESCO as the lead agency for the implementation of 2013 as the International Year on Water Cooperation.

10. Mr James Teko Lopoyetum, Principal Secretary, Cabinet for Environment, Water and Natural Resources of Kenya, explained that the management of water resources requires cooperation across countries, especially in the case of Kenya, as it is a water scarce country in

which more than 50 per cent of key water resources are transboundary. Mr Lopoyetum expressed gratitude to UNESCO for its role in establishing the Category 2 Regional Centre on Groundwater Resources Education, Training and Research in East Africa in Nairobi, Kenya, noting that this institution will help Kenya to improve its understanding on groundwater resources and their sustainable yields. Mr Lopoyetum furthermore highlighted Kenya's participation in the African Ministers' Council on Water. Ms Judi Wakhungu, Cabinet Secretary for Environment, Water and Natural Resources of Kenya, recalled the importance of cooperation in Africa, where many water resources are shared between two or more countries and which could lead to potential sources of conflict and insecurity. Ms Wakhungu provided examples of Kenya's leadership in promoting regional peace, stability and development, including its role in the Intergovernmental Authority on Development, the Nile Basin Initiative, the Lake Victoria Basin Commission, the Great Lakes Region, and the African Ministers' Council on Water. She also explained that about 75 per cent of water resources in Africa come from groundwater and that the poor management of aquifers represents an obstacle to economic and social development. To address these types of issues Kenya proposed the creation of a UNESCO Category 2 Centre focused on groundwater resources education, training and research. Recalling the devastating drought that swept through Kenya in 2009, Ms Wakhungu also spoke of Kenya's collaboration with the UNESCO Regional Office in Nairobi on the Horn of Africa Project, an initiative aimed at tapping into the region's more resilient groundwater resources for emergency water supplies, and expressed gratitude to the Ministry of Foreign Affairs of Japan for its financial support of this initiative. Ms Wakhungu moreover provided information about the promising results of recent groundwater exploration activities expressing her hope that these new resources would alleviate the perennial water shortages in the region. Finally, Ms Wakhungu reminded that the one of the objectives of the present meeting was to design an implementation strategy for IHP-VIII, and asked the task force members from Africa to be aware of the diversity in the region and to design practical programmes that cater to all sub-regions.

## **PANEL 1 – THE INTERNATIONAL YEAR OF WATER COOPERATION: OVERVIEW OF PROGRESS AND EXPECTATIONS**

11. The first panel provided an overview of the progress achieved in the context of the 2013 International Year of Water Cooperation (IYWC) and on activities planned until the end of the Year. The panel was chaired by Mr Jacob Kaimenyi, Cabinet Secretary for Education, Science and Technology of Kenya. The chair highlighted the involvement of Kenya in several cooperation initiatives with neighbouring countries with which it shares water resources. He noted as an example that Kenya is actively involved in the Nile Basin Initiative, which brings together the riparian Nile States. He further noted the cooperative framework for the Mara river basin with The Republic of Tanzania and the Sio-Malaba-Malakisi agreement with the Republic of Uganda. The panel was moderated by Mr Nicholas Bonvoisin, Secretary to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, United Nations Economic Commission for Europe (UNECE) and Ms Alice Aureli of the IHP Secretariat.

12. Ms Marielle Geraedts, Deputy Ambassador of the Kingdom of the Netherlands in Kenya provided an overview of the outcomes of the World Water Day celebration held in The Hague. Ms Geraedts mentioned that the celebration included a High-Level Panel discussion that wrapped up one of the biggest and most inclusive water consultation the world had ever seen, thanks partly to the extensive use of social media and ICT technology. The discussion in The Hague resulted in the following conclusions: (i) water must be a central focus of the Post-2015 Development Agenda; (ii) there is a need to finish unfinished business and reach universal access to safe water and sanitation; and (iii), there is a need to address the wider water agenda, including sustainable governance and wastewater treatment. Ms Geraedts further concluded that the next water agenda

needs to be conflict sensitive. She reminded the audience of the conclusions of the report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, which provided one powerful suggestion: setting a development target that would stimulate countries to bring two central issues in line, namely the abstraction of freshwater and the availability of freshwater. Furthermore, the Deputy Ambassador commented on the importance of having sufficient and high quality data with which to work. In this regard she noted the suggestion of the Post-2015 High Level Panel to initiate a Global Partnership on Development Data. Additionally, Ms Geraedts emphasized the need to further invest in capacity building and mentioned the Dutch support for UNESCO-IHE as an example.

13. Mr Sirodjidin Aslov, Ambassador of Tajikistan to the United Nations, provided an overview of the process that led to the designation of 2013 as the IYWC. He first noted that the IYWC was initiated with resolution 67/204 presented to the United Nations General Assembly in New York by Tajikistan. Mr Aslov then summarized the proceedings of the high-level interactive dialogue held on 22 March 2013, World Water Day, in New York. The Dialogue organized in New York consisted of two interactive panel discussions, one dedicated to Issues, Challenges and Opportunities for Water Cooperation, and the second to the Post-2015 Agenda. The panellists agreed that the needs with regards to water can only be met through better access to water resources, enhanced water efficiency, increased wastewater management and pollution prevention, and by ensuring that the competing needs for drinking water, energy generation, and agricultural irrigation are reconciled in an integrated and equitable manner, while securing water for healthy ecosystems. Ambassador Aslov further informed the audience on the outcomes of the High Level International Conference on Water Cooperation held in Dushanbe, Tajikistan, in August 2013. The Conference opened with two high level plenary sessions, followed by eight high level panels and complemented by twenty special focus events, as well as a gender forum and a thematic exhibition. The discussions were focused on four major themes and on four cross-cutting issues, with the outcomes being summed up in the Dushanbe Declaration, the Dushanbe Framework for Action on Water Cooperation and the Chair's Summary. Three water-related goals for the Post-2015 Development Agenda were proposed: (i) Universal access to safe and sustainable water, sanitation and hygiene services; (ii) appropriate levels of treatment for used water and wastewater before it is returned to nature or reused in agriculture or other productive activities; and (iii) a significant improvement in the productivity and efficiency of water use in agriculture, industry, and at household level, and a significant reduction of water losses.

14. Mr Anders Jägerskog, Director of Knowledge Services at the Stockholm International Water Institute (SIWI), Sweden, spoke about the World Water Week held in Stockholm in September 2013, under the theme of water cooperation. The Stockholm Statement of the event concludes that water should have a dedicated goal in the Post-2015 process and should also be linked to other development goals. Additionally, Mr Jägerskog said that the future of water development lies in the hands of young water professionals. Therefore the Week would include sessions for young water professionals and also an inter-generational panel which allowed young professionals to interact with eminent peers. Mr Jägerskog mentioned also the proposal of the Government of Sweden for the establishment of a new centre under the auspices of UNESCO focusing on water cooperation. In this context, he mentioned that cooperation already exists between SIWI, the IHP-HELP Centre in Dundee as well as the International Groundwater Resources Assessment Centre (IGRAC) in the Netherlands. Mr Jägerskog also mentioned that the 2014 World Water Week will focus on the topic of water and energy, and he called for bold proposals that could lead to testing new grounds.

15. Mr Tibor Stelbaczky, Head of the European Union Sectoral Policies Department of the Ministry of Foreign Affairs of Hungary, provided an overview of the programme and objectives of the Budapest Water Summit, which will take place in October 2013 in Hungary. He informed that five key sessions will be held on water and sanitation, along with thematic forums on science, youth, civil society, business leaders and philanthropy. He mentioned the possibility for Member States to react to the draft statement (already on line), in which WASH and IWRM are currently included as key targets. The Summit will bring together key stakeholders and help linkages

between decision makers, scientists and the business sector, aiming to emphasize the importance of including water on the Post-2015 Development Agenda.

16. Mr Eduardo Donath, of the Mexican Institute for Water Technology, announced that UN-Water had accepted the offer of The United Mexican States to host the closing ceremony for the IYWC. The main aim of the event will be to provide an overview of the IYWC, propose its follow-up and strengthen South-South cooperation with a particular focus on Latin America and the Caribbean (LAC), as well as bilateral cooperation among countries in the region. He invited all participants of the Nairobi meeting to attend the closing ceremony, which will be held in December 2013 in Mexico City.

17. Secretary Kaimenyi, as chair of the panel, concluded by highlighting some of the key aspects raised, in particular the pressing need to further advance the unfinished water business, to strengthened capacities, to gather information and to create a women for water fund. He concluded by saying that he didn't see many young people in the room, and stressed the need to bring on board more young people to make water cooperation and development a success.

## **PANEL 2 – WATER SECURITY AND COOPERATION IN AFRICA**

18. The second panel on water security and cooperation in Africa was chaired by Mr Ephraim Kamuntu, Minister of Water and Environment of Uganda. Ms Blanca Jiménez-Cisneros, Secretary of IHP, acted as moderator.

19. Mr Abou Amani, IHP Regional Hydrologist for Africa provided an overview of the status of water security and cooperation in Africa and of IHP activities in this field. He noted that about 35% of the African population still has no access to safe drinking water and less than 40% is covered by sanitation. In this context, many countries in Africa will not meet the MDG target on water and sanitation. Furthermore, food insecurity and water related disasters, such as floods and droughts, as well as collapsing hydraulic infrastructure pose serious challenges for the region. In addition, transboundary water management remains strongly desirable. Mr Amani also noted that over 80% of the transboundary river basins are located in Africa and calls for more and stronger water cooperation. The same reasoning applies to the over 61 transboundary aquifers in the region. Poor scientific knowledge for management and grave skill and capacity gaps pose enormous challenges and require holistic approaches. An estimated 50 billion USD/year would be required in Africa for water related infrastructure for the next 20 years. Finally, Mr Amani informed that UNESCO is promoting water cooperation in Africa through programmes such as FRIEND (Flow Regimes from International Experimental and Network Data), HELP (Hydrology for the Environment, Life and Policy), ISARM (Internationally Shared Aquifer Resources Management) and PCCP (from Potential Conflict to Cooperation Potential).

20. Mr John Mutorwa, Minister of Agriculture, Water and Forestry of Namibia noted that ground and surface water were meant to be shared to give and sustain life. Therefore we should share water and manage it sustainably, not because conventions oblige us to do so but because water does not in itself entirely belong to a country in particular and is by essence our common source of life on earth. In this regard, Mr Mutorwa warned against human actions which pollute and destroy these shared resources not minding the interest of fellow users, both of man and of the tree which cannot speak. The Earth is a single globe with many continents where water is not confined to human boundaries. Thus, he concluded that preserving, using and managing these commonly shared resources through cooperation are fundamental for collective advancement and socio-economic emancipation in Africa. Although water resources are non-uniformly distributed by nature, human greed and self-centeredness can bring unfair distribution in usage and development.

21. The Chair, Mr Kamuntu, took the floor to stress the importance of cooperation and equitable sharing and management of the available water resources. He recalled the comments made by Mr Boutros Boutros-Ghali, who once highlighted the need to avoid a future large war about water.

22. Mr Antero Veiga, Minister of Environment, Housing and Land Management of Cape Verde, noted that Africa must mobilize to promote policies of peace, unity and stability through effective water cooperation. Mr Veiga emphasized the great need to promote environmentally friendly policies that ensure riparian rights. He informed that Cape Verde is located in the Sahel region and has scarce water resources. The country has experienced devastating disasters, including drought and famine. Cape Verde's current water supply largely consists of desalinated sea water but projects are on-going to diversify water sources, through the building of dams and harvesting rain water. He noted that efforts are also undertaken to increase agricultural productivity and reduce water losses, and to scale down overall water consumption. He further noted that in terms of the MDG target for water and sanitation, his country reached 72% coverage in 2010 but additional work is required to promote water and sanitation at institutional, public and private sector levels in the context of the scarce water resources.

23. Mr Ayoade Shamonda, Director-General of the Nigerian Hydrological Services Agency, representing Ms Sarah Reng Ocheke, Minister of Water Resources of Nigeria, noted that water is the only natural resource that can both provide a permanent demarcation boundary and create unity because of its transboundary nature. He informed that Nigeria is strengthening existing water institutions and establishing new ones for effective resource management. The Centre for Integrated River Basin Management (RC-IRBM) under the auspices of UNESCO in Kaduna is one such new institution. 70% of Nigerian water resources are transboundary and the Niger Basin Authority, as well as the Lake Chad Basin Commission and Nigeria-Niger Joint Commission are supported to ensure the equitable sharing of the resource and to avoid conflicts. Currently, inter-basin water transfer is promoted to save Lake Chad from disappearing. Mr Shamonda concluded by highlighting that a global management approach is desirable for integrated water resources management.

24. The chair of the panel, Mr Kamuntu, in his concluding remarks noted that demographic dynamics, climate change and increased urbanization are seriously impacting on water resources management. He emphasized the need to effectively manage water through cooperation, for the benefit of the present and future generations. He warned for the challenges that cooperation needs to overcome as water or the financial resources needed for its development and management become scarce. He noted that Uganda is well aware of the challenges posed by sharing transboundary water sources as it shares the waters of Lake Victoria with Kenya, Tanzania and Nigeria, which cooperate through the Lake Victoria Commission.

### **PANEL 3 – WATER SCIENCE, EDUCATION AND GOVERNANCE FOR THE FUTURE WE WANT (POST-2015 AGENDA)**

25. Ms Michela Miletto, Coordinator a.i. of UNESCO's World Water Assessment Programme (WWAP), and Mr Kuniyoshi Takeuchi, Director of the International Centre for Water Hazard and Risk Management (ICHARM), co-chaired the panel. Mr Miguel Doria, IHP Secretariat, acted as moderator.

26. The session started with a keynote address by Mr Kuniyoshi Takeuchi, on the emerging consensus among the water community for the Post-2015 Agenda. Mr Takeuchi highlighted the need for the international water community to agree upon on a specific water goal for the Post-2015 Agenda based on the numerous high level and relevant global events taking place. He noted

however that there is currently no consensus on this. On the one hand, the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda does not propose a goal entirely dedicated to water, but instead identifies water challenges within 12 different development goals. On the other hand, many voices in the global water community plead for a stand-alone water goal in the post-2015 development agenda. There is however a global consensus, including the United Nations Secretary General's Advisory Board on Water and Sanitation (UNSGAB), UN Water, the Global Water Partnership (GWP) and also IHP, on the critical importance of e.g. WASH, water quality and IWRM as key elements of sustainable development. Mr. Takeuchi suggested that this consensus could be further elaborated and implemented within the comprehensive concept of water security as defined in IHP-VIII. Such approach could also include water-related disaster risk management in relation to climate change and extreme events.

27. Mr Luis Augusto Pelembe, Minister of Science and Technology of Mozambique, noted that despite its abundance of water resources, his country faces challenges related to extreme hydrological events due to climate change, as well as water quality deterioration. He explained that nine out of the eleven large rivers in Southern Africa cross Mozambique and surface water is the main source of freshwater of the country. Water is mainly used for agriculture, followed by domestic and industrial water use. Mr Pelembe noted that Mozambique is in the process of developing a strategy for water resources management addressing governance, extreme water events and pollution, while promoting science development to cope with growing needs. He concluded that more research and development work is needed to tackle the effects of climate change and to develop a framework to manage risks.

28. Mr Salisu Abdulmumin, Programme Coordinator at AMCOW, expressed his gratitude to UNESCO for the establishment of category 2 centres in Africa. He then presented the outcomes of the consultations conducted by AMCOW on the Post-2015 Agenda, emphasizing that AMCOW is committed to promote the adoption of a goal on water security for all. Such a goal would aim at securing access to safe water and sanitation by 2030, thereby addressing the African agenda on water and sanitation, water management including risk management, and securing water quality for all uses. Mr Abdulmumin further noted that a remaining challenge is the insufficient synergy between scientists and politicians. There is great need to bridge the gap between science, research and policy making, attainable in part through strengthening category 2 centres and promoting enhanced cooperation. He noted that UNESCO has an important role to play in supporting African countries by fostering science and technologies to support science-based solutions, strengthening capacity development through centres, fostering South-South and North-South cooperation, and supporting the African centres of excellence.

29. Mr András Szöllösi-Nagy, Rector of the UNESCO-IHE Institute for Water Education, corroborating Mr. Takeuchi, noted that a consensus has yet to be reached within the water community on the nature of a much needed water goal. He highlighted that a development goal on water is necessary to ensure the sustainability of the resource for future generations. He said that a stand-alone water goal was necessary, because "if water is everywhere, it is nowhere". Furthermore, such a goal should involve stakeholders outside the water community, like financiers, and should also be "SMART": Specific, Measurable, Attainable, Relevant and Time-bound. It should include WASH, as well as water management, risk management, water quality management, climate change, ecosystem services and capacity development.

30. Mr Antonio Ricarte took the floor to note that the negotiations for the Post-2015 Development Agenda are still on-going and the report of Secretary-General of the United Nations has yet to be launched. He highlighted that this report will serve as the departure point for the negotiations on sustainable development goals and there is still a way to provide input for the process, especially in light of the importance given to water in *The Future We Want* document.

31. Mr Rachid Taibi, Director General of the National Agency of Hydraulic Resources of Algeria, underlined the critical importance of water education. Mr Taibi noted that water education at various levels creates an adequate labour force and brings employment opportunities to those

who may sorely lack it. Youth is demanding education and training, not only at university level, but also at the technical level. Therefore, Mr Taibi stressed the need to reinforce water education at all levels and noted that the strategic plan for IHP-VIII contains relevant issues to the achievement of Algeria's food security as a means to fight poverty. He requested to consider the link between water and agriculture in the implementation of IHP-VIII.

32. Mr Abdelkader Dodo, Project Manager at the Observatory for the Sahara and the Sahel (OSS), noted the important role of IHP in the region and its synergies with OSS. Considering the IHP-VIII strategic plan, he highlighted the relevance of transboundary aquifers, seeking the promotion of a better understanding and mapping of the OSS transboundary aquifers. He stressed that the development of capacities in this area is crucial, in order to better understand aquifer systems. Another relevant area of synergy with UNESCO, which is present in the IHP-VIII strategy, is the need and promotion of water governance by means of inclusive institutional and legal frameworks, especially on transboundary waters.

33. During the discussion Mr Jacques Ganoulis, UNESCO Chair on Sustainable Management on Water and Conflict Resolution, referred to the challenge of involving those that are responsible for water issues in finding solutions, saying that the only answer is education. Mr Ephraim Kamuntu stressed that indeed those responsible should be part of the solution. Mr Szöllösi-Nagy also called for integrated management and institutional strengthening to be added to education. Mr Kuniyoshi Takeuchi underscored the need for water-related inputs into the international development agenda. Mr Antonio Ricarte called for a wider mobilization of stakeholders and noted that the Post-2015 Agenda is much broader than the sustainable development goals. Ms Blanca Jimenez-Cisneros, Secretary of IHP, concluded by inviting all to listen closer to the objections to a standalone goal on water, in order to better understand their reasoning and find a solution that reflects the key importance of freshwater.

#### **PANEL 4 – STRENGTHENING INTERGOVERNMENTAL COOPERATION FOR WATER IN AFRICA**

34. Mr Chrispine Omondi Juma, Vice-Chairperson of the IHP Intergovernmental Council, chaired the panel and Mr Cullmann, Chairperson of the IHP Intergovernmental Council, acted as moderator.

35. Mr Thomas Chiramba, Chair of the UN Task Force on Water Resources Management and Chief of the Freshwater Ecosystems Unit of UNEP, noted the difficulty of establishing a goal on water without a clear proposal from UN-Water. Such a goal could be, for instance, to manage water to sustain it and the environment, setting target areas on services, other uses of water and water quality, resilience to floods and droughts and building an enabling environment to sustain water.

36. Mr Mekuria Beyene, Principal Program Officer for Transboundary Waters of the New Partnership for Africa's Development (NEPAD), said that fifty-one priority action projects on water are being implemented by NEPAD, including thirteen projects on dams, which are economically viable and regionally important. He further noted that cooperation is based on trust, which requires transparency and availability of data. Mr Beyene gave the example of cooperation on the Nile basin, where relevant data about water use and availability are accessible online to all parties and they work together to identify economically homogenous regions shared by them. He also noted that Ministers need tangible indicators for decision making, which are not always available. Such tangible indicators should be based on scientific models but that are translated into concrete economic or social consequences that decision-makers can use to choose the most opportune trade-offs. Thus, the gap between science and policy needs to be addressed and seminars in



collaboration with UNESCO could be used to inform policy makers, using role plays and applications to explain matters in a practical way.

37. Mr John Nyaoro, Director of Water Resources of the Ministry of Water and Irrigation of Kenya, mentioned the agreements in place for the use of the Nile River waters by the eleven countries that share its basin. He provided an historical overview of the efforts to enhance cooperation between the Nile basin countries, emphasizing the potential of a new Nile basin regime, with its own conflict resolution capacity and a joint development plan.

38. Mr Madine Ba, Secretary General of the Senegal River Basin Development Authority (OMVS), gave a brief overview of the history of the organization he represents, highlighting that the development and protection of the Senegal River is a task best accomplished by a common effort of all states concerned. He mentioned that this task was facilitated by the decision of the OMVS members to consider the river as a *shared* sovereignty, shared by a community common interests and rights, but also of common responsibilities and obligations. A best practice worth noting in this regard is the establishment of shared ownership of infrastructures, the maintenance and benefits of which are allocated to OMVS members in an equitable way. Another one is a mechanism of optimal distribution of water among users, based on a water charter and on equal water distribution between states and sectors. The OMVS thus manages both to preserve the equilibrium of the river and to improve the economic welfare of all basin citizens.

39. Mr Abdelkader Dodo noted that the northern Sahara aquifer system is shared by three states and is largely used for agriculture. He emphasized the need for further study and analysis of the way its water is being used and managed, in order to develop policies that help minimize waste.

40. Mr Chrispine Omondi Juma summarized the panel discussions by noting the key issues related to building confidence and cooperation. He also mentioned the need to include organizations of large African rivers basins that were not represented in the panel.

41. Minister John Mutorwa commented that trust is an important issue as raised by the speakers. He noted that Africa is the second largest continent, with about fifty-four independent sovereign states, where democratization is gaining momentum. The governments emanating from these processes of democratization are freely elected and depend on public support. He noted that lack of action should not always be blamed on lack of political will. He highlighted the importance of the recommendations received from experts in determining a government's policy.

42. Mr Sanjo Bamgboye, Director of RC-IRBM in Nigeria commented that in order to use transboundary waters, one must work closely together across national borders, as in the case of the Niger Basin Authority. Having a common vision helps to better share resources and benefits and even to resolve conflicts that may arise.

43. The moderator of the session, Mr Cullmann, briefly summarized the session and underlined that interdependency was often positive and mutually beneficial.

## **PANEL 5 – SOUTH-SOUTH AND TRIANGULAR COOPERATION**

44. Mr Salisu Abdulmumin, Programme Coordinator of AMCOW, chaired the panel, with Ms Zelmira May, IHP Regional Hydrologist for LAC, acting as moderator.

45. Mr Azizou Elhadj Issa, of the Committee on Agriculture of the Pan-African Parliament, emphasized the need to ensure that parliamentarians have a good understanding of the issues, in order to allow their participation in the dialogue and make informed decisions when dealing with water issues. He asked that parliamentarians be involved in the process of project development at

an early stage, instead of being involved only when problems arise. This way, they can better understand what the projects and challenges are about and contribute more adequately.

46. Mr Sirodjidin Aslov, Ambassador of Tajikistan to the United Nations, commented that cooperation is required for the implementation of issues raised in international fora, such as protection of ecosystems, mitigating climate change and even for technology transfer for improved food security. He further noted that on-going South-South cooperation on food security could also include overseas development assistance, but not necessarily involving financial sources. Alternatively, such assistance can involve technology transfer, sharing of best practices and capacity building. Wastewater treatment as well as implementation of stricter rules of sanitation and hygiene are necessary and should be addressed as priorities. He gave the example of the Aral Sea region, where water cooperation was necessary for improvement of the social and economic situation.

47. Mr Eduardo Donath, of the Mexican Institute for Water Technology (IMTA), spoke about water scarcity in Mexico. In order to fulfil present needs without compromising future demands, the Mexican authorities are developing concerted efforts which help address the lack of water. Since the year 2000, fifty-one new infrastructure projects for water supply and wastewater management have been developed and additional projects were put in place in cooperation with assistance from Germany and other partners with a focus on improving the reuse and management of wastewater.

48. Mr Julius Wellens-Mensah, Chief of the Basic Systems in Hydrology, Climate and Water Department of the World Meteorological Organisation (WMO), noted that a considerable setback in cooperation stems from the fact that some countries are reluctant to share data, regarding it as a strategic resource. In the case of transboundary water sources this tendency is particularly unproductive, as there is often no real choice but to cooperate. Mr Wellens-Mensah further warned for the danger of not thinking ahead and leaving insufficient water or water of poor quality for future generations.

49. The chair of the panel, Mr Abdulmumin, summarized the discussion and noted that challenges in South-South cooperation do exist and international tools such as treaties for transboundary collaboration are required. Also, he repeated Mr Issa's plea to closely involve parliamentarians in the discussions, briefing them about water projects and agreements, in order to ensure they are able to follow the process from the start.

50. Ms Blanca Jiménez-Cisneros, Secretary of IHP, thanked the panellists and all participants for their valuable contributions. She gave a brief overview of the proceedings for the remaining days of the meeting, which consist of the work of the Working Group established by the Intergovernmental Council of IHP at its 20th session to increase the involvement of Member States in the Implementation of IHP-VIII. According to its Terms of Reference, the Working Group shall elect its chair and rapporteur at its first meeting after or during each session of the Intergovernmental Council. The chair of the IHP Council served as interim chair of the Working Group until its first meeting. The Terms of Reference of the Working Group are presented in Annex III.

51. Mr Cullmann, in his quality as interim chair of the Working Group, took the floor to preside over the election of a chairperson and rapporteur of the Working Group. He noted that in the spirit of cooperation a joint candidacy for the role of chairperson was presented by Minister Antero Veiga of Cape Verde, and Minister John Mutorwa of Namibia. Likewise, a joint candidacy for the role of Working Group rapporteur was received from Mr Stein van Oosteren, from the Netherlands, and Mr William Logan, from the United States. The joint candidates for chairperson and rapporteur were elected unanimously by the participants.

## WORKING GROUP ON IHP-VIII IMPLEMENTATION

52. Mr Chrispine Omondi Juma, welcomed the participants as member of the host country and also as IHP vice chairperson for the African Region.
53. Mr Mohamed Djelid, Director of UNESCO Nairobi Office welcomed the participants on behalf of the Regional Office.
54. Ms Gretchen Kalonji, ADG/SC, welcomed the participants to the IHP-VIII implementation meeting, highlighting the importance of the IHP strategic document and its implementation plan.
55. The objectives of the Working Group and input from the Koblenz preparatory meeting, which took place from 10 to 12 December 2012, were presented by Mr Johannes Cullmann. This preparatory meeting was a first step to create a forum to discuss the implementation of IHP-VIII and reached the conclusion that specific priorities corresponding to time periods should be set, as well as indicators of performance and reporting. Furthermore visibility and transparency with regards to IHP's activities should be further increased, so that Member States can understand the potential of IHP and participate more easily.
56. Mr Antero Veiga assumed the chairpersonship for this segment of the working group, interchanging this role during the meeting with Mr John Mutorwa. The structure of the working group session was presented by Ms Blanca Jiménez-Cisneros, Secretary of IHP.
57. The session proceeded with regional inputs. Mr Geoffrey Gooch, Director of the Centre for Water Law, Policy and Science, and Mr Callist Tindimugaya, Commissioner for Water Resources Regulation of the Ministry of Water and Environment of Uganda, co-moderated the session. IHP regional hydrologists were invited to provide an overview of the activities and challenges faced by their regions in relation to water.
58. Mr Abou Amani, Regional Hydrologist for Africa, presented an overview of IHP's network in the region, which comprises forty-two IHP National Committees and focal points, three category two centres, four Chairs and four active scientific networks. Mr Amani further presented the key partners at the national, sub-regional and regional levels, including ministries, IHP National Committees, as well as AMCOW, Regional Economic Communities (ECOWAS, IGAD, SADC, ECCAS) and various river basin organizations. The key challenges he noted were (i) several weak or inactive IHP Committees and networks because of underfunding and understaffing, (ii) reduced number of regional meetings of IHP Committees and (iii) the limited entry points of IHP through UNDAF, which prevents IHP from positioning its niche in the UN system. Also, the work is fragmented and there is a lack of regional management oversight, although the IHP National Committees do meet biennially. Mr Amani concluded that in order to improve the situation, it would be needed to better align the IHP activities with the priorities of AMCOW and the Regional Economic Communities, as well as to further engage the River Basin Organizations, and finally to strengthen and further mobilize the UNESCO water network in the region.
59. Mr Zaki Abdelaziz, Regional Hydrologist for the Arab States, presented an overview of the activities conducted for the benefit of Arab States. He identified five major water challenges in his region: (1) water scarcity and inability to secure water demands; (2) absence of a holistic approach to water sector management; (3) shared water resources; (4) climate change, and (5) lack of awareness and capacities. Furthermore, examples were given of activities undertaken, including a project of research and capacity building for the promotion of knowledge on climate change risk assessment and adaptation in the Arab region supported by the Spanish MDG Fund, and a workshop on climate change impacts on the Nile basin. Other regional workshops were organized in order to strengthen policies for water governance in the Arab region, and the FRIEND Nile network helped to improve regional cooperation with regard to management of transboundary water resources. Finally, efforts are undertaken to enhance public capacities towards rational use, conservation and protection of water resources by various means, including an online exhibition on

water challenges, as well as production and dissemination of cartoons to be used as informal educational material in schools.

60. Mr Shahbaz Khan, Regional Hydrologist for Asia and the Pacific (ASPAC), presented an overview of the ASPAC water network, which comprises fourteen UNESCO field offices, six category 2 centres and six water Chairs. The region supports about 60 per cent of the world's population with 38 per cent of the world's water resources. The ASPAC region has twenty-seven IHP National Committees, seven of which are in least developed countries. IHP has been very active in international research through publications for the FRIEND network, including a Catalogue of Rivers for the region. The ASPAC Ecohydrology programme now has three operational projects and twelve evolving projects. Furthermore, contributions are made to the HELP programme in 26 river basins and via regular training courses and pilot projects at country level, which help strengthen local capacities. SWITCH-Asia, an integrated and innovative programme focusing on sustainable water management in Asian cities, is the regional flagship programme for the sector. Mr Khan noted upcoming activities, including the Regional Steering Committee meeting for South East Asia and the Pacific and the 23rd IHP Nagoya training course. The key challenges and opportunities for IHP-VIII include the increasing frequency and intensity of natural disasters and vulnerabilities to climate change leading to recurring floods and droughts, the need to develop liveable and sustainable cities, the water quality and quantity challenges caused by massive pollution and over-abstraction and unsustainable water management practices and the urgency to catch up on the MDG target on water supply and sanitation challenges for the large number of 'unreached' populations.

61. Mr Siegfried Demuth, representing the Regional Hydrologist for Europe, highlighted the achievements of the IHP projects in the European region, particularly, the establishment of a European Water Archive which is the basis for research on low flows and droughts in Europe and impact studies of climate change. The projects also have components on education and capacity building. Over 30 courses on low flows were organized in recent years. Drought curricula were introduced at several universities, including at Oslo, Wageningen, Birmingham and Freiburg. Sharing knowledge on low flows and drought was accomplished through the European Drought Centre, which is a virtual centre. Published text books on drought and a manual on low flow estimation and prediction for decision makers and water managers in water agencies were published in close cooperation with WMO. The FRIEND Water programme established a reporting mechanism by providing a Global Progress Report including key achievements and future research were published. The FRIEND Water Conferences produced proceedings of their research results in the IAHS Red Book Series. A new category 2 centre on "Water for Sustainable Development and Adaptation to Climate Change" under the auspices of UNESCO was established at the Jaroslav Černi Institute for the Development of Water Resources in Serbia. He also mentioned that UNESCO, in the framework of two GEF projects, cooperates with several Southeastern European countries, including Albania, Bosnia and Herzegovina, Croatia and Montenegro, Slovenia, Turkey and Greece,. The regional project "Protection and Sustainable Use of the Dinaric Karst Transboundary Aquifer System", funded by the Global Environment Facility (GEF) and implemented by UNDP, is currently being executed by UNESCO-IHP. The project countries include: Albania, Bosnia and Herzegovina, Croatia and Montenegro, as GEF-recipient countries; and Slovenia, Greece and Italy, as GEF non-recipient countries.

62. Ms Zelmira May, Regional Hydrologist a.i. for LAC, noted that the IHP network in the region comprises thirty-three IHP National Committees and focal points, alongside five category 2 centres, as well as six water-related chairs. A brief theme-by-theme overview of activities and achievements in the LAC region followed. It was further emphasized that the major achievements of IHP-VII in the LAC region were related to the development and consolidation of a strong and growing IHP network, the reinforcement of existing partnerships as well as the development of new such partnerships at a national, sub-regional and regional level, from which new opportunities for project development also arise. The challenges which remain of great importance for IHP-VIII relate to the further development of such partnerships, as well as to improving coordination and

synergies between programmes and within the UNESCO water network. Also, the need to raise more extra-budgetary resources is of great importance for IHP.

63. Mr Chrispine Omondi Juma, Vice-Chair of the IHP Intergovernmental Council for Africa, informed that Africa is a big region with equally extreme arid sub-regions. The most important issue is how to align national programme with the IHP strategic objectives. Funding remains a problem in the region. There are weak IHP national Committees and most of the committees are not recognized by country's legal instruments. That is why the committees don't have funding mechanisms. Part of the explanation for this is that most of the UNESCO national commissions are part of the education ministry, where IHP has a very little interest and influence. Also the production and sharing of data remains problem in the region. PCCP could play an important role in the region in this respect.

64. Mr Mohamed Elhassan Eltayeb Elhag, Vice-Chair of the IHP Intergovernmental Council for the Arab States, highlighted water security issues in the context of the Arab Region. He emphasized that the countries in the region with low rainfall and high evaporation need to address challenges posed by climate variability and change. The representatives of National Committees in the Arab Region held consultations in Beirut to discuss the IHP-VIII strategic plan. A category 2 centre has been created in Sudan. The regional meeting in Morocco will review water scarcity and groundwater management within the framework of IHP VIII. The Arab region gives high priority to education, disasters, human settlements and ecohydrology within the framework of IHP-VIII.

65. Mr Johannes Cullmann, Chair of the IHP Intergovernmental Council, informed that in his region, Western Europe and North America, the data issue is better organized and it could serve as an example to other regions. The region has a coordination mechanism, but there are both strong and weak national committees. The region is improving on policy implementation. Within the region, many national committees have good products but as these products are not visible enough for authorities, they don't generate the political and financial support needed to realize IHP's full potential. To address this problem, IHP should develop a policy for transparency and dissemination. Mr Cullmann also noted that project proposals should be improved.

66. Mr Jovan Despotovic, Vice-Chair of the IHP Intergovernmental Council for Eastern and Central Europe noted that his region has a vast territory that is facing considerable water problems and it necessary to exchange ideas and solutions to challenges. The region is ready to provide information to other regions. He stressed the importance to involve young people in IHP's projects, both in its implementation and as a target group. Another focus that could increase IHP's relevance and profile is to focus on (the understanding and mapping of) benefits that water cooperation can generate.

67. Mr Victor Javier Bourguett Ortiz, regional representative for LAC, provided an update of the regional water resources issues. He noted that meteorological observation currently remains scattered in different institutions and is managed with different criteria. Also, there is deficient spatial coverage of surface stations operated by the meteorological systems and a further lack of real-time access to information of Automatic Meteorological Stations to facilitate monitoring of extreme events. Additionally, meteorological instruments installed in the observatories lack calibration. Such shortfalls hinder the proper operation of the observatories. A further problem is posed by the lack of specialists in the field of weather forecasting and the use of empirical methods of prediction. Mr Bourguett noted for levels of actions that should be taken to solve these weaknesses: (i) actions for institutional strengthening (functions, structure, organization, human and financial resources, training, user support, communication plans, and strategic alliances); (ii) actions for the consolidation and strengthen of infrastructure and equipment (network monitoring and remote sensing, communications and informatics, databases and information systems); (iii) actions to develop products and services for meteorology (general interest and specific sector users); and (iv) actions for the development of studies of climate and climate change.

68. Mr Kuniyoshi Takeuchi, regional representative for ASPAC, said that more than half of the world's population lives in the ASPAC region. A regular regional IHP steering committee meeting is organized in this area. He underlined the relevance of IHP activities for addressing floods, tsunami, landslides, drought and other disasters faced by the region. The region contributes to FRIEND AP and other IHP programmes. The FRIEND AP has published five volumes of the "Catalogue of Rivers for Southeast Asia and the Pacific", presenting detailed information on 114 rivers in 13 countries.

## HIGHLIGHTS OF IHP-VIII

69. Ms Asma El Kasmi, UNESCO Chair on Water, Women and Decision Making, moderated the session summarizing IHP-VIII and indicated the need for an implementation plan building on the achievements from previous IHP phases and taking into account the evolving needs and new challenges for water security.

70. Ms Maria Concepcion Donoso, coordinator of the IHP-VIII Task Force, presented an overview of the eighth phase of IHP. She highlighted the history of the IHP from the International Hydrological Decade until more recent phases, as the Programme moved towards a holistic approach taking greater account of societal and governance issues. She indicated that IHP-VIII has been prepared building on achievements of previous IHP phases through a participatory and transparent process, with a task force put in place and supported by the IHP Secretariat. Consultations were held with Member States and the statutory bodies of the IHP. The themes of IHP-VIII were agreed to be based on the challenges of water availability, both in quality and quantity, for supplying increasing population and demand, and also responding to the needs of ecosystems. It addresses water security challenges at local and global levels. Six themes have been selected to compose IHP-VIII: (1) Water-related disasters and hydrological change, (2) Groundwater in a changing environment, (3) Addressing water scarcity and quality, (4) Water and human settlements of the future, (5) Ecohydrology, engineering harmony for a sustainable world, and (6) Water education. The strategy also includes cross-cutting issues such as Integrated Water Resources Management (IWRM), trans-boundary waters and the human dimension. Ms Donoso further noted that the implementation considered three axes, including mobilizing international cooperation to improve knowledge, improving the science-policy interface and building capacity. The implementation should also build on the different existing associated programmes and initiatives. She insisted on the necessity of all parts of the UNESCO water network to contribute to implementation of IHP-VIII. The final version of the strategic plan for IHP-VIII is available on-line (<http://unesdoc.unesco.org/images/0021/002180/218061e.pdf> in English, <http://unesdoc.unesco.org/images/0021/002180/218061f.pdf> in French, and <http://unesdoc.unesco.org/images/0021/002180/218061s.pdf> in Spanish).

71. The IHP Secretariat presented the IHP-VIII themes and their respective focal areas in detail: Mr Siegfried Demuth presented Theme 1, Ms Alice Aureli presented Theme 2, Mr Anil Mishra presented Theme 3, Mr Bisher Imam presented Theme 4, Mr Shahbaz Khan presented Theme 5, and Mr Miguel Doria presented Theme 6.

## IHP-VIII IMPLEMENTATION PLAN

72. In order to design the implementation of the strategic plan of IHP-VIII, the working group carefully considered each of the six themes, their focal areas and the associated specific objectives to define the order of priority, key outputs, interventions, the main partners and linkages

with UNESCO priorities for Africa and gender equality. Considering that IHP-VIII is an eight year plan, with about a hundred and fifty specific objectives, the order of priority corresponds to the implementation biennium when a specific objective is to be developed.

73. The working group met in parallel sessions, with each session focusing on a specific theme. Each session convened fifteen to thirty members, who could rotate among the sessions. The outcomes of each parallel session can be summarized as follows:

74. **Theme 1: Water-related disasters and hydrological change** session was chaired by Mr Sanjo Bamgboye, RC-IRBM, and moderated by Mr Kuniyoshi Takeuchi, Director of ICHARM. Mr Siegfried Demuth from the IHP secretariat served as a rapporteur. For focal area 1.1 on risk management as adaptation to global changes, priority will be given to the development of demonstration case studies for the use of early warning systems within the Niger Basin Authority (NBA) and Lake Chad Basin Commission (LCBC), and a comprehensive study on standards, leading to the establishment of a Memorandum of Understanding within the NBA and LCBC for collaboration and finally to the development of risk management strategies. The Netherlands will contribute to focal area 1.1 through an event on 8 November 2013 to identify knowledge gaps and solutions for living with floods and to identify and share with private, governmental and knowledge partners, Dutch technologies for disaster risk reduction. Focal area 1.2, dealing with the understanding of coupled human and natural processes, was regarded as low priority by participants. WMO will provide input after the meeting. For focal area 1.3 on benefiting from earth observation systems, a platform to facilitate the accessibility of data through a global network of data centres (GTNH) will be developed. WMO will provide input after the meeting. The African Drought Monitor which has been established under IHP-VII will be further developed and a tool for seasonal forecasts and the extension to floods will be prepared. A training course delivered in several languages will be developed and the Monitor will be implemented at different regional centres in Africa. For focal area 1.4, WMO will provide input to the topic. For focal area 1.5 on improving the scientific basis for hydrology and water sciences for preparation and response to extreme hydrological events, knowledge will be enhanced on the modelling of hydrological extremes and the exchange of methodologies for changing environments, and a report will be published on recent hazards (floods and drought). The Secretariat of the International Flood Initiative (IFI) presented a flagship "Project to support targeting, strategizing and benchmarking flood risk reduction at global, national and local levels". Participants were asked to provide input on either a specific "theme" e.g. hazard assessment, exposure assessment, coping capacity and preparedness and disaster risk reduction at all scales or to a specific "scale" e.g. local community, river basin, country, regional, and global. It was also pointed out that the scale "country" was not appropriate and the scale "river basin" should be the one to be considered. The Germany IHP National Committee and the Nigeria RC-IRBM will contribute at a river basin level for all themes hazard assessment, exposure assessment, coping capacity and preparedness and disaster reduction. The German IHP/HWRP stressed the need for a "flagship basin" which will allow for jointly addressing some of the most important actual issues in hydrology and water management at different dimensions (science, engineering, technical issues, maintenance), and with different foci (e.g. a big city water quality, risk management). The Secretary of IFI emphasized the need for an IFI implementation planning meeting as soon as possible and this "flagship basin" could be agreed upon there.

75. **Theme 2: Groundwater in a changing environment** session was chaired by Mr Neno Kukuric, Director of IGRAC and co-chaired by Mr Callist Tindimugaya, IHP National Committee of Uganda, and Mr Chrispine Omondi Juma, UNESCO IHP Bureau Member. Ms Alice Aureli from the IHP Secretariat served as a rapporteur. The general debate focussed on the identification of priority actions to be taken and taking stock of what was already developed by IHP in the seventh phase of the IHP programme. Successful on-going IHP activities, such as the ISARM and GRAPHIC initiatives and aquifer mapping activities, will be continued and strengthened. Close cooperation will continue with the WWAP to develop water and gender studies with focus on Africa. UNESCO IHP was called to support the AMCOW Groundwater Commission. For focal area

2.1, focus will be placed on the preparation of groundwater governance regional diagnostics, aquifer maps, and recommendations and guidelines on groundwater resources governance, specifically in support of Strategic Objectives (SO) 2.1.4. and 2.1.5. Cooperation will be strengthened between UNESCO, OECD, FAO, IAH, WB and GEF. Preparation and application of indicators for the assessment of aquifers will be carried out also for the aquifers of small island states. IHP and the International Network of Basin Organizations (INBO) plan to develop a baseline on water governance at the basin level. For focal area 2.2, considering that extensive work has already been undertaken by IHP on managed aquifer recharge (MAR) and aquifer recharge in general, it was agreed to postpone new actions in the next biennium. For focal areas 2.3, focus will be placed on establishing a network and best practices on groundwater resources and climate change adaptation strategies and on further developing a global groundwater monitoring network (GGMN) in Africa with IGRAC. The implementation of some of the SOs of focal areas 2.3 and 2.4 and 2.5 will be combined. Case studies will be undertaken on the management of groundwater for climate change adaptation and recommendations made to Member States. Cooperation with IAH will be set up. For focal areas 2.4, focus will be placed on studying and mapping the vulnerability of aquifers (including natural hazards, hydrological extremes and human-induced stresses), on management of coastal aquifers and on guidelines for the assessment and management of groundwater dependent ecosystems, particularly in Africa. IHP will cooperate with Ramsar to create a baseline on the state of wetlands that are dependent upon coastal aquifers and to prepare management guidelines. The work done on groundwater management for emergency situations (GWES) in the IHP-VII was considered useful and the resulting recommendations should be applied to case studies with the category 2 centres and other partners. For focal area 2.5, focus will be placed on implementation of transboundary aquifers management (ISARM) activities. High priority was given to all five of the SOs for focal area 2.5 and to continuing some of the on-going activities by strengthening cooperation between ISARM and PCCP and also by developing new studies about water diplomacy. IHP has been called by the UNGA to implement the UNGA Resolution on the Law of Transboundary Aquifers 63/124 and to provide guidance and support to Member States in the assessment and management of transboundary groundwater resources (ISARM). The meeting of the parties of the UNECE Water Convention also called on IHP to provide technical and scientific support to non-UNECE countries. The organization of training courses will enhance the capacities of Member States in addressing complex issues of transboundary surface and groundwater management in a cooperative manner. Trainings will be addressed to policy and decision makers. Training workshops will be organized in close coordination with the category 2 centres.

76. **Theme 3: Addressing water scarcity and quality** session was chaired by Ms Jeanne Balonishnikova, of the IHP National Committee of the Russian Federation, and moderated by Mr Gabriel Mancilla, of the Water Centre for Arid and Semi-arid Zones of Latin America and the Caribbean (CAZALAC). Mr Anil Mishra from the IHP secretariat served as a rapporteur. For focal area 3.1 on the use of water resources, the priorities will be the promotion of sustainable conjunctive use of groundwater and surface water for meeting various needs under changing scarcity conditions and to implement adaptation measures to climate change. The main activities will include the identification of best practices from different regions, lesson learned from other countries and preparation of guidelines and policy briefs. For focal area 3.2, dealing with present water scarcity and developing foresight to prevent undesirable trends, priorities will be to (i) predict and plan for water scarcity for a sustainable future through building international and regional consensus on the way of addressing water scarcity, better measuring and accounting for freshwater, developing and improving predictive water planning and management tools, and enhancing water management and sharing during scarcity periods; and (ii) develop alternative and environmentally and economically sound non-conventional water resources (e.g., desalination and treated wastewater) as well as conventional water augmentation techniques (water transfer, water reuse, water harvesting) through encouraging world-wide use of technologies and successful experiences for enhancing water supply. For focal area 3.4, on addressing water quality and pollution issues within an IWRM framework, priorities will be to improve the understanding and



knowledge of the quality of world's water resources for human wellbeing through monitoring and assessment of the quality of the world's water resources, strengthening the knowledge base and information, and by data management and sharing. For focal area 3.5, on the promotion of innovative tools for safety of water supplies and controlling pollution, priorities will be to promote joint research on particular water quality issues and challenges through improving the understanding and scientific knowledge on new and emerging pollutants, and monitoring/risk assessment, regulations, control and attenuation.

77. **Theme 4: Water and human settlements of the future** session was chaired and moderated by Mr Jovan Despotovic, member of the IHP Bureau, with Mr Imam Bisher serving as rapporteur. The working group initially discussed IHP implementation approaches and then proceeded to review each of the focal areas of the theme in order to prioritize them. The discussion resulted in identifying focal area 4.4 as the highest priority. In addition, the group identified proposed combining the implementation of SO 4.3.1 with SO 4.3.2. Similarly, the implementation of SO 4.3.5 will be conducted in combination with that of SO 4.2.4. The group then proceeded to identify an appropriate timeframe and implementation sequence. Some focal areas were identified as targets for implementation throughout Phase VIII, including the first biennium (37 C/5), while others were identified as target for one or more biennia. For SO 4.1.1 the 37 C/5 will provide a preparatory period. SO 4.1.5 will be carried out through both 37 C/5 and 38 C/5 biennia with support from new centres, especially iWSSM in the Republic of Korea. For SO 4.2.5 the focus will be on supporting activities at regional scale in cooperation with partners and with emphasis on defining requirements for system wide-changes for integrated management that must continue throughout IHP-VIII. For SO 4.4.1, which concerns the state of urban water management models in developing countries, and SO 4.4.4, which also emphasizes regional activities within the focal area, the members of the panel agreed that focus should be on development of illustrative, detailed case studies, especially with respect to activities that focus on state of the art reviews. Members of the group also recommended strong partnerships with centres and chairs dealing with urban water issues. However, only one representative of such a centre was present and able to make a commitment (Mr Jovan Despotovic, representing the International Research and Training Centre on Urban Drainage [IRTCUD] in Belgrade, Serbia). It is likely that other centres will be engaged and other potential partners were identified, such as the SWITCH programme as well as UN-Habitat.

78. **Theme 5: Ecohydrology, engineering harmony for a sustainable world** session was chaired by Mr Maciej Zalewski, Director of ERCE, and moderated by Mr Luis Chicharo, Director of the ICCE, with Mr Shahbaz Khan, Regional IHP hydrologist in Jakarta, serving as rapporteur. Participants stressed the importance of developing low cost advanced solutions for water quality and quantity through ecohydrology. They stressed the need to synthesize comparative studies of artificial wetlands for improving water quality at different scales. As a first step for implementing this theme, IHP needs to identify spatial potential of catchments for implementation of different ecohydrological biotechnologies. This will help identify structural and non-structural measures for harmonisation of hydrotechnical infrastructure with catchment ecohydrological processes and for improvement of ecosystem services at all levels. Category 2 ecohydrology centres in Poland, Portugal and Indonesia can undertake studies to pursue systems solutions for the integration of ecohydrological technologies at different scales during the first four years for IHP-VIII. The wider UNESCO family can help build legal and policy analysis to implement biotechnologies and systemic solutions through the establishment of related ecohydrology demonstration projects in freshwater and estuarine systems. The participants recommended the use of ecosystem services and enhancement of carrying capacity approaches to improve water quantity and quality, biodiversity and resilience. This needs to be aided with economic evaluation of ecosystems services in landscapes. During the plenary discussions it was highlighted that partnership with Ramsar Wetlands and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) could be important vehicles for the effective delivery of this theme.

79. **Theme 6: Water education, key for water security** session was chaired by Mr Juan Chalas, Director of CEHICA, and moderated by Mr Octavio Elisio de Brito, Director of HIDROEX, the International Centre for Education, Capacity Building and Applied Research in Water, with Mr Miguel Doria, IHP Secretariat, serving as rapporteur. For focal area 6.1 on tertiary water education and professional capabilities in the water sector, priority will be given to the development – in consultation with IHP and through it with the network of UNESCO centres – of a virtual campus for education and to the development of joint degrees among IHP partners. In addition, the implementation of specific objective 6.1.3 (Strengthen collaboration between UNESCO-IHE Institute for Water Education, the UNESCO category 2 water centres and UNESCO water-related Chairs, other UN system agencies and programmes, and existing international water-related education programmes) was also regarded as a high priority but due to its wide scope and overlap with the general agenda of the meeting it was subsequently discussed in the general session. For focal area 6.2 on vocational education and training of water technicians, priority was given to the support of specific initiatives to sustain and improve water-related vocational education via the sharing of TVET curricula on the web. For focal area 6.3 on water education for children and youth, priority was allocated to the development of improved tools for the teaching of water issues in the K-12 curriculum and to the strengthening of youth networks on water. For focal area 6.4 on informal water education, no high priority was allocated to any objective, although the development of community education strategies and the engagement of leading mass media resources received particular interest. For focal area 6.5 on education for transboundary water cooperation and governance, priority was allocated to the enhancement of capacity building activities at all levels, particularly via PCCP and ISARM, with details to be specified later in consultation with such programmes.

80. The conclusions of the parallel sessions were subsequently presented by the rapporteurs to all participants for discussion and further inputs. The outcomes for each theme are presented in detail in Annex IV. As many key partners could not be present at the meeting in Nairobi, it was agreed that the templates presented in Annex IV would be circulated among all IHP National Committees, category 2 centres and water-related Chairs for completion of the list of partners, so that all could express their interest in working towards a specific objective.

81. During the debate on the implementation plan, Mr Wellens Mensah of WMO asked to include demand management into human settlement activities and if needed to involve other partners. In relation to the theme 6, he recalled the work that UNESCO has been doing in training technicians from the water sector and requested that the curricula for these trainings be made available.

82. Mr Jacques Ganoulis, UNESCO Chair on Sustainable Management on Water and Conflict Resolution, mentioned the existence of a platform developed by the International Network of Water-Environment Centres for the Balkans (INWEB) with useful tools and databases which are freely available online.

83. Mr Geoffrey Gooch requested that cross-cutting issues and tasks among different themes be taken into consideration in the development of the implementation strategy. He also mentioned that the contribution of category 2 centres to education should be further acknowledged by IHP as it might be comparable to that provided by UNESCO-IHE.

84. Ms Fatima Bako, representative of the IHP National Commission in Niger, called for raising awareness at the governmental level so that funding is made available for the implementation of the coming phase. She also indicated that it is necessary to incorporate valuable partners that can provide expertise and more exchange among IHP National Commissions, as well as the need to develop measurable indicators of progress.

85. Mr Ayoade Shamonda of the Nigeria Hydrological Services Agency (NHSA) reinforced the comments above, also calling for development of TVET and related curricula.

86. Mr Azizou Issa from the Committee on Rural Economy, Agriculture, Natural Resources and Environment, Pan-African Parliament, African Union, called for a simplified version of the strategic plan, to make it accessible to people who are not water experts. In this way the work of IHP could be widely enhanced and turned into real policies.

87. Mr Rachid Taibi, Director-General, National Agency of Hydraulic Resources, Algeria, suggested a strategy be developed for on-going assessment and evaluation of the implementation of IHP-VIII in real time. The Chair suggested that the Secretariat write a proposal to ensure this monitoring and evaluation process. This proposal should (i) include criteria for determining to what extent activities contribute to the achievement of the objectives of IHP VIII and (ii) a mechanism to follow-up on its findings. He would discuss this with Ms Blanca Jiménez Cisneros.

88. Mr Stein van Oosteren proposed that the Working Group should also work in an efficient way to communicate with governments and inform them about the relevance and potential of IHP, especially with regard to political processes related to water such as the post-2015 development agenda.

## **COOPERATION WITHIN THE UNESCO WATER FAMILY**

89. Ms Blanca Jiménez Cisneros underscored that the UNESCO Water Family is rapidly growing and that all members must work together as one family. She praised highly the efforts of Mr András Szöllösi-Nagy for his contributions to IHP.

90. Ms Michela Miletto outlined the synergies between WWAP and other members of the UNESCO Water Family through IHP-VIII. The presentation included an overview of the institutional arrangements and relationships with UN-Water for the preparation of the World Water Development Report (WWDR) and for providing decision-makers with the tools to implement sustainable use of water resources. She mentioned that since the ratification on 24 August 2013 of an agreement between the Government of Italy and UNESCO, the core funding of WWAP was now secured. WWDR is to be published on an annual basis on specific themes, with WWDR 2014 focusing on “Water and Energy” and WWDR 2015 on “Water and Sustainable Development”. Furthermore, a list of WWAP complementary publications was presented and the activities on water and gender equality that were recently initiated were discussed. The joint efforts of WWAP and AMCOW were highlighted. Finally, the WWAP capacity development components were overviewed covering Water Assessment and Monitoring and Water Conflicts and Cooperation.

91. Mr András Szöllösi-Nagy praised the IHP efforts and contribution to the water science community. He emphasised the active role of UNESCO-IHE in educating the world’s future water leaders. The core activities of UNESCO-IHE were highlighted as water education, training and research in addition to water sector capacity development. It was stressed that UNESCO-IHE research themes closely link to IHP-VIII. Fostering networking among partnership institutions and centres was highly recommended and he mentioned the potential of a possible future UNESCO-IHE Global Virtual Campus for Water Education and Research.

92. Mr Julius Wellens-Mensah from WMO recommended the integration of Green Economy and Nexus (Energy-Water-Food) in water resources management through IHP and WWAP. Also, the idea of a possible IHP/WWAP future contribution, involvement, and participation in the Global Partnership for Development Data Initiative coordinated by the IHP Germany National Committee was considered.

93. Mr Kunyoshi Takeuchi noted the importance of having diversity within the UNESCO Water Family, with no dominating centre or institute, to account for cultural diversity and a basis for educational diversity. He also noted the close cooperation between ICHARM and UNESCO during

the floods in Pakistan and highlighted that ICHARM contributed to the establishment of early warning systems.

94. Mr Jovan Despotovic, IHP vice-chairperson for Eastern Europe, stated that the assessment of national needs should provide the basis for capacity development.

95. Mr Julius Wellens-Mensah expressed concern that the courses at UNESCO-IHE are exclusively conducted in English, thus excluding non-English speakers, particularly those from francophone countries. Mr András Szöllösi-Nagy added that the Institute is making efforts to raise additional resources from the Francophonie, which would enable it to hold short courses in French. Furthermore, he invited the Member States to contribute to the UNESCO-IHE scholarship fund.

96. Mr Johannes Cullmann asked how the various institutions present can better cooperate and share their expertise, in order to make better use of the knowledge created. More consistent and coherent lines should be created for UNESCO-IHE research to focus on.

97. Ms Blanca Jiménez Cisneros provided a short overview of the water-related Chairs and centres. She described that in terms of activities there is not a conceptual or critical difference between category 1 and category 2 institutes and centres. The main difference between category 1 and 2 status is related to ownership, as category 1 are an integral part of UNESCO and hence have to closely follow UNESCO's regulations, while category 2 centres belong to one or several Member States. She concluded that the UNESCO Water Family needs to find a way to further enhance coordination, perhaps through an interactive online mechanism of communication. She encouraged participants to present suggestions in this regard. She also informed the audience that an overarching focal point for all category 2 centres has been established at the Secretariat, which will be extended to also include Chairs.

98. Mr Octavio Elisio de Brito introduced the work of HIDROEX, which has already developed an extensive cooperation programme with IHP and UNESCO-IHE. The Centre is only three years old but is developing rapidly. Its main purpose is to create well-trained human resources for water sectors of the LAC and lusophone countries of Africa. He further noted the interest of HIDROEX in integrating further into the structure of UNESCO.

99. Mr Graham Jewitt, Director of the African Centre for Global Change and Water Research in South Africa, presented the current work of the Centre. He observed that in Africa many water initiatives are competing among themselves. He called for a better coordination of activities, notably for the whole UNESCO Water Family, in order to achieve better results and enhance synergies.

100. Mr Sanjo Bamgboye, Director of RC-IRBM, presented the work of the Institute and noted that by networking with local universities, the Centre can enhance its work in different areas.

101. Mr Johannes Cullmann noted that organizing a coordination unit for water-related centres is in principle positive but its implementation requires further analysis. All concerned institutions should have some responsibility within the unit, for instance to sustain it by sharing the costs of additional staff.

102. Mr Gabriel Mancilla presented the work of CAZALAC, highlighting cooperation already in place with other centres, such as the International Center for Integrated Water Resources Management (ICIWaRM).

103. Mr Geoffrey Gooch summarised the activities of the IHP-HELP Centre for Water Law, Policy and Science. He emphasized the need for finding strategic partners which would complement the work of the centres and noted that cooperation should be focused on mutual benefits, not conducted just for the sake of cooperation per se.

104. Mr William Logan provided an overview of the work of ICIWaRM, noting that cooperation with other category 2 centres is a priority and ICIWaRM has already a strong connection with ICHARM and several centres in LAC. He also mentioned that ICIWaRM has supported the travel

of experts from African centres to attend a meeting organized by the European Regional Centre for Ecohydrology (ERCE).

105. Mr Andras Szöllösi-Nagy noted the financial challenges encountered by some centres and the constant search for donations which hampers the full development of their activities.

106. Mr Richard Meganck noted that a potential for synergy exists among a group of collaborating institutions and UNESCO-IHE, both in terms of fundraising experience as well as providing assistance to newer institutions for developing their curricula. He further noted that the costs of the training could be lowered by enabling students to attend classes at a local university partnered with centres.

107. Mr Imam Bisher, IHP Secretariat, noted that working with private foundations may not be an option to all institutions. He suggested that a list be prepared with details of potential sources for sponsoring.

108. Mr Antonio Ricarte, Deputy Representative of Brazil to UNDP, noted that the idea of an IHP coordinating committee for category 1 and 2 centres may not be useful, as each centre has its own board and administrative environment, and most of the centres respond also to the priorities of their host nations. He recommended encouraging networking amongst the centres instead, by creating channels of exchange of information. He also noted that IHP-VIII should not be implemented on its own, without reaching out to other agencies such as WMO, FAO, UNFCCC and UNEP, in order to share the workload, save time and be more efficient. In addition, he proposed reinforced collaboration with UNESCO's International Bureau of Education on the water education activities of IHP.

109. Mr Miguel Doria, IHP Secretariat, noted that IHP work on water education was largely developed together with the intersectoral platform of the UNESCO-Education for Sustainable Development programme.

110. Mr Stein Van Oosteren stressed the need to make sure that the communication between Member States that this meeting had ignited should not be limited to the proposals for cooperation that had been put on paper in Nairobi. Therefore he suggested that the form in which participants had entered their proposals for cooperation in each theme of IHP-VIII be accessible online, so that after the meeting they can still consult it and see directly how and under which themes cooperation is evolving effectively and where they could join.

111. Ms Gretchen Kalonji, in reply to Mr Van Oosteren, underlined the importance of access to this information because by increasing transparency and visibility of IHP's activities, Member States would have more possibilities and motivation for getting involved. She said she would make the necessary arrangements to create this online accessibility.

112. Mr Geoffrey Gooch mentioned that, during the breaks of the current meeting, some of the Chairs and centres have already agreed to visit each other and share information on their activities. This is a first step of collaboration among Chairs with similar and complementing interests. In addition, he suggested that information be provided on the competencies of each centre, in order to foster cooperation and interdisciplinarity.

113. Mr Johannes Cullmann and Mr William Logan noted that new opportunities must be provided for alliances to develop, so that work is no longer duplicated among the various institutions.

114. Mr Jacques Ganoulis suggested that one of the centres could develop a portal where all the information from different partners could be gathered and made available to all interested parties. He also mentioned the 'Peace, Security and Diplomacy' course on transboundary water resources being currently developed by the United Nations Institute for Training and Research (UNITAR), suggesting that UNITAR could provide a good platform to develop new courses.

115. Ms Gretchen Kalonji, ADG/SC, noted that she would prioritize the creation of a better system of information related to category 2 centres in natural sciences, with the assistance of Member States.

116. Mr Johannes Cullmann inquired into the relevance of UNESCO-IHE Ph.D. research for issues close to the IHP. He asked how many results from these studies have been transformed into guidelines or policy papers. Mr Szollosi-Nagy answered that most research is market-driven. However he added that there are roughly 120 students currently working on issues relevant to the IHP.

117. Mr Sanjo Bamgboye pointed out that UNESCO offices may provide requests to the centres regarding scientific issues they could work on.

118. Ms Blanca Jimenez-Cisneros noted that no exact road map could be presented as the meeting was very short, but the valuable input provided by all participants would be taken into consideration in the next steps of implementation of IHP-VIII. Special attention will also be given to the creation of a means of communication and information sharing for centres and Chairs.

119. Ms Gretchen Kalonji thanked all participants for their presence and valuable input.

120. Mr John Mutorwa, chairing the session, declared the meeting officially closed.

ANNEX I – AGENDA



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## UNESCO Strategic and High-Level Meeting on Water Security and Cooperation

11-13 September 2013, Nairobi, Kenya

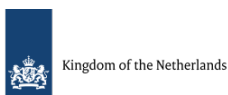
*Kenya School for Monetary Studies*

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### FINAL PROGRAMME

11 September 2013

*With the support of*



## DAY 1

### High Level Panel on Water Security and Cooperation in Africa

11 September 2013

<i>Time</i>	<i>Session</i>
8:00-9:00	Registration
9:00-9:40	<p><b>Opening Session</b></p> <p>Chair: <b>Gretchen Kalonji</b>, <i>Assistant Director-General for Natural Sciences, UNESCO</i></p> <p>Moderator: <b>Johannes Cullmann</b>, <i>Chairperson of the UNESCO International Hydrological Programme (IHP) Intergovernmental Council</i></p> <ul style="list-style-type: none"><li>▪ <b>Irina Bokova</b>, <i>Director-General of UNESCO</i> (video message)</li><li>▪ <b>Eric Odada</b>, <i>United Nations' Secretary General Advisory Board on Water and Sanitation (UNSGAB)</i></li><li>▪ <b>Jan Eliasson</b>, <i>Deputy Secretary-General of the United Nations</i> (video message)</li><li>▪ <b>Michel Jarraud</b>, <i>Chair of UN-Water</i> (video message)</li><li>▪ <b>Mary M. Khimulu</b>, <i>former Ambassador, Permanent Delegate of Kenya to UNESCO</i></li><li>▪ <b>James Teko Lopoyetum</b>, <i>Principal Secretary, State Department of Water, Kenya</i></li><li>▪ <b>Judi Wakhungu</b>, <i>Cabinet Secretary for Environment, Water and Natural Resources, Kenya</i></li></ul> <p>Rapporteurs: <b>Jovan Despotovic</b>, <i>IHP Vice-Chairperson</i> and <b>Alice Aureli</b>, <i>IHP Secretariat</i></p>
9:40-10:10	<p><b>Building Drought Resilience and Reducing Risks</b></p> <p>(information session formally organized outside of the main meeting)</p> <p>Moderator: <b>Norbert Opiyo Akech</b>, <i>Technical Scientific Committee of the Turkana Survey, University of Nairobi</i></p> <ul style="list-style-type: none"><li>▪ <b>Judi Wakhungu</b>, <i>Cabinet Secretary for Environment, Water and Natural Resources, Kenya</i>: Turkana Groundwater Results &amp; Launch of Kenya Groundwater Mapping Programme in support of Kenya's Vision 2030</li><li>▪ <b>Gretchen Kalonji</b>, <i>Assistant Director-General for Natural Sciences, UNESCO</i>: The Role of GRIDMAP in Reducing Drought Vulnerability and Building Long-term Resilience</li><li>▪ <b>Mohamed Djelid</b>, <i>Director, UNESCO Regional Office in Nairobi (Kenya)</i> <b>Yukihiro Haisa</b>, <i>First Secretary, Embassy of Japan to Kenya and Deputy Permanent Delegate to the United Nations Environment Programme (UNEP)</i>: Japan's support to drought resilience building and the water sector in Kenya</li><li>▪ <i>Handover of Turkana Survey results and press conference</i></li></ul>



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**10:10-10:40** Coffee Break

**10:40-11:40** Panel 1

**The International Year of Water Cooperation (IYWC):  
Overview of Progress and Expectations**

Chair: **Jacob Kaimenyi**, *Cabinet Secretary for Education, Science and Technology, Kenya*

Moderators: **Nicholas Bonvoisin**, *Secretary to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, United Nations Economic Commission for Europe (UNECE)* and **Alice Aureli**, *IHP Secretariat*

**Marielle Geraedts**, *Deputy Ambassador of the Kingdom of the Netherlands in Nairobi: Messages from the World Water Day in The Hague, Netherlands*

**Sirodjidin M. Aslov**, *Ambassador of Tajikistan to the United Nations: World Water Day Celebration in New York and Messages from the High Level International Conference on Water Cooperation in Dushanbe, Tajikistan*

**Anders Jägerskog**, *Director, Knowledge Services, Stockholm International Water Institute (SIWI), Sweden: Messages from the Stockholm World Water Week 2013*

**Tibor Stelbaczkzy**, *Head, European Union Sectoral Policies Department, Ministry of Foreign Affairs, Hungary: Overview on the programme and objectives of the Budapest Water Summit, Hungary*

**Eduardo Donath**, *Secretary of the Director General, Mexican Institute for Water Technology (IMTA): Closing Event of the International Year of Water Cooperation, Mexico*

**11:25-11:40** Questions and Answers

Rapporteurs: **Miguel Doria**, *IHP Secretariat* and **Geoffrey Gooch**, *Director, Dundee Centre for Water Law, Policy and Science*

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**11:40-12:45** Panel 2

**Water Security and Cooperation in Africa**

Chair: **Ephraim Kamuntu**, *Minister of Water and Environment, Uganda*

Moderator: **Blanca Jiménez-Cisneros**, *Secretary of IHP*

Introductory Note: **Abou Amani**, *IHP Regional Hydrologist for Africa: UNESCO's International Hydrological Programme: Cooperating for Water Security in Africa*

- **John Mutorwa**, *Minister of Agriculture, Water and Forestry, Namibia*
  - **Antero Veiga**, *Minister of Environment, Housing and Land Management, Cape Verde*
  - **Sarah Reng Ochekepe**, *Minister of Water Resources, Nigeria*, represented by **John Ayoade Shamonda**, *Director General of the Nigeria Hydrological Services Agency (NIHSA)*
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**12:30-12:45** Questions and Answers

Rapporteurs: **Bisher Imam**, *IHP Secretariat* and **Sanjo Bangboye**, *Director, Regional Centre for Integrated River Basin Management (RC-IRBM, Nigeria)*

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**12:45-14:00** Lunch break

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**14:00-15:30** Panel 3

### Water Science, Education and Governance for the Future We Want (Post-2015 Agenda)



This session is hosted by the International Centre for Water Hazard and Risk Management (ICHARM)

Chair: **Michela Miletto**, *Coordinator a.i., World Water Assessment Programme (UNESCO-WWAP)*

Co-chair: **Kuniyoshi Takeuchi**, *Director, ICHARM*

Moderator: **Miguel Doria**, *IHP Secretariat*

Keynote: **Kuniyoshi Takeuchi**, *Director, ICHARM*

- **Luis Augusto Pelembe**, *Minister of Science and Technology, Mozambique*
- **Salisu Abdulmumin**, *Programme Coordinator, African Ministers' Council on Water (AMCOW)*
- **András Szöllösi-Nagy**, *Rector, UNESCO-IHE Institute for Water Education*
- **Rachid Taibi**, *Director-General, National Agency of Hydraulic Resources, Algeria*
- **Abdelkader Dodo**, *Project Manager, Observatory for the Sahara and the Sahel (OSS)*

Questions and Answers

**15:15-15:30**

Wrap-up by **Blanca Jiménez-Cisneros**, *Secretary of IHP*

Rapporteur: **Zelmira May**, *UNESCO Montevideo Office*

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**15:30-16:00** Coffee Break

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**16:00-17:00** Panel 4

### Strengthening Intergovernmental Cooperation for Water in Africa

Chair: **Christpine Omondi Juma**, *IHP Vice-Chair*

Moderator: **Johannes Cullmann**, *Chairperson of the UNESCO International Hydrological Programme (IHP) Intergovernmental Council*

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**Mekuria Beyene**, *Principal Program Officer, Transboundary Water, New Partnership for Africa's Development (NEPAD)*

**Madine Ba**, *Secretary General, Organisation for the Development of the Senegal River (OMVS)*

**Abdelkader Dodo**, *Project Manager, OSS*

**Thomas Chiramba**, *Chair, UN Task Force on Water Resources Management Freshwater and Marine Ecosystems Branch, UNEP*

**John Nyaoro**, *Director of Water Resources, Ministry of Water and Irrigation, Kenya*

**16:45-17:00** Questions and Answers

Rapporteur: **Bisher Imam**, *IHP Secretariat*

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**17:00-17:50** **Panel 5**

### **South-South and Triangular Cooperation**

Chair: **Salisu Abdulmumin**, *Programme Coordinator, AMCOW*

Moderator: **Zelmira May**, *UNESCO Montevideo Office, Regional Hydrologist a.i. for Latin America and the Caribbean*

**Sirodjidin M. Aslov**, *Ambassador to the United Nations, Tajikistan*

**Eduardo Donath**, *Mexican Institute for Water Technology (IMTA), Mexico*

**Julius Wellens-Mensah**, *Chief, Basic Systems in Hydrology, Climate and Water Department, World Meteorological Organization (WMO)*

**Azizou Elhadj Issa**, *Committee on Rural Economy, Agriculture, Natural Resources and Environment, Pan-African Parliament, African Union*

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**17:35-17:50** Questions and Answers

Rapporteurs: **Siegfried Demuth**, *IHP Secretariat* and **Anders Jägerskog**, *Director, Knowledge Services, Stockholm International Water Institute (SIWI), Sweden*

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**17:50-18:00** **Concluding Remarks**

**Blanca Jiménez-Cisneros**, *Secretary of IHP*

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## DAY 2

### Working Group on IHP-VIII Implementation

12 September 2013

UNESCO's Water Family and IHP-VIII

<i>Time</i>	<i>Item</i>
9:00-9:30	<b>Opening</b> <ul style="list-style-type: none"><li>▪ Welcome Address <b>Chrispine Omondi Juma</b>, <i>IHP Vice-Chairperson for Africa</i></li><li>▪ Welcome Address <b>Mohamed Djelid</b>, <i>Director of UNESCO Nairobi Office</i></li><li>▪ Welcome Address <b>Gretchen Kalonji</b>, <i>Assistant Director-General for Natural Sciences, UNESCO</i></li></ul>
9:30-9:50	<b>Objectives and Structure of the Meeting</b> <ul style="list-style-type: none"><li>▪ Objectives of the meeting and input from the Koblenz meeting <b>Johannes Cullmann</b>, <i>Chairperson of the IHP Intergovernmental Council</i></li><li>▪ Structure of the meeting <b>Blanca Jiménez-Cisneros</b>, <i>Secretary of IHP</i></li></ul>
10:10-10:30	<i>Coffee Break</i>
10:30-12:30	<b>Regional Spotlights</b> <p>Discussions between the Vice-Chairpersons of the IHP Intergovernmental Council and the IHP Regional Hydrologists on regional implementation challenges and success stories: "Learning from the past and looking to the future"</p> <p>Moderators:</p> <ul style="list-style-type: none"><li>▪ <b>Geoffrey Gooch</b>, <i>Director, Dundee Centre for Water Law, Policy and Science (under the auspices of UNESCO)</i></li><li>▪ <b>Callist Tindimugaya</b>, <i>Commissioner for Water Resources Regulation, Ministry of Water and Environment, Uganda</i></li></ul> <p>Regional Hydrologists:</p> <ul style="list-style-type: none"><li>▪ <b>Abou Amani</b> <i>for Africa</i></li><li>▪ <b>Zaki Abdelaziz</b> <i>for the Arab States</i></li><li>▪ <b>Shahbaz Khan</b> <i>for Asia and the Pacific</i></li><li>▪ <b>Siegfried Demuth</b> <i>(representing) Europe and North America</i></li><li>▪ <b>Zelmira May</b> <i>for Latin America and the Caribbean</i></li></ul> <p>Vice-Chairpersons of the IHP Intergovernmental Council:</p> <ul style="list-style-type: none"><li>▪ <b>Chrispine Omondy Juma</b> <i>for Africa</i></li><li>▪ <b>Mohamed Elhassan Eltayeb Elhag</b> <i>for the Arab States</i></li><li>▪ <b>Johannes Cullmann</b> <i>for Western Europe and North America</i></li></ul>

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- **Jovan Despotovic** for *Eastern and Central Europe*

Regional representatives

- **Victor Javier Bourguett Ortiz** for *Latin America and the Caribbean*
- **Kuniyoshi Takeuchi** for *Asia and the Pacific*

Questions from the floor

Rapporteurs: **Anil Mishra** and **Siegfried Demuth**, *IHP Secretariat*

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**12:30-14:00**

*Lunch Break*

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### **IHP-VIII “Water Security: Responses to Local and Global Challenges”**

The afternoon sessions will serve to present IHP-VIII. The discussions will focus on learning about the strategic plan of the programme for the next eight years, with an emphasis on its objectives. This will pave the way to the next day's discussion on (a) implementation approaches to be adopted as well as (b) potential collaboration between various members of the UNESCO Water Family.

**14:00-16:00**

### **Highlights of IHP-VIII**

Moderator: **Asma El Kasmi**, *UNESCO Chair of Water, Women and Decision Making, Morocco*

**14:00-14:40**

Overall presentation of IHP-VIII Strategic plan

- **Maria Concepcion Donoso**, *Coordinator of the IHP-VIII Task Force*

Feedback and questions from the plenary

**14:40-15:30**

Overall presentation of the IHP-VIII Themes and support by cross-cutting programmes

- Theme 1 of IHP-VIII: Water-related disasters and hydrological change  
**Siegfried Demuth**
- Theme 2 of IHP-VIII: Groundwater in a changing environment  
**Alice Aureli**
- Theme 3 of IHP-VIII: Addressing water scarcity and quality  
**Anil Mishra**
- Theme 4 of IHP-VIII: Water and human settlements of the future  
**Bisher Imam**
- Theme 5 of IHP-VIII: Ecohydrology, engineering harmony for a sustainable world  
**Shahbaz Khan**
- Theme 6 of IHP-VIII: Water education, key for water security  
**Miguel Doria**

Rapporteurs: **Zelmira May** and **Abou Amani**, *IHP Secretariat*

**15:30-16:00**

Feedback and questions from the plenary

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**16:00-16:30**

*Coffee Break*

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**16:30-19:00**

### **Parallel sessions on IHP-VIII themes**

During these sessions, participants (Chairs, Centres, Institutes, other partners)

will focus on the objectives of specific IHP-VIII themes. They will identify:

- order of implementation and prioritization among the over 120 objectives of the eight-year programme
- key outputs
- modality of implementation (i.e. what kind of intervention activity/product/initiative)
- areas to which they would like to contribute
- approach of the collaboration on the implementation of IHP-VIII through which they will contribute
- strategy that they suggest for such collaboration (time, partners, products etc.)
- contributions to UNESCO priorities on Africa and Gender Equality

- **Theme 1 of IHP-VIII: Water-related disasters and hydrological change**

Chair: **Sanjo Bamgboye**, *Regional Centre for Integrated River Basin Management (RC-IRBM)*

Moderator: **Kuniyoshi Takeuchi**, *Director, ICHARM, Japan*

Rapporteur: **Siegfried Demuth**, *IHP Secretariat*

- **Theme 2 of IHP-VIII: Groundwater in a changing environment**

Chair: **Chrispine Omondi Juma**, *IHP Vice-Chairperson of the IHP Intergovernmental Council*

Moderator: **Neno Kukuric**, *Director, International Groundwater Assessment Centre (IGRAC), The Netherlands*

Rapporteur: **Alice Aureli**, *IHP Secretariat*

- **Theme 3 of IHP-VIII: Addressing water scarcity and quality**

Chair: **Gamal Ismail Shaker**, *Director, Regional Centre for Training and Water Studies of Arid and Semi-arid Zones (RCTWS), Egypt*

Moderator: **Gabriel Mancilla**, *Water Center for Arid and Semi-Arid Zones in Latin America and the Caribbean (CAZALAC), Chile*

Rapporteur: **Anil Mishra**, *IHP Secretariat*

- **Theme 4 of IHP-VIII: Water and human settlements of the future**

Chair: **Jovan Despotovic**, *IHP Vice-Chairperson*

Moderator: **Eltayeb Ahmed**, *Regional Centre on Capacity Development and Research in Water Harvesting (RCWH)*

Rapporteur: **Bisher Imam**, *IHP Secretariat*

- **Theme 5 of IHP-VIII: Ecohydrology, engineering harmony for a sustainable world**

Chair: **Luis Chicharo**, *International Center on Coastal Ecohydrology, Portugal*

Moderator: **Maciej Zalewski**, *European Regional Center for Ecohydrology (ERCE), Poland*

Rapporteur: **Shahbaz Khan**, *IHP Secretariat*

- **Theme 6: Water education, key for water security**

Chair: **Juan Chalas**, *Centre for the Sustainable Management of Water Resources in the Caribbean Island States (CEHICA), Dominican Republic*

Moderator: **Octávio Elísio Alves de Brito**, *Director, HidroEX International*

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*Center for Education, Capacity-Building and Applied Research in Water , Brazil*

Rapporteur: **Miguel Doria**, *IHP Secretariat*

## DAY 3

### Working Group on IHP-VIII Implementation

13 September 2013

Involvement of UNESCO's Water Family in the implementation of IHP-VIII

Meeting of UNESCO water-related centres and chairs

<b>Time</b>	<b>Item</b>
<b>09:00-11:00</b>	<b>Report from the IHP-VIII Themes</b>  Moderator: <b>Johannes Cullmann</b> , <i>Chairperson of the IHP Intergovernmental Council</i>  All rapporteurs of the parallel sessions will report in plenary session the suggestions made in their respective sessions.  Rapporteur: <b>Youssef Filali-Meknassi</b> , <i>UNESCO Windhoek Office</i>
<b>11:00-11:30</b>	<i>Coffee break</i>
<b>11:30-13:00</b>	Discussion with the plenary  Rapporteurs: <b>Zelmira May</b> and <b>Miruna Bouros</b> , <i>IHP Secretariat</i>
<b>13:00-14:00</b>	<i>Lunch Break</i>

#### **Cooperation within the UNESCO Water Family**

The second part of Day 3 will focus on cooperation among UNESCO's water family. Having discussed the potential contributions of centres and chairs to the implementation of IHP-VIII in the previous segment of the meeting, this segment will define the required mechanisms for enhancing cooperation among members of the Water Family. Efforts will focus on identifying self-sustaining regional and disciplinary cooperative modalities between members of the water family, including the secretariat, and on strategies to further strengthen the role of centres and chairs in implementing IHP activities.

<b>14:00-15:00</b>	<b>Contributions of United Nations World Water Assessment Programme (WWAP) and UNESCO-IHE to IHP-VIII</b>  <i>Chair: Blanca Jiménez-Cisneros, Secretary of IHP</i> <ul style="list-style-type: none"><li>▪ <b>Michela Miletto</b>, <i>Coordinator a.i., World Water Assessment Programme (UNESCO-WWAP)</i></li><li>▪ <b>András Szöllösi-Nagy</b>, <i>Rector, UNESCO-IHE Institute for Water Education</i></li></ul> Discussion and feedback from the plenary  Rapporteur: <b>Zaki Abdel-Aziz</b> , <i>UNESCO Cairo Office</i>
<b>15:00-15:30</b>	<i>Coffee Break</i>
<b>15:30-17:30</b>	<b>Contributions of water related Centres and Chairs: Examples and lessons</b>

Chair of the afternoon's Panel discussion: **John Mutorwa**, *Minister of Agriculture, Water and Forestry, Namibia*



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Moderator: **Johannes Cullmann**, *Chairperson of the IHP Intergovernmental Council*

**15:30-15:45** Objectives of category 1 and category 2 centres, and Chairs

**Blanca Jiménez-Cisneros**, *IHP Secretary*

Coordination among the UNESCO Water Family, focus on water-related category 2 centres and Chairs

**Bisher Imam**, *IHP Secretariat*

**15:45-17:00** Following the presentation of the objectives by the Secretariat, a panel of representative of Centres and Chairs will discuss:

- The experience of Centres and Chairs in implementing the Strategies and possible questions related to changes
- The modalities of efficient cooperation between the Centres and Chairs and the IHP Secretariat.
- The various aspects of support that Centres and Chairs can bring to the Programme beyond the technical support.

Panellists:

- **Kuniyoshi Takeuchi**, *Director, ICHARM*
- **Michela Miletto**, *Coordinator a.i., World Water Assessment Programme (UNESCO-WWAP)*
- **Sanjo Bamgboye**, *Regional Centre for Integrated River Basin Management (RCIRBM), Nigeria*
- **Geoffrey Gooch**, *IHP-HELP Centre for Water Law, Policy and Science (IHP-HELP), Dundee, United Kingdom*
- **Gabriel Mancilla**, *Water Centre for Arid and Semi-arid Zones of Latin America and the Caribbean (CAZALAC), Chile*
- **András Szöllösi-Nagy**, *Rector, UNESCO-IHE Institute for Water Education*
- **William Logan**, *International Center for Integrated Water Resources Management (ICIWaRM), United States of America*

Rapporteurs:

**Bisher Imam**, *IHP Secretariat*

**Siegfried Demuth**, *IHP Secretariat*

**17:00-17:15** **Closing Remarks**

**Gretchen Kalonji**, *Assistant Director-General for Natural Sciences, UNESCO*

**Blanca Jiménez-Cisneros**, *IHP Secretary*

Rapporteur: **Anil Mishra**, *IHP Secretariat*

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ANNEX II – LIST OF PARTICIPANTS

Family Name	First Name	Title	Organization	Country
<b>Participants</b>				
<b>Adhiambo</b>	Dymphina	Secretariat	Ministry of Environment, Water and Natural Resources	Kenya
<b>Akech</b>	Norbert Opiyo		University of Nairobi	Kenya
<b>Akpabio</b>	Emmanuel	Executive Board IWRA	IWRA	Nigeria
<b>Al-Atrash</b>	Mohammad Ahmad	Director of Water Resources Studies and Monitoring	Ministry of Water and Irrigation, Jordan	Jordan
<b>Araigua</b>	F.K.		Ministry of Education, Science and Technology	Kenya
<b>Aslov Ivetic</b>	Sirodjidin	Ambassador	Permanent Mission of Tajikistan to UN	USA
<b>Asunta</b>	Alex		Ministry of Environment, Water and Natural Resources	Kenya
<b>Ayoade Shamonda</b>	John	Director General	Nigeria Hydrological Services Agency, Abuja and Secretary of the Nigeria National Committee of UNESCO-IHP, in Nigeria	Nigeria
<b>Azelwa</b>	Fred		KWRC	Kenya
<b>Ba</b>	Madine	Secretary General	OMVS	Mauritania
<b>Bamgboye</b>	Sanjo	Director	Regional Centre for Integrated River Basin Management (RC-IRBM)	Nigeria
<b>Bari</b>	Emad Abu (AlSarour / Abosror)	Senior Hydrogeologist	Ministry of Water and Electricity	Saudi Arabia
<b>Beckley</b>	Moses O.		Ministry of Environment, Water and Natural Resources	Kenya
<b>Behravan</b>	Gity		Embassy of Sweden	Kenya
<b>Berham</b>	Aleg		AAS	Kenya
<b>Beyene</b>	Mekuria	Principal Program Officer	NEPAD	
<b>Bonvoisin</b>	Nicholas	Secretary	UNECE	Switzerland
<b>Bourguett Oz</b>	Victor		IMTA	Mexico

Family Name	First Name	Title	Organization	Country
<b>Briggs</b>	Christopher	Secretary General	RAMSAR	Switzerland
<b>Carrato</b>	Mark		USAID	USA
<b>Casey</b>	Walther		RTI/Independent Consultant	USA
<b>Chalas</b>	Juan	Director	Centre for the Sustainable Management of Water Resources in the Caribbean Island States	Dominican Republic
<b>Chenevoy</b>	Manon	Office Manager	Seureca East Africa Ltd	Kenya
<b>Chicharo</b>	Luis	Director	International Centre for Coastal Ecohydrology	Portugal
<b>Chiramba</b>	Thomas	Chair	UN Task force (UNEP)	Kenya
<b>Connell</b>	Daniel	Professor	The Australian National University (Chair in Water Economics and Transboundary Water Governance)	Australia
<b>COŞAR</b>	Pelin		Ministry of Forestry and Water Affairs	Turkey
<b>Cullmann</b>	Johannes	Chair	IHP Bureau	Germany
<b>de Brito</b>	Octavio Elisio Alves	Director	International Centre for Education, Capacity Building and Applied Research in Water (HidroEX)	Brazil
<b>de Miranda Guarda</b>	Vera Lúcia	Professor	Université Fédéral de Ouro Preto (Chaire UNESCO "Eau, femmes et développement")	Brazil
<b>de Pina</b>	Antonio Pedro	President	IHP National Committee	Cape Verde
<b>Despotovic</b>	Jovan	Vice-Chair	IHP Bureau	Serbia
<b>Devos</b>	Bart		President of the World Youth Parliament for Water	Belgium
<b>Diego</b>	Elizabeth		Water Resources Management Authority	Kenya
<b>Diis</b>	Rashid Mohamed	Chair	Kenya Pastoralist Consortium on Climate Change	Kenya
<b>Dimkic</b>	Jaroslav	Director	Centre for Water for Sustainable Development and Adaptation to Climate Change	Serbia
<b>Dodo</b>	Abdel Kader	Representative	OSS	Tunisia
<b>Donath</b>	Eduardo		IMTA	Mexico
<b>Donoso</b>	Maria	Director	Global Water for	USA

Family Name	First Name	Title	Organization	Country
			Sustainability - GLOWS	
<b>El Kasmi</b>	Asma	Professor	Al Akhawayn University in Ifrane, UNESCO Chair "Water, Women and Decision-making"	Morocco
<b>El-Tahan</b>	Heba		Embassy of Egypt	Kenya
<b>Eltayeb</b>	Ahmed	Director	Regional Centre on Capacity Development and Research in Water Harvesting RCWH	Sudan
<b>Eltayeb Elhag</b>	Mohamed Elhassan	Vice-Chair	IHP NatCom Sudan/IHP Bureau	Sudan
<b>Fatimata Gagara</b>	Bako		Ministry of Hydraulic Energy and Sanitation	Niger
<b>Folkunger</b>	Elisabeth		Embassy of Sweden	Kenya
<b>Fuentes</b>	Elfego Edwin Orozco	Professor	The University of San Carlos de Guatemala (Chair on Water Resources Sustainability)	Guatemala
<b>Gachet</b>	Alain	President	Radar Technologies	France
<b>Gamal</b>	Ismail Shaker	Director	Regional Centre for Training and Water Studies of Arid and Semi-arid Zones (RCTWS)	Egypt
<b>Ganoulis</b>	Jacques	Professor	UNESCO Chair "Sustainable Management of Water and Conflict Resolution" at the Aristotle University of Thessaloniki	Greece
<b>Gaye</b>	Cheikh Bécaye		Université Cheikh Anta Diop	Senegal
<b>Gedikoğlu</b>	Nefise		Ministry of Forestry and Water Affairs	Turkey
<b>Geraedts</b>	Marielle	Deputy Ambassador	Dutch Ministry of Foreign Affairs (Ambassador of the Netherlands)	Netherlands
<b>Gichuri</b>	Philip		Nairobi Water Company	Kenya
<b>Githae</b>	Ian Tandi		Ministry of Environment, Water and Natural Resources	Kenya
<b>Gonzalez</b>	Rafael	Technical manager	International Centre on Hydroinformatics for Integrated Water Resources Management, Parque Tecnológico Itaipú Binacional	Brazil/Paraguay

Family Name	First Name	Title	Organization	Country
<b>Gooch</b>	Geoffrey D.	Director	IHP-HELP Centre for Water Law, Policy and Science, University of Dundee	UK
<b>Gyampol</b>	Benjamin		Africa Academy of Sudan	Kenya
<b>Hassane</b>	Abdou			Niger
<b>Ikal</b>	Angelei		Turkana County	Kenya
<b>Ingati</b>	Albert		Kenya National Commission for UNESCO	Kenya
<b>Irungu</b>	Margaret		Ministry of Environment, Water and Natural Resources	Kenya
<b>Issa</b>	Azizou Elhadj	Parliamentarian	Pan African Parliament of the African Union	Benin
<b>Ivetic</b>	Marco		International Research and Training Centre on Urban Drainage (IRTCUD)	Serbia
<b>Jägerskog</b>	Anders	Programme Director transboundary Water Management	SIWI	Sweden
<b>Jeanna</b>	Balonishnikova		Scientific Secretary State Hydrological Institute	Russian Federation
<b>Jewitt</b>	Graham	Director	African Centre for Global Change and water research in South Africa	South Africa
<b>Juma</b>	Chrispine Omondi	Vice-Chair	IHP Bureau	Kenya
<b>Kaimenyi</b>	Jacob T.	Cabinet Secretary	Cabinet of Education, Science and Technology	Kenya
<b>Kamukwanyama</b>	Christopher		Ministry of Agriculture Water and Forestry	Namibia
<b>Kamuntu</b>	Ephraim	Minister	Ministry of Water and Environment	Uganda
<b>Kebency</b>	Jonah		NOA / SHDP	Kenya
<b>Khimulu</b>	Mary	Former Ambassador to UNESCO		Kenya
<b>Kimani</b>	Daniel	Hydrologist		Kenya
<b>Kimosop</b>	David		KWDA	Kenya
<b>Kimura</b>	Joseph H.		Commission on revenue allocation	Kenya

<b>Family Name</b>	<b>First Name</b>	<b>Title</b>	<b>Organization</b>	<b>Country</b>
<b>Kiragu</b>	Serah	Representative	Embassy of Finland	Kenya
<b>Kukuric</b>	Neno	Director	International Groundwater Resources Assessment Centre (IGRAC)	Netherlands
<b>Kumar</b>	Rakesh	Head of Division	National Institute of Hydrology	India
<b>Kuribayashi</b>	Daisuke		International Centre for Water Hazard and Risk Management (ICHARM)	Japan
<b>Kwak</b>	Young Joo		International Centre for Water Hazard and Risk Management (ICHARM)	Japan
<b>Labfaf Khaneiki</b>	Majid	Senior Expert	International Centre on Qanats and Historic Hydraulic Structures (ICQHS)	Iran
<b>Lee</b>	Sangeun	Research Specialist	International Centre for Water Hazard and Risk Management (ICHARM)	Japan
<b>Lekoomet</b>	Wilson		Kenya Water Institute	Kenya
<b>Lepuchirit</b>	Sophia		Kerio Valley Development Authority	Kenya
<b>Lima Ferreira</b>	Roberta	Secretary	Embassy of Brazil	Kenya
<b>Logan</b>	William	Deputy Director	International Center for Integrated Water Resources Management (ICIWaRM), Institute for Water Resources (IWR) of the United States Army Corps of Engineers	USA
<b>Luis</b>	Roda Nuvunga	Deputy National Director	Ministry of Science and Technology	Mozambique
<b>Maki</b>	Abdourahman Gaba	Water Resource Programme Officer	IGAD	Kenya
<b>Mancilla</b>	Gabriel	Director	Water Centre for Arid and Semi-arid Zones of Latin America and the Caribbean (CAZALAC)	Chile
<b>Marjanovic</b>	Prvoslav		Jaroslav Cerni Institute	Serbia
<b>Mbaruku</b>	A. Vyakweli	Manager / Corporate communication	Nairobi Water Company	Kenya
<b>Mbugua</b>	Agnes		Ministry of Environment, Water and Natural Resources	Kenya

Family Name	First Name	Title	Organization	Country
<b>Mebius</b>	Jaco	Policy Officer	Royal Embassy of Netherlands	Kenya
<b>Meganck</b>	Richard	Professor	HIDROEX International Centre for Education, Capacity Building and Applied Research in Water	USA
<b>Muguna</b>	Nahashon	Technical Director	Nairobi Water Company	Kenya
<b>Mulei</b>	Muia		Ministry of Environment, Water and Natural Resources	Kenya
<b>Mulongo</b>	Martin		USAID	Kenya
<b>Mulwa</b>	Bernard		Ministry of Environment, Water and Natural Resources	Kenya
<b>Murad</b>	Ahmed	Associate Professor of Hydrogeology	UAE University	UAE
<b>Muraya</b>	Boniface		Kenya Water Institute	Kenya
<b>Muritu</b>	Dennis		RWS	Kenya
<b>Musyoka</b>	Annan		Water Appeals Board	Kenya
<b>Mutorwa</b>	John	Minister	Ministry of Agriculture Water and Forestry	Namibia
<b>Mutuku</b>	Florence		Ministry of Environment, Water and Natural Resources	Kenya
<b>Nehemia</b>	Abraham		Ministry of Agriculture Water and Forestry	Namibia
<b>Nepfumbada</b>	Mbangiseni Patrick		Policy and Regulation Department of Water Affairs	South Africa
<b>Nevry</b>	Rose		UNESCO Chair "Eau, Femmes et Pouvoir de Décisions"	Cote d'Ivoire
<b>Njoka</b>	Eva		Kenya National Commission for UNESCO	Kenya
<b>Nuriyev</b>	Anar		Baku State University	Azerbaijan
<b>Nyambane</b>	Kennedy		Ministry of Environment, Water and Natural Resources	Kenya
<b>Nyanganyi</b>	Jeremiah		CTS	Kenya
<b>Nyaoro</b>	John Rao	Director of Water	Ministry of Environment, Water and Natural Resources	Kenya

Family Name	First Name	Title	Organization	Country
		Resources		
<b>Odada</b>	Eric Onyango	Professor, Advisor	UNSGAB	Kenya
<b>Pelembe</b>	Luis Augusto	Minister	Ministry of Science and Technology	Mozambique
<b>Radojevic</b>	Biljana		Jaroslav Cerni Institute	Serbia
<b>Sa Ricarte</b>	Antonio Otavio	Minister Counsellor	Embassy of Brazil	Kenya
<b>Saavedra Horita</b>	Raul	Coordinator of Hydrology	IMTA	Mexico
<b>Salisu</b>	Abdulmumin	Programme Coordinator	African Ministers' Council on Water (AMCOW)	Nigeria
<b>Seifeldin</b>	Abdalla	Chair	IHP National Committee	Sudan
<b>Sekwele</b>	Ramogale C.	Scientific Manager	Department of Water Affairs	South Africa
<b>Stalgren</b>	Patrik	First Secretary, Regional Development Programme	Embassy of Sweden	Sweden
<b>Stelbaczky</b>	Tibor	Head, EU Sectoral Policies Department	Ministry Foreign Affairs	Hungary
<b>Sugiura</b>	Ai	Research Specialist	International Centre for Water Hazard and Risk Management (ICHARM)	Japan
<b>Sumba</b>	Leunita	Principal Water Research Officer	Kenya Water Institute	Kenya
<b>Sutara</b>	Ignasius		Asia-Pacific Centre for Ecohydrology (APCE)	Indonesia
<b>Taibi</b>	Rachid	Director General	Agence nationale de Ressources Hydrauliques (ANRH)	Algeria
<b>Takeuchi</b>	Kuniyoshi	Director	ICHARM	Japan
<b>Teko Lopoyetum</b>	James	Principal Secretary	Cabinet for Environment Water and Natural resources	Kenya
<b>Temeirao de Azevedo</b>	Igor		HIDROEX International Centre for Education, Capacity Building and Applied Research in Water	Brazil
<b>Thendiu</b>	Isaac		USAID	Kenya
<b>Tindimugaya</b>	Callist		Ministry of Water and Environment	Uganda



Family Name	First Name	Title	Organization	Country
van der Valk	Michael R.		IHP National Committee of the Netherlands	Netherlands
van Oosteren	Stein	Attaché	Permanent Delegation of the Netherlands to UNESCO	Netherlands
Vanclooster	Marnik	Chair	IHP National Committee of Belgium	Belgium
Veem	Katarina		IHP National Committee of Sweden	Sweden
Veiga	Antero	Minister	Ministry of Environment Housing and Land Management	Cape Verde
Vink	Maria	First Secretary	Embassy of Sweden	Sweden
Wakhungu	Judi	Cabinet Secretary	Cabinet for Environment Water and Natural resources	Kenya
Wellens-Mensah	Julius	President of the Commission for Hydrology	World Meteorological Organization (WMO)	UN Agency
Yaya	Omogbemi O.		Regional Centre for Integrated River Basin Management (RC-IRBM)	Nigeria
Zalewski	Maciej	Director	European Regional Centre for Eco-hydrology (ERCE)	Poland
<b>UNESCO / IHP Secretariat</b>				
Kalonji	Gretchen	ADG Natural Sciences	UNESCO HQ	France
Jimenez-Cisneros	Blanca	Secretary	IHP, UNESCO HQ	France
Djelid	Mohamed	Director	UNESCO Office Nairobi	Kenya
Szollosi-Nagy	Andras	Rector	UNESCO-IHE	Netherlands
Miletto	Michaela	Coordinator a.i.	UNESCO WWAP	Italy
Imam	Bisher	Deputy Secretary	IHP, UNESCO HQ	France
Aureli	Alice	Chief of Section	IHP, UNESCO HQ	France
Doria	Miguel	Assistant Programme Specialist	IHP, UNESCO HQ	France
Mishra	Anil	Programme Specialist	IHP, UNESCO HQ	France
Demuth	Siegfried	Chief of Section	IHP, UNESCO HQ	France
Yoshida	Kazuaki	Programme Specialist	IHP, UNESCO HQ	France
Bouros	Miruna	Intern	IHP, UNESCO HQ	France

<b>Family Name</b>	<b>First Name</b>	<b>Title</b>	<b>Organization</b>	<b>Country</b>
<b>May</b>	Zelmira	Regional Hydrologist a.i. for Latin America and the Caribbean	UNESCO Office Montevideo	Uruguay
<b>Khan</b>	Shahbaz	Regional Hydrologist for Asia and the Pacific	UNESCO Office Jakarta	Indonesia
<b>Abdel-Aziz</b>	Zaki	Regional Hydrologist for Arab states	UNESCO Office Cairo	Egypt
<b>Amani</b>	Abou	Regional Hydrologist for Africa	UNESCO Office Nairobi	Kenya
<b>Meknassi</b>	Youssef Filali	Science Programme Specialist	UNESCO Office Windhoek	Namibia
<b>Manyara</b>	Peter	Programme Coordinator	UNESCO Office Nairobi	Kenya
<b>Mwakindia</b>	Kenneth		UNESCO Office Nairobi	Kenya
<b>Ochanda</b>	Alice		UNESCO Office Nairobi	Kenya
<b>Terahata</b>	Kyioko	Intern	UNESCO Office Nairobi	Kenya
<b>JOURNALISTS</b>				
<b>Boulloud</b>	Sylvie		Art City TV	France
<b>Cheptumo</b>	Kibet		Kenya News Agency	Kenya
<b>Cough</b>	Richard		Reuters	Kenya
<b>Delvaux</b>	Lilian Alwanga		The Standard Group	Kenya
<b>Gitonga</b>	Njeru		Reuters	Kenya
<b>Kahungu</b>	Evelyn		AlJazeera TV	Kenya
<b>Kamadi</b>	Geofrey		Standard media	Kenya
<b>Kavilu</b>	Shadrack		Business Weekly Kenya	Kenya
<b>Vorfeld</b>	Clara		Film maker	France
<b>Wahome</b>	Erastus		Africa Water of Environment Magazine	Kenya

## **ANNEX III – TERMS OF REFERENCE OF THE WORKING GROUP ON SUPPORTING THE IMPLEMENTATION OF THE STRATEGIC PLAN OF IHP-VIII**

### **ESTABLISHMENT**

The 20th session of the Intergovernmental Council of the International Hydrological Programme (IHP) established, in accordance with the IHP Statutes, article V, paragraphs 3 and 4, a Working Group (WG) to develop a strategy for supporting the Implementation of IHP-VIII based on Member States' input.

### **OBJECTIVES AND TASKS**

The overall objective of the working group is to develop, together with the Secretariat of IHP, a strategy for implementing IHP-VIII; with the aim to enhance contribution and cooperation of Member States in implementing IHP-VIII.

The tasks of the WG are to: coordinate with the Secretariat, Bureau and the Council the development of an implementation plan for IHP-VIII and to support the IHP Secretariat, Member States, their IHP National Committees and Focal Points, and other partners in implementing IHP-VIII by:

- Developing an overall strategy to ensure Member States' active participation as lead partners in the implementation of activities relevant to themes and focal areas of IHP-VIII, taking into account the relevant decisions related to the strengthening of IHP National Committees and focal points;
- Proposing to the IHP Council viable approaches for evaluating progress in meeting the expectation of Member States and suggesting the format they should be reported to the governing bodies of UNESCO;
- Proposing to the IHP Council, mechanisms for Member States to recommend adjustment of the implementation of IHP-VIII on the basis of the secretariat reports, if necessary;
- Defining clear criteria for introducing new activities and maintaining existing activities;
- Overseeing the establishment of WG-owned transparent information and communication means (Internet) to allow easy access to IHP-VIII, its implementing bodies and lead partners, and ensuring that such is done at no additional cost to the secretariat's regular programme budget.

### **MEMBERSHIP**

The WG will be composed initially of members of the IHP Bureau, and members of the task force that prepared the Strategic Plan for IHP-VIII.

The Secretariat will seek nominations from Member States to expand the membership to all relevant experts nominated by Member States in accordance with article V.4 of the Statutes of the Intergovernmental Council of IHP, in terms of appropriate geographic distribution and adequate regional representations. Membership is also open to nominated experts from category 1 and 2 institutes and centres, as well as water-related Chairs, ensuring also the appropriate geographic distribution and adequate regional balance.

### **CHAIR**

The WG shall elect its chair and rapporteur on its first meeting after or during each session of the Intergovernmental Council. The chair of the IHP Bureau will serve as interim chair of the WG until its first meeting.

## **DURATION**

The WG has been established by the IHP Council at its 20th session in June 2012, and will be subject to review during regular sessions of the IHP Council for the duration of IHP-VIII.

## **FUNCTIONING**

The Secretary of IHP will designate staff members of the secretariat to support the WG in carrying out its functions without burdening the regular programme resources.

The WG will interact constantly, by e-mail, video conference and telephone conferences. If needed, the WG may also meet at a location to be agreed upon. No regular programme funds can be used to support these meetings.

## **FINANCIAL IMPLICATION**

The WG, including its meetings, shall not be supported financially by UNESCO's regular programme and shall have no financial implication to the Organization. Costs will be borne directly by the Member States of WG Members and/or by Member States wishing to support the functioning of the WG through extrabudgetary funds.

ANNEX IV – IMPLEMENTATION MATRIX

## THEME 1: WATER-RELATED DISASTERS AND HYDROLOGICAL CHANGE

### BIENNIUM FOR IMPLEMENTATION

Focal Area (rephrased as Expected Result)	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennia		
		37	38	>39
<b>Focal Area 1.1:</b>  <i>Risk management as adaptation to global changes</i>	<b>SO 1.1.1:</b> Improve understanding and promotion of an approach to flood risk management based on the idea of "living with floods" instead of "fighting floods" (e.g. IFI).	<b>X</b>		
	<b>SO 1.1.2:</b> Further research and develop early warning systems that integrate enhanced monitoring capability and hydrological modelling of socio-ecological systems, which consist of natural and anthropogenic water cycles, to operationally support IWRM.	<b>X</b>	<b>X</b>	
	<b>SO 1.1.3:</b> Compile, share, and analyse data on socio-economic damages due to water-related hazards, taking into consideration the magnitude of the hydrological hazard and the social vulnerabilities.			<b>X</b>
	<b>SO 1.1.4:</b> Support Member States in developing a culture of resilience to water-related disasters and risk treatment.	<b>X</b>	<b>X</b>	
	<b>SO 1.1.5:</b> Develop the knowledge (memory) of past disasters by improving communication and understanding of the changing nature of hazards	<b>X</b>		
	<b>SO 1.1.6:</b> Support cooperation among Member States and with international organizations to advance vulnerability studies and adaptation actions related to climate change	<b>X</b>	<b>X</b>	
<b>Focal Area 1.2:</b>  <i>Understanding coupled human and natural processes</i>	<b>SO 1.2.1:</b> Implement integrated modelling of social ecological systems (SES) in water resources management decision making processes			
	<b>SO 1.2.2:</b> Improve understanding of the processes in coupled hydrological, biogeochemical, and anthropogenic systems across hydrological domains and social systems both in models and in water education.			
	<b>SO 1.2.3:</b> Promote innovative, holistic approaches to education and capacity development.			
<b>Focal Area 1.3:</b>  <i>Benefiting from global and local</i>	<b>SO 1.3.1:</b> Adapt models to the continuously changing hydrology, remote sensing and in situ data availability, and to the different needs of water managers.			

Focal Area	IHP-VIII Specific Objectives	Biennia		
<b>Earth observation systems</b>	<b>SO 1.3.2:</b> Support actions aimed to increase availability of hydrological data in near real time coming from remote sensing and in situ monitors to enable a more integrated approach to continuously calibrate/update models and water management			
	<b>SO 1.3.3:</b> Develop new analytical methods, such as sequential processing of data and diagnostic evaluation of model consistency or data assimilation and other quality-assurance tests of real-time data.			
	<b>SO 1.3.4:</b> Share experiences with data platforms to facilitate more rapid model adaptation and increase monitoring in critical areas.	<b>X</b>		
<b>Focal Area 1.4:</b> <b>Addressing uncertainty and improving its communication</b>	<b>SO 1.4.1:</b> Adopt consistent terminology and systematic approaches and guidelines for uncertainty estimation			
	<b>SO 1.4.2:</b> Research how the uncertainties of water-related risk maps are understood, communicated, and then responded to in different institutional settings.			
	<b>SO 1.4.3:</b> Develop clear guidelines, aimed at water managers, for uncertainty estimation and probabilistic mapping of water-related risks.			
	<b>SO 1.4.4:</b> Encourage the application of recent advances in uncertainty analysis and probabilistic mapping of water-related hazards and risks among government agencies, river basin authorities, and engineering consultancies.			
	<b>SO 1.4.5:</b> Encourage governmental flexibility in developing new standards and regulations in response to climate variability and changes.			
<b>Focal Area 1.5:</b> <b>Improve scientific basis for hydrology and water sciences for preparation and response to extreme hydrological events</b>	<b>SO 1.5.1:</b> Support and expand scientific research and development of methodological basis for hydrology and water sciences	<b>X</b>		
	<b>SO 1.5.2:</b> Document recent hazards induced by extreme hydrological events and share lessons learned within the water community.	<b>X</b>	<b>X</b>	
	<b>SO 1.5.3:</b> Promote among water professionals and managers the understanding of probabilistic and uncertainty analysis of extreme events.			<b>X</b>
	<b>SO 1.5.4:</b> Reset design standards of hydraulic structures considering the variations in climate and land use changes.			<b>X</b>





## THEME 1: WATER-RELATED DISASTERS AND HYDROLOGICAL CHANGE

### IMPLEMENTATION OF SOs DURING THE 37 C/5 BIENNIUM

Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
<b>Focal Area 1.1:</b>  <b><i>Risk management as adaptation to global changes</i></b>	<b>SO 1.1.1:</b> Improve understanding and promotion of an approach to flood risk management based on the idea of "living with floods" instead of "fighting floods" (e.g. IFI).	<b>“Launch” of IHP-VIII Theme 1.1.1 through NL (Nov 8<sup>th</sup> 2013)</b>  <b>Promote IHP-VIII Programme</b>  <b>Identify knowledge gaps and solutions for living with floods</b>  <b>Identify and share DRR technologies</b>  <b>Flagship programme on targeting, strategizing and benchmarking flood risk reduction at global, national and local level</b>	<b>Seminar</b>       <b>Workshop, awareness raising</b>	<b>UNESCO, The Netherlands, OECD, Dutch Ministry for Foreign Affairs, Dutch Ministry of Environment, UNISDR, ARCADIS</b>    <b>IFI, German IHP/HWRP, WMO,</b>  <b>UNESCO regional category 2 Centre in Nigeria on IRBM</b>	<b>Africa</b>  <b>Gender</b>
	<b>SO 1.1.2:</b> Further research and develop early warning systems that integrate enhanced monitoring capability and hydrological modelling of socio-ecological systems, which	<b>Develop early warning systems for the Niger Basin Authority and the Lake Chad Basin Commission</b>	<b>Software development</b>  <b>Training workshops</b>	<b>Nigeria</b>	<b>Africa</b>  <b>Gender</b>

Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
	consist of natural and anthropogenic water cycles, to operationally support IWRM.				
	<b>SO 1.1.4:</b> Support Member States in developing a culture of resilience to water-related disasters and risk treatment.	<b>Journals, Documents, Hand-outs Case studies on NBA and LCBC</b>	<b>Seminars Workshops Awareness raising</b>	<b>Nigeria, NBA, LCBC</b>	<b>Africa, Gender</b>
	<b>SO 1.1.5:</b> Develop the knowledge (memory) of past disasters by improving communication and understanding of the changing nature of hazards	<b>Development of standards Case study</b>	<b>Capacity building Training workshop and seminar</b>	<b>Mozambique, Kenya</b>	<b>Africa, Gender</b>
	<b>SO 1.1.6:</b> Support cooperation among Member States and with international organizations to advance vulnerability studies and adaptation actions related to climate change	<b>MOU between NBA (Niger Basin Authority) LCBC (Lake Chad Basin Commission (LCBC) on collaboration on the development of a risk management strategy</b>	<b>Workshop High level meeting</b>	<b>Nigeria, NBA, LCBC, WMO</b>	<b>Africa Gender</b>
<b>Focal Area 1.3: Benefiting from global and local Earth</b>	<b>SO 1.3.4:</b> Share experiences with data platforms to facilitate more	<b>Establish an open internet platform for access of data through a global</b>	<b>Awareness raising</b>	<b>WMO, German IHP/HWRP</b>	

Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
<b>observation systems</b>	rapid model adaptation and increase monitoring in critical areas.	<b>network of data centres (GTNH)</b>			
<b>Focal Area 1.4:</b>  <b>Addressing uncertainty and improving its communication</b>	<b>SO 1.4.1:</b> Adopt consistent terminology and systematic approaches and guidelines for uncertainty estimation	<b>i. Literature review of methods for estimating the uncertainty of most frequently used techniques for stage-discharge relation.</b>  <b>ii. Identification and recommendation of general methodology to be used in the estimation of the uncertainty of determined discharge.</b>	<b>A manual on methodology for estimation of discharge.</b>	<b>WMO CHy Expert Group</b>	
	<b>SO 1.4.3:</b> Develop clear guidelines, aimed at water managers, for uncertainty estimation and probabilistic mapping of water-related risks.	<b>Review and report on updated techniques of large-scale flood inundation analysis and prepare material for Manual on Flood Risk Mapping.</b>	<b>Manual on Flood Risk Mapping.</b>	<b>Existing material in Secretariat and input from OPACHES WMO</b>	
<b>Focal Area 1.5:</b>  <b>Improve scientific basis for hydrology and water sciences for preparation and</b>	<b>SO 1.5.1:</b> Support and expand scientific research and development of methodological basis for hydrology and	<b>Journal publication</b>	<b>International conference</b>	<b>India WMO</b>	

Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
response to extreme hydrological events	water sciences				
	<b>SO 1.5.2:</b> Document recent hazards induced by extreme hydrological events and share lessons learned within the water community.	<b>Enhance knowledge on modelling</b>  <b>Report on recent hazards (floods and drought)</b>  <b>Publications, communications</b>	<b>Workshop and seminar</b>  <b>Conference</b>	<b>German IHP/HWRP</b>  <b>Kenya</b>  <b>River Commissions</b>  <b>Kenya with Kenya dealing with disaster management</b>	<b>Africa</b>  <b>Gender</b>

**THEME 2 – ENHANCE MEMBER STATES’ CAPACITY TO IMPROVE  
GROUNDWATER RESOURCES MANAGEMENT IN A CHANGING ENVIRONMENT**

**BIENNIUM FOR IMPLEMENTATION**

Focal Area (rephrased as Expected Result)	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennia		
		37	38	>39
<b>Focal Area 2.1 - Enhancing sustainable groundwater resources management</b>	<b>SO 2.1.1:</b> Promote measures to address the principles of sustainable management of groundwater resources and incorporate them into National Water Master Plans as a basic country document for integrated management and environmentally sound protection of water resources.		X	
	<b>SO 2.1.2:</b> Address methods for sound development, exploitation and protection of groundwater resources to minimize social and ecological side-effects on populations and water supply systems and propose appropriate measures for rehabilitation / replenishment of depleted aquifers.		X	
	<b>SO 2.1.3:</b> Manage and balance competing demands for groundwater resources especially in arid and semi-arid regions to reduce risks associated with drought impact by use of relevant models and considering limited availability of groundwater data in developing countries.		X	
	<b>SO 2.1.4: Develop new groundwater resources maps</b> and visualizations at various scales, related guidelines, standards, and methods for the assessment, mapping and presentation of groundwater resources in areal extent and three-dimensional nature (WHYMAP).	X		
	<b>SO 2.1.5: Strengthen groundwater governance policy</b> and water user rights in emergency situations (natural disasters, human induced pollution events) and increase public awareness in the management of emergency groundwater resources based on historical experience and knowledge.	X		
<b>Focal Area 2.2 - Addressing strategies for management of aquifers recharge</b>	<b>SO 2.2.1:</b> Integrate managed aquifer recharge			X
	<b>SO 2.2.2:</b> Develop and apply methods to assess impacts of recharge structures on water availability and quality, social and economic resilience and local ecosystems with special focus on appropriate MAR methodologies and techniques for conservation and augmentation of safe drinking water supplies in developing countries in arid and semi-arid regions.			X

	<b>SO 2.2.3:</b> Evaluate the risks and benefits of recycling of appropriately treated urban waste and storm water for aquifer recharge to produce safe irrigation or drinking water supplies.			<b>X</b>
<b>Focal Area 2.3 - Adapting to the impacts of climate change on aquifer systems</b>	<b>SO 2.2.4:</b> Enhance governance capacities and institutional and legal frameworks to aid effective MAR Programme implementation.			<b>X</b>
	<b>SO 2.2.5:</b> Develop a scientific basis for the prevention and management of clogging in recharge systems to increase confidence in MAR for sustaining the quantity of water supplies via aquifers replenishment and improve measurement methods, models, knowledge of biochemical processes and fate of pathogens and organics in MAR systems			<b>X</b>
	<b>SO2.3.1: Identify and evaluate the potential influence of climate change on different types of aquifers</b> under different climatic, geographical, hydrogeological and hydrochemical conditions and provide relevant data for appropriate models for predicting and assessing climate change impacts on specific aquifer systems (e.g. shallow, coastal, karstic, deep, non-renewable).	<b>X</b>		
	<b>SO2.3.2:</b> Increase public awareness about importance and vulnerability of groundwater resources and propose adaptation measures in the context of climate change influence on aquifers in developing countries, preferably in arid and semi-arid regions.	<b>X</b>		
	<b>SO 2.3.3:</b> Promote the increase of groundwater storage in aquifers in order to create more water security in view of potential climate change impact and conduct case studies preferably focused on regions regularly affected by droughts.		<b>X</b>	
	<b>Focal Area 2.4 – Promoting groundwater quality protection</b>	<b>SO 2.3.4:</b> Expand and integrate ground and satellite-based monitoring methods in order to better identify climate change impacts on groundwater recharge and storage and provide data for evaluation of paleo, present and future markers of sea water intrusion in coastal aquifers.	<b>X</b>	
	<b>SO 2.3.5:</b> Improve/develop appropriate methodologies and models for predicting and assessing climate change impact on groundwater resources at regional and small islands scales	<b>X</b>		
	<b>SO 2.4.1:</b> Propose basic principles for sustainable		<b>X</b>	

	groundwater quality management and groundwater protection policy with special focus on developing countries and link sustainable sanitation with groundwater protection in order to secure the quality of groundwater resources for current and future uses.			
	<b>SO 2.4.2:</b> Outline the basic criteria for the assessment of groundwater quality and vulnerability in regions repeatedly affected by climatic, hydrological and geological extremes (GWES).	X		
	<b>SO 2.4.3:</b> Improve numerical and statistical models for groundwater quality and hydrochemical evaluation and mathematical simulation models describing pollutants transport and transformation processes that take place in the soil and groundwater system			X
	<b>SO 2.4.4:</b> Strengthen national groundwater quality monitoring networks and site specific monitoring systems around pollution sources, in public groundwater supplies protection zones and in groundwater dependent ecosystems.		X	
<b>Focal Area 2.5 - Promoting management of transboundary aquifers</b>	<b>SO 2.4.5:</b> Increase support for the study of the origin, behavior, and processes occurring in groundwater environments polluted by hazardous substances of natural origin (arsenic, fluoride) or by specific organic chemicals (e.g. pharmaceutical products) and propose cost-effective soil and groundwater pollution remediation techniques..			X
	<b>SO 2.5.1:</b> Finalize assessment of transboundary aquifers on the world-wide scale including all components of ISARM Programme and develop a global groundwater databases and knowledge-based systems within IGRAC Global Groundwater Monitoring Network Programme to assist Member States set up their own groundwater information services and provide data for periodic assessment of global and regional groundwater resources.	X		
	<b>SO 2.5.2:</b> Implement the UNGA Resolution on the Law of Transboundary Aquifers 63/124.	X		
	<b>SO 2.5.3:</b> Support African countries to improve their cooperation and mutual understanding, strengthen their capacities and develop regulations for the sustainable management of transboundary aquifers.	X		

**THEME 2: GROUNDWATER IN A CHANGING ENVIRONMENT**

**IMPLEMENTATION OF SOs DURING THE 37 C/5 BIENNIUM**

Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
Focal Area 2.1 - Enhancing sustainable groundwater resources management	SO 2.1.4: Develop new groundwater resources maps and visualizations at various scales, related guidelines, standards, and methods for the assessment, mapping and presentation of groundwater resources in areal extent and three-dimensional nature (WHYMAP).	Production of Groundwater Related Thematic Maps	Mapping	Re-Confirm existing agreement with BGR  IGRAC	WHYM AP Africa
	SO 2.1.5: Strengthen groundwater governance policy and water user rights in emergency situations (natural disasters, human induced pollution events) and increase public awareness in the management of emergency groundwater resources based on historical experience and knowledge.	Guidelines and Recommendations for Groundwater Governance	Develop guidelines and consider how to include Groundwater Governance within Water Governance and IWRM  Emergency Situation will be considered in the apposite Focal area	GEF, FAO, IAH, OCDE, INBO	Global
Focal Area 2.3 - Adapting to the impacts of climate change	SO2.3.1: Identify and evaluate the potential influence of climate change	Improved consistent soil and groundwater global dataset to		IAH  NASA, GRAPHIC,	Africa



Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
on aquifer systems	on different types of aquifers under different climatic, geographical, hydrogeological and hydrochemical conditions and provide relevant data for appropriate models for predicting and assessing climate change impacts on specific aquifer systems (e.g. shallow, coastal, karstic, deep, non-renewable).	<b>calibre Models for prediction and quantification of groundwater systems response to the impact of climate change.</b>		<b>IGRAC</b>	
	<b>SO2.3.2:</b> Increase public awareness about importance and vulnerability of groundwater resources and propose adaptation measures in the context of climate change influence on aquifers in developing countries, preferably in arid and semi-arid regions.	<b>To be defined</b>	<b>To be defined</b>	<b>To be defined</b>	<b>To be defined</b>
	<b>SO 2.3.4:</b> Expand and integrate ground and satellite-based monitoring methods in order to better identify climate change impacts on groundwater recharge and storage and provide data for evaluation of paleo, present and future markers of sea water intrusion in coastal aquifers.	<b>Case studies</b>	<b>GRAPHIC Network on experts</b>	<b>NASA</b>	

Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
	<b>SO 2.3.5:</b> Improve/develop appropriate methodologies and models for predicting and assessing climate change impact on groundwater resources at regional and small islands scales	<b>Case studies of management of Groundwater resources in Coastal zones Published</b>	<b>Experts group and case studies selection</b>	<b>RAMSAR, IHP National Committees, IAH, Centres, Chairs</b>	<b>Global</b>
<b>Focal Area 2.4 – Promoting groundwater quality protection</b>	<b>SO 2.4.2:</b> Outline the basic criteria for the assessment of groundwater quality and vulnerability in regions repeatedly affected by climatic, hydrological and geological extremes (GWES).	<b>Outline of the basic criteria for the assessment of groundwater quality and vulnerability in regions repeatedly affected by climatic, hydrological and geological extremes (GWES) published.</b>	<b>Set up of experts network</b>  <b>Case studies identified</b>		<b>Global Hotspot at risk</b>
	<b>SO 2.4.4:</b> Strengthen national groundwater quality monitoring networks and site specific monitoring systems around pollution sources, in public groundwater supplies protection zones and in groundwater dependent ecosystems.	<b>Characterization of Costal Aquifers dependent Wetlands published</b>	<b>Guidelines prepared and government representatives and other host country experts improve their knowledge and understanding of groundwater quality monitoring</b>	<b>RAMSAR, IAH</b>	<b>Africa and Global and Gender</b>
<b>Focal Area 2.5 - Promoting management of transboundary</b>	<b>SO 2.5.1:</b> Finalize assessment of transboundary aquifers on the world-wide scale	<b>Set of indicators to be applied to 1 selected case study prepared and capacity of</b>	<b>Workshops to develop set of indicators and bringing IHP National</b>	<b>GEF, UNEP, Swiss Development Cooperation, IAH, IHP</b>	

Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
<b>aquifers</b>	including all components of ISARM Programme and develop a global groundwater databases and knowledge-based systems within IGRAC Global Groundwater Monitoring Network Programme to assist Member States set up their own groundwater information services and provide data for periodic assessment of global and regional groundwater resources.	<b>member states to assess shared aquifers Increased</b>	<b>Committees into discussion about data sharing with the support of IGRAC Global Groundwater Monitoring Network</b>	<b>National Committees, Regional Intergovernmental Institutions, IGRAC, UNECE, OAS, SADEC</b>	
	<b>SO 2.5.2:</b> Implement the UNGA Resolution on the Law of Transboundary Aquifers 63/124.	<b>Decision-making informed and Improved national and regional polices</b>	<b>Organization of Workshops for sensitization of decision makers</b>	<b>UNECE, IAH, Dundee Centre</b>	
	<b>SO 2.5.3:</b> Support African countries to improve their cooperation and mutual understanding, strengthen their capacities and develop regulations for the sustainable management of transboundary aquifers.	<b>Execution of the Stampriet transboundary aquifer as case study and strengthened capacity of key institutions to maintain and develop skills in the different aspects of operating and managing transboundary aquifers programme</b>	<b>Seminars, case studies and Dissemination of information to participating countries' decision-makers</b>	<b>IGRAC and other centres, chairs, Regional Economic Commissions</b>	<b>Africa</b>
	<b>SO 2.5.4:</b> Map and evaluate with the support of	<b>Maps and Case studies prepared</b>	<b>Experts groups for the Selection</b>	<b>BGR, IGRAC, IAH</b>	<b>global</b>

Focal Area	IHP-VIII Specific Objectives  (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
	WHYMAP and IGRAC the relation between international river systems and transboundary aquifers.		of Case studies		
	<b>SO 2.5.5:</b> Coordinate activities for parallel UNESCO IHP activities that relate to transboundary aquifers and support other initiatives on transboundary waters such as e.g. the transboundary water programme at the Institute for Water and Watersheds ( <a href="http://www.transboundarywaters.orst.edu/index.html">http://www.transboundarywaters.orst.edu/index.html</a> )	<b>Support prevention conflicts tools and the implementation of the 97 Watercourses Convention and 92 Water Convention in non UNECE countries</b>	<b>Seminars jointly organized with UNECE</b>	<b>UNECE, UNEP, UNDP, Institute for Water and Watersheds</b>	global

**THEME 3: ADDRESSING WATER SCARCITY AND QUALITY, BIENNIUM FOR IMPLEMENTATIONS**

**BIENNIUM FOR IMPLEMENTATION**

Focal Area (rephrased as Expected Result)	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennium		
		37	38	39
<b>Focal Area 3.1 - Improving governance, planning, management, allocation, and efficient use of water resources</b>	SO 3.1.1: Promote catchment-based water resources planning and decision making, and promote a policy shift towards water demand management and its integration in the policies of the various water use sectors.		X	
	SO 3.1.2: Promote good water governance practice, including shared vision planning and adaptive management to enhance rational water allocation and implement water use policies and regulations.			X
	SO 3.1.3: Promote sustainable conjunctive use of groundwater and surface water for meeting various needs under changing scarcity conditions and implement adaptation measures to climate change.	X		
	SO 3.1.4: Understand and promote valuation and costing of water as a tool for cost-effective decision making in water resources management.			X
	SO 3.1.5: Promote water use efficiency in the various water use sectors through traditional and modern technologies.			X
<b>Focal Area 3.2 - Dealing with present water scarcity and developing foresight to prevent undesirable trends</b>	SO 3.2.1: Predict and plan for water scarcity for a sustainable future through building international and regional consensus on the way of addressing water scarcity, better measure and account for freshwater, developing and improving predictive water planning and management tools, enhancing water management and sharing during scarcity periods, improving understanding of water-related services and ecosystem needs for water, improving valuation of water, designing schemes in order to live with scarcity in view of the on-going climate change and exploring new forms of resource management.	X		
	SO 3.2.2: Develop alternative and environmentally and economically sound non-conventional water resources (e.g., desalination and treated wastewater) as well as conventional water augmentation techniques (water transfer, water reuse, water harvesting) through encouraging world-wide use of technologies and successful experiences for enhancing water supply.	X		
	SO 3.2.3: Develop and promote innovative water-saving technologies and tools and enhance their public acceptance as an adaptation measures for scarcity.			X
<b>Focal Area 3.3 - Promoting tools for stakeholders involvement and awareness and conflict resolution</b>	SO 3.3.1: Engage all stakeholders (NGOs, private sector, local communities, etc.) in sustainable water resources use and management.			X
	SO 3.3.2: Train, communicate, and raise stakeholders' awareness of water security issues.			X
	SO 3.3.3: Empower education, universities and research institutes to address issues of water scarcity, including efficient water use and conservation.			X
	SO 3.3.4: Strengthen education and training in inter-disciplinary policy and decision making for water			X

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennium		
	professionals and decision makers under scarcity conditions.			
	SO 3.3.5: Promote and support capacity development for decision makers in managing conflicts over water resources use under scarcity conditions induced by either human activities and/or climatic change.			X
<b>Focal Area 3.4 - Addressing water quality and pollution issues within an IWRM framework - improving legal, policy, institutional, and human capacity</b>	SO 3.4.1: Improve the understanding and knowledge of the quality of world's water resources for human wellbeing through monitoring and assessment of quality of world's water resources, strengthening the knowledge base and information, data management and sharing	X		
	SO 3.4.2: Assess the current knowledge base and information about water quality to establish management priorities			X
	SO 3.4.3: Integrate quality-quantity management and science-based decision making.			X
	SO 3.4.4: Improve water pollution licensing and enforcement systems for sustainability through developing water quality regulations, guidelines, and standards and promoting their implementation and improving enforcement and compliance to various standards and regulations.			X
	SO 3.4.5: Enhance legal, policy and institutional frameworks for improved water quality management.		X	
	SO 3.4.6: Build institutional and human capacity in water quality management and water pollution control (strengthen scientific and technical cooperation).			X
	<b>Focal Area 3.5 - Promoting innovative tools for safety of water supplies and controlling pollution</b>	SO 3.5.1: Develop and promote new innovative tools for water quality management and pollution control		
SO 3.5.2: Promote joint research on particular water quality issues and challenges through improving the understanding and scientific knowledge on new and emerging pollutants, and monitoring/risk assessment, regulations, control/attenuation.		X		
SO 3.5.3: Promote integrated water pollution management through prevention, reduction and restoration of polluted water, wastewater management and management of impacts of land-use changes.				X
SO 3.5.4: Share research findings and successful experiences in reducing pollution and restoring water quality among managers and others participating in watershed governance.				X

### THEME 3: ADDRESSING WATER SCARCITY AND QUALITY

#### IMPLEMENTATION OF SOs DURING THE 37 BIENNIUM

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
<b>Focal Area 3.1 - Improving governance, planning, management, allocation, and efficient use of water resources</b>	<b>SO 3.1.3:</b> Promote sustainable conjunctive use of groundwater and surface water for meeting various needs under changing scarcity conditions and implement adaptation measures to climate change.	Identify Best practises from different regions Lesson learned from other countries Guidelines Policy briefs	Case studies, Research, training and capacity building, awareness raising Workshop and Seminar	IHP National committees, International agencies UN System (FAO) IAHS, IAHS and other NGOs University Government, private company, category 2 centre, chairs WWAP	Africa Gender
<b>Focal Area 3.2 - Dealing with present water scarcity and developing foresight to prevent undesirable trends</b>	<b>SO 3.2.1:</b> Predict and plan for water scarcity for a sustainable future through building international and regional consensus on the way of addressing water scarcity, better measure and account for freshwater, developing and improving predictive water planning and management tools, enhancing water management and sharing during scarcity periods, improving understanding of water-related services and ecosystem needs for water, improving valuation of water, designing schemes in order to live with scarcity in view of the on-going climate change and exploring new forms of resource management.	Models and scenarios (socio economic) on appropriate situations Policy briefs	Data collection verification Stakeholder consultation Software development Research, capacity building, Training, workshop seminar Awareness raising activities	IHP national Committees Universities, research centres, UNESCO cat II and chairs, WWAP Governments IAHS	Africa Gender
	<b>SO 3.2.2:</b> Develop alternative and environmentally and economically sound non-conventional water	Guidelines Policy briefs Manuals Case studies	Awareness raising Capacity Building Training	Researcher Universities Category 2 centres, Chairs	AFRICA GENDER

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
	resources (e.g., desalination and treated wastewater) as well as conventional water augmentation techniques (water transfer, water reuse, water harvesting) through encouraging world-wide use of technologies and successful experiences for enhancing water supply.		workshop and Seminar Interaction with policy makers and decision makers	Governments Un and other international institutions	
<b>Focal Area 3.4 - Addressing water quality and pollution issues within an IWRM framework - improving legal, policy, institutional, and human capacity</b>	<b>SO 3.4.1:</b> Improve the understanding and knowledge of the quality of world's water resources for human wellbeing through monitoring and assessment of quality of world's water resources, strengthening the knowledge base and information, data management and sharing	Data base Reports Methodologies Baseline	Prepare guideline for national data collection Research Capacity building Workshops, Training Seminar and awareness raising	IHP national committees Governments Research institutes, NGOS, category 2 centres and chairs UN agencies WWAP	Africa Gender
<b>Focal Area 3.5 - Promoting innovative tools for safety of water supplies and controlling pollution</b>	<b>SO 3.5.2:</b> Promote joint research on particular water quality issues and challenges through improving the understanding and scientific knowledge on new and emerging pollutants, and monitoring/risk assessment, regulations, control/attenuation.	Technical reports, case studies Baseline methodologies	Research Data collection Verification Education and capacity building Workshop training seminar Awareness raising	IHP National Committees Universities, Research Centres, Category 2 centres, Chairs NGOS	Africa Gender



**THEME 4: WATER AND HUMAN SETTLEMENTS OF THE FUTURE**

**BIENNIUM FOR IMPLEMENTATION**

Focal Area (rephrased as Expected Result)	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennium		
		37	38	>39
<b>Focal Area 4.1- Game changing approaches and technologies</b>	<b>SO 4.1.1:</b> Take stock of the various existing approaches to urban water management starting from conventional approaches to more distributed approaches, qualifying their performance according to city size and region. Urban water management plans should include long-term funding solutions to build and maintain water and wastewater infrastructure.	X		
	<b>SO 4.1.2:</b> Elaborate on the concept of water-machine within the urban environment typifying the ways in which it could be implemented, the conditions under which this potential can be maximized, and the likely consequences in cities of the developed and developing world, by updating and qualifying the current and potential non-conventional sources or efficiency-enhancing means for providing urban water.		X	X
	<b>SO 4.1.3:</b> Promote a fuller understanding of the role of urban groundwater – as a source of water in the conventional sense, but also the risks of uncontrolled extraction of contaminated groundwater under the city itself and of the dynamic character often missed and entrain other risks such as rising water table because of leakage, potential contamination of drinking water when the water table rises above the sewage and/or water supply network			X
	<b>SO 4.1.4:</b> Develop a systematic inventory of existing natural systems treatments qualifying their performance and potential in the urban environment, possible direction in the intensifying their application and investigating new approaches, especially those linking to the application of ecohydrology concepts.			X
	<b>SO 4.1.5:</b> Analyse the state-of-the-art in the design of smart networks applicable to urban water management likely condition in which they will prosper and their potential benefits, especially in cities of developing countries.	X		X
<b>Focal Area 4.2 - System wide changes for integrated management approaches</b>	<b>SO 4.2.1:</b> Study the potential application of flexible and adaptive design to urban water management, identify promising directions and propose ways and means to develop and apply meaningfully this concept in cities in diverse socio-economic, cultural and physical environments, considering the possible consequences of global changes, including demographics, climate change, land use change, changing consumption patterns and technological advances. The presence of slums and marginal peri-urban areas will be integrated into the analysis			X

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennium		
	considering the attendant institutional, social and economic implications.			
	<b>SO 4.2.2:</b> Perform comparative studies of urban metabolism models with significance to urban water management and potential applicability.	X		
	<b>SO 4.2.3:</b> Compile and analyse cases where water sensitive urban design has been applied since its inception over 20 years ago, evaluate the state-of-the-art, including restoration of urban streams, and recommend the relevant applications, particularly in cities of the developing world.			X
	<b>SO 4.2.4:</b> Identify the characteristics of existing transition models: principles, objectives, scope, and required information; select case studies with description of current and desired scenarios and evaluate results from the application of models, including the possibility of “leapfrogging” to accelerate development, particularly in developing countries.		X	
	<b>SO 4.2.5:</b> Support regional activities and inter-regional cooperation in aspects addresses under this focal area, incorporating relevant regional initiatives such as SWITCH-in-Asia, and the contribution of the regional and international water-related centres under the auspices of UNESCO and of UNESCO-IHE Institute for Water Education.	X	X	X
<b>Focal Area 4.3 - Institution and leadership for beneficiation and integration</b>	<b>SO 4.3.1:</b> Examine the appropriate level of centralization and decentralization of urban water management according to the prevailing technical considerations and of economies of scale and necessary conditions of autonomy for the decentralized scheme in order to insure viability and effectiveness, considering case studies.			X
	<b>SO4.3.2:</b> Develop a conceptual framework of institutional structures conducive to the adoption of more effective management that enables the necessary transitional process and introduction of innovative practices, including effective conflict resolution mechanisms and examination of the appropriate level of centralization/decentralization schemes (From 4.3.1)			X
	<b>SO 4.3.3:</b> Investigate the current and potential links of effective urban water management to the generation of green growth, including the introduction of water beneficiation processes and the impact of urban agriculture.	X		
	<b>SO 4.3.4:</b> Promote capacity development of a new generation of urban leaders with a wider vision of the role of the city processes with the economy and the interaction between the urban infrastructure for the different urban services, and sensitive to appropriate innovations, placing a special emphasis on urban water management aspects.		X	X
	<b>SO 4.3.5:</b> Carry out a survey of current participatory approaches applicable to urban water management and how participating stakeholders can effectively		X	

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennium		
	be integrated into the decision-making process and into potential transitioning processes under various environments, and formulate appropriate conclusions			
<b>Focal Area 4.4 -Opportunities in emerging cities in developing countries</b>	<b>SO 4.4.1:</b> Perform a state-of-the-art review of existing urban water systems in developing countries, their evolution and constraints (physical, technical, institutional, financial, political, social); identify responsible national institutions as well relevant intervening international cooperation institutions, regional and intergovernmental organizations, and NGOs	X	X	
	<b>SO 4.4.2:</b> Characterize a representative cross-section of cities regarding size, environmental, social, cultural, institutional and developmental conditions and aspects relevant to urban water management.		X	
	<b>SO 4.4.3:</b> Develop a set of criteria for identifying the cities that may offer favourable conditions for rapid urban water development and of “leapfrogging” to Integrated Urban Water Management and undertake a pilot project in cooperation with the relevant institutions and governments. Identify those elements that lend themselves to replication in developing countries in other regions of the world.		X	X
	<b>SO 4.4.4:</b> Organize a series of well-designed events in target countries and sub-regions in order to obtain significant responses from stakeholders to the above activities, to impart capacity building sessions – these would need to closely coordinated with the local authorities, regional organizations such AMCOW (African Ministers’ Council on Water), ADB, AfDB, and UN organizations such as UN-Habitat.	X	X	X
<b>Focal Area 4.5 – Integrated development in rural human settlement</b>	<b>SO 4.5.1:</b> Identify appropriate awareness raising programme for water security and safe sanitation that are suitable rural population, especially where the majority of the population are dominated by elderly people, women and children and identify public participation approaches that take into account the construct of the communities, which are strongly influenced by their ethnic, cultural and religious beliefs.	X	X	
	<b>SO 4.5.2:</b> Identify appropriate technology for agriculture, water and sanitation services that can be accepted, developed, operated and maintained by the local rural people, who often lack education/capacity and resources.		X	
	<b>SO 4.5.3:</b> Propose a new business model of infrastructure development and investment specifically for the rural poor that ensures the sustainable infrastructure development and operation (e.g. centralized subsidy model versus PPP model or any modification of them), and infrastructure development strategies that reconcile the conflicting domestic and agricultural water			X

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennium		
		demand and efficient use and reuse of resources (e.g. Multiple Use Services -MUS- approach).		
	<b>SO 4.5.4:</b> Study on new institutional framework that can address the issues of rural area in an integrated approach and identify enabling institutional and governance structures (e.g. institution, decentralization and devolution, level of participation of NGOs' and community organization, policies and regulation, cost recovery and subsidies).		<b>X</b>	

**THEME 4: WATER AND HUMAN SETTLEMENTS OF THE FUTURE  
IMPLEMENTATION OF SOs DURING THE 37 BIENNIUM**

Note: the key outputs and interventions were subsequently added by the session rapporteur as they were not defined during the meeting.

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
<b>Focal Area 4.1- Game changing approaches and technologies</b>	<b>SO 4.1.1:</b> Take stock of the various existing approaches to urban water management starting from conventional approaches to more distributed approaches, qualifying their performance according to city size and region. Urban water management plans should include long-term funding solutions to build and maintain water and wastewater infrastructure.	Case studies on the formulation of urban water management plans that exemplify existing approaches to urban water management are identified in selected cities. Policy briefs are developed in light of the outcome of detailed comparative analyses of selected case studies.  Deliverables: 1. Publications 2. Policy review 3. Technical reports and guidelines	Workshop on existing approaches to urban water management Case Studies analysis	Urban water Centres IWRM Centres and Chairs SWITCH C40Cities	
	<b>SO 4.1.5:</b> Analyse the state-of-the-art in the design of smart networks applicable to urban water management likely condition in which they will prosper and their potential benefits, especially in cities of developing countries.	State of the Art in smart networks is reviewed and Potential for application in cities in developing countries is explored. Possible future trends in smart networks are explored, particularly in supporting transitioning of urban water management models	1. Technical workshop 2. Conference sessions (TBD) 3. Training workshop on smart networks  4. Development of community of practice platform	C40 Cities SWITCH-in ASIA Urban Water Management and IWRM centres, especially IWSSM (Korea).  Potential UN-Water Partners UN-Habitat UNDP UNEP  Outreach to academics and regional city networks	Not necessarily but likely through targeted outreach in Africa through community of practice (networks)
<b>Focal Area 4.2 - System wide</b>	<b>SO 4.2.2:</b> Perform				

<b>changes for integrated management approaches</b>	comparative studies of urban metabolism models with significance to urban water management and potential applicability.				
	<b>SO 4.2.5:</b> Support regional activities and inter-regional cooperation in aspects addresses under this focal area, incorporating relevant regional initiatives such as SWITCH-in-Asia, and the contribution of the regional and international water-related centres under the auspices of UNESCO and of UNESCO-IHE Institute for Water Education.	Capacity of member states in formulating participatory approaches to urban water management is enhanced through regional and inter-regional cooperation led by UNESCO water family centres and IHE	Training workshops in three regions (Africa, LAC, and Arab States) in collaboration with SWITCH-in ASIA and transferring experience from SWITCH-in ASIA to other regions 3 Regional Consultations Establishment of new Network and/or community of practice in participatory urban water management	SWITCH SWITCH-ASIA UNESCO Relevant Centres and Chairs Regional Alliances of Urban Areas	Very Likely
<b>Focal Area 4.3 - Institution and leadership for beneficitation and integration</b>	<b>SO 4.3.3:</b> Investigate the current and potential links of effective urban water management to the generation of green growth, including the introduction of water beneficitation processes and the impact of urban agriculture.				
<b>Focal Area 4.4 - Opportunities in emerging cities in developing countries</b>	<b>SO 4.4.1:</b> Perform a state-of-the-art review of existing urban water systems in developing countries, their evolution and constraints	A wide set of case studies in Urban Water Management Systems in Developing countries is identified and developed	Develop outreach programme to concerned NGO, National Institutions, and regional organizations	Initially UNESCO-Water related centres (URBAN WATER CENTRES and IWRM) NGOs, and UNESCO	

	(physical, technical, institutional, financial, political, social); identify responsible national institutions as well as well relevant intervening international cooperation institutions, regional and intergovernmental organizations, and NGOs.	Network with national institutions and other intervening entities including NGOs with f  Deliverables Technical Publications and reports Briefs and Outreach material	2 Regional workshops and consultations on urban water management systems and mechanism for assessment and evaluation metrics	Water-Family entities concerned with Urban Water Management Systems and sustainability in developing countries.	
	<b>SO 4.4.4:</b> Organize a series of well-designed events in target countries and sub-regions in order to obtain significant responses from stakeholders to the above activities, to impart capacity building sessions – these would need to closely coordinated with the local authorities, regional organizations such as AMCOW (African Ministers' Council on Water), ADB, AFDB, and UN organizations such as UN-Habitat.	Capacity building on stakeholder participation.	Outreach activities (surveys, public meetings) organized in support of identifying and enhancing stakeholder participation in urban water management plans, implementation , and actions. Please see implementation of 4.4.1 for 37 C	TBD	
<b>Focal Area 4.5 – Integrated development in rural human settlement</b>	<b>SO 4.5.1:</b> Identify appropriate awareness raising programme for water security and safe sanitation that are suitable for rural population, especially where the majority of the population are dominated by	Effective Outreach and awareness raising material on fresh water and sanitation are developed that takes into account the specific structure and characteristics of rural communities.	Awareness raising campaign on water and sanitation in rural communities are launched in four 6 countries in Africa, Latin America and Asia	Involvement of PCCP and UNESCO Partners	UNESCO Chairs on Gender

	elderly people, women and children and identify public participation approaches that take into account the construct of the communities, which are strongly influenced by their ethnic, cultural and religious beliefs.				
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**THEME 6: WATER EDUCATION, KEY FOR WATER SECURITY**

**BIENNIUM FOR IMPLEMENTATION**

Focal Area (rephrased as Expected Result)	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Biennia		
		37	38	>39
<b>Focal Area 6.1 - Enhancing tertiary water education and professional capabilities in the water sector.</b>	<b>SO 6.1.1:</b> Support the enhancement of tertiary water education capacities, particularly in developing countries.	X		
	<b>SO 6.1.2:</b> Promote and assist the development of interdisciplinary and multidisciplinary curricula and research initiatives linked to water-related programs in higher education and research institutions	X		
	<b>SO 6.1.3:</b> Strengthen collaboration between UNESCO-IHE Institute for Water Education, the UNESCO category 2 water centres and UNESCO water-related Chairs, other UN system agencies and programmes, and existing international water-related education programmes.	X		
	<b>SO 6.1.4:</b> Promote and support strategies and actions for continuous professional development of water scientists, engineers, managers and policy makers in the water sector.			X
	<b>SO 6.1.5:</b> Develop interdisciplinary materials, such as guidelines, briefing papers, prototype professional development programmes and case studies connected with water education for water security, linked to the implementation of other themes and programmes of IHP.			X
<b>Focal Area 6.2 - Addressing vocational education and training of water technicians.</b>	<b>SO 6.2.1:</b> Support specific initiatives in developing Member States to sustain and improve water-related vocational education. Implement integrated modelling of social ecological systems (SES) in water resources management decision making processes	X		
	<b>SO 6.2.2:</b> Survey, prepare and analyse case studies of examples of leading practices in sustainable water management in water technicians training and support the preparation of guidelines and Briefing Papers based on them.			X
	<b>SO 6.2.3:</b> Develop efforts within UNESCO and in partnership with other UN system agencies and programmes to maintain and expand the training of technicians in water-related fields.		X	
<b>Focal Area 6.3 – Water education for children and youth.</b>	<b>SO 6.3.1:</b> Capacitate teachers and informal educators on water issues at the local, regional and global scales.		X	
	<b>SO 6.3.2:</b> Support and guide the development of improved tools for the teaching of water issues in the K-12 curriculum.	X		
	<b>SO 6.3.3:</b> Guide and provide technical support to national/regional demonstration projects and development of prototype materials at national/regional levels in selected Member States/regions.		X	
	<b>SO 6.3.4:</b> Provide technical assistance to the development of interdisciplinary support materials, such as guidelines, briefing papers, and case studies on leading practices in K-12 water education, and curriculum development on water resources, in coordination with other Sectors of UNESCO..			X
<b>Focal Area 6.4 – Promoting awareness of water issues through informal water education</b>	<b>SO 6.4.1:</b> Develop and promote community education strategies related to water issues (state of the resource, conservation, co-management, among other).		X	
	<b>SO 6.4.2:</b> Provide technical assistance to the development			X

		of interdisciplinary support materials, such as guidelines, briefing papers, and case studies on leading practices in water education for communities.			
		<b>SO 6.4.3:</b> Provide technical assistance to the development of interdisciplinary support materials, such as guidelines, briefing papers, and case studies on leading practices in water education for mass and community media professionals.			<b>X</b>
		<b>SO 6.4.4:</b> Engage leading mass media resources in water issues awareness raising campaigns and programs..		<b>X</b>	
<b>Focal Area 6.5 Education transboundary cooperation governance.</b>	<b>for water and governance.</b>	<b>SO 6.5.1:</b> Provide technical assistance for the development of interdisciplinary support materials, such as guidelines, briefing papers, and case studies on leading practices in education and capacity building for transboundary water cooperation.			<b>X</b>
		<b>SO 6.5.2:</b> Improve Member States' cooperation and mutual understanding, strengthen capacities and develop agreements for the sustainable management of transboundary water through capacity building activities at all levels.	<b>X</b>		
		<b>SO 6.5.3:</b> Assist in the development of curricula and research on transboundary water cooperation in higher education institutions.		<b>X</b>	

**THEME 6: WATER EDUCATION, KEY FOR WATER SECURITY  
IMPLEMENTATION OF SOs DURING THE 37 BIENNIUM**

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
Focal Area 6.1 - Enhancing tertiary water education and professional capabilities in the water sector.	SO 6.1.1: Support the enhancement of tertiary water education capacities, particularly in developing countries.	Post graduations	Virtual Campus	UNESCO-IHE, HIDROEX, Rhodes University (South Africa)	Rhodes University (South Africa) involvement
	SO 6.1.2: Promote and assist the development of interdisciplinary and multidisciplinary curricula and research initiatives linked to water-related programs in higher education and research institutions	Joint courses/degrees and joint research (innovation)	Networks of similar organizations (Water condominium)	IHP, Chair in Water Resources in Guatemala HIDROEX, IIA (Mozambique), CEHICA, KWA South Africa, ISD Serbia, Groundwater Resources Centre for Water Education, Research and Training (Kenya), Chairs of Water and Gender in Cote d'Ivoire and Ouro Preto, University of Uyo (Nigeria)	Strong participation of African universities and of Water and Women Chairs
	SO 6.1.3: Strengthen collaboration between UNESCO-IHE Institute for Water Education, the UNESCO category 2 water centres and UNESCO water-related	To be implemented on a priority basis as part of a wider strategy. Exact format to be agreed.	-	IHP, UNESCO-IHE, WWAP, category 2 centres, UNESCO Chairs and other partners.	-

Focal Area	IHP-VIII Specific Objectives (to rephrase later into performance indicators)	Key outputs	Interventions	Main Partners of IHP	Priority Africa and Gender
	Chairs, other UN system agencies and programmes, and existing international water-related education programmes.				
<b>Focal Area 6.2 - Addressing vocational education and training of water technicians.</b>	<b>SO 6.2.1:</b> Support specific initiatives in developing Member States to sustain and improve water-related vocational education.	<b>Webpage with TVET curricula</b>	<b>Development of webpage</b>	<b>HIDROEX, IIA (Mozambique), Chair in Water Resources in Guatemala, Ground Water Resources Centre for Water Education, Research and Training (Kenya), Chairs of Water and Gender in Cote d'Ivoire and Ouro Preto</b>	
<b>Focal Area 6.3 – Water education for children and youth.</b>	<b>SO6.3.2:</b> Support and guide the development of improved tools for the teaching of water issues in the K-12 curriculum.	<b>Upgraded curricula</b>	<b>Workshops and reports</b>  <b>Support to youth groups by developing a network of youth networks</b>	<b>HIDROEX</b>  <b>World Youth Parliament for Water</b>	<b>Gender equality issues to be integrated in curricula</b>
<b>Focal Area 6.5 Education for transboundary water cooperation and governance.</b>	<b>SO 6.5.2:</b> Improve Member States' cooperation and mutual understanding, strengthen capacities and develop agreements for the sustainable management of transboundary water through	<b>To be determined with ISARM and PCCP</b>	<b>To be determined with ISARM and PCCP</b>	<b>UNESCO-IHE, Chair in Serbia (FETWATER)</b>	

<b>Focal Area</b>	<b>IHP-VIII Specific Objectives</b> (to rephrase later into performance indicators)	<b>Key outputs</b>	<b>Interventions</b>	<b>Main Partners of IHP</b>	<b>Priority Africa and Gender</b>
	capacity building activities at all levels.				

## ANNEX V – ACRONYMS

AGRHYMET	Regional Training Centre for Agrometeorology and Operational Hydrology and their Applications
AMCOW	African Ministers' Council on Water
ANRH	Agence Nationale de Ressources Hydrauliques (National Agency for Water Resources)
ASPAC	Asia and the Pacific
CAZALAC	Water Centre for Arid and Semi-arid Zones of Latin America and the Caribbean
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
ERCE	European Regional Centre for Ecohydrology
FAO	Food and Agriculture Organization of the United Nations
FETWater	Framework Programme for Research, Education and Training in Water
FRIEND	Flow Regimes from International Experimental and Network Data Sets
GRAPHIC	Groundwater Resources Assessment under the Pressures of Humanity and Climate Change
GRIDMAP	Groundwater Resources Investigation for Drought Mitigation in Africa Programme
G-WADI	Global Network on Water and Development Information in Arid Lands
GWP	Global Water Partnership
HELP	Hydrology for the Environment, Life and Policy
ICHARM	International Centre for Water Hazard and Risk Management
ICIWARM	International Centre for Integrated Water Resources Management
ICPAC	IGAD Climate Prediction and Applications Centre
IDI	International Drought Initiative
IFI	International Flood Initiative
IGAD	Intergovernmental Authority on Development
IGRAC	International Groundwater Resources Assessment Centre
IHP	International Hydrological Programme
IMTA	Instituto Mexicano de Tecnología del Agua (Mexican Institute of Water Technology)
INWEB	International Network of Water-Environment Centres for the Balkans
ISARM	International Shared Aquifer Resource Management Initiative
IWRM	Integrated Water Resources Management
LAC	Latin America and the Caribbean
MDG	Millennium Development Goals

NEPAD	New Partnership for Africa's Development
OMVS	Senegal River Development Organization
OSS	Sahara and Sahel Observatory
PCCP	From Potential Conflict to Cooperation Potential programme
RAMSAR	The Convention on Wetlands (Ramsar, Iran, 1971)
RC-IRBM	Regional Centre for Integrated River Basin Management
RIO +20	United Nations Conference on Sustainable Development (Rio de Janeiro, June 2012)
SADC	Southern African Development Community
SDG	Sustainable Development Goal
SIWI	Stockholm International Water Institute
SWITCH	Sustainable Water management Improves Tomorrow's Cities' Health
TVET	Technical and Vocational Education and Training
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-IHE	UNESCO-IHE Institute for Water Education
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research
UNSGAB	United Nations Secretary-General's Advisory Board on Water and Sanitation
WASH	Water, Sanitation and Hygiene
WHYMAP	World-wide Hydrogeological Mapping and Assessment Programme
WMO	World Meteorological Organization
WWAP	World Water Assessment Programme
WWDR	World Water Development Report