Water Futures and Solutions: World Water Scenarios Initiative

LAUNCH MEETING
4-5 February 2013, Laxenburg, Austria

REPORT

International Institute for Applied Systems Analysis
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SUMMARY

- The “Water Futures and Solutions: World Water Scenarios Initiative” (WFaS) was launched on 4-5 February 2013 at the International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria. Some 80 participants from a broad range of institutions attended the launch meeting, including senior representatives from government and non-government organizations, the business sector and academia.

- The launch meeting provided a platform to formulate needs and priority areas for global water governance. Participants discussed the initiative and explored opportunities to participate in it. An agreement was reached on a shared vision to develop a stakeholder-driven set of global water scenarios that are consistent with recent global efforts on energy and climate change and explore robust solutions for managing water under different future development pathways.

- The five-year initiative will serve as a mechanism of change to stimulate thinking and action on water management globally. A new generation of global, regional and country-based water scenarios will be developed with an explicit emphasis on technological, institutional, financial and socio-economic solutions to address current and future water demands across all sectors. The multi-model assessments will increase the robustness of policy responses and the effectiveness of solutions to manage water efficiently.

- The initiative will build on IIASA’s Applied Systems Analysis approach, which has enabled groundbreaking assessments such as the Global Energy Assessment, as well as the accomplishments of UNESCO through the World Water Assessment Programme. It will make use of ongoing scenario work with the Shared Socioeconomic Pathways (SSPs) that are being developed in the context of the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report (AR5).

- The contributions from participants will guide further development of the initiative. The first step of engaging and building partnerships was achieved with the launch meeting. A process leading to the finalization of the governing structure has been initiated and an agreement reached on the initial composition of the Governing Board. Leaders of the Sector Actors Group (SAG) and the Scenarios Focus Group (SFG) were selected. The SAG and the SFG are important organs of the initiative’s governing structure. Both groups will support the development and application of the scenarios.

- The meeting culminated with substantial financial commitments and expression of interest from the participating organizations. Discussions were initiated with the World Bank, the Asian Development Bank (ADB), the African Development Bank (AfDB), the Qatar National Food Security Program (QNFSP), and the OPEC Fund for International Development (OFID) to explore potential mechanisms for funding.
BACKGROUND

The Water Futures and Solutions: World Water Scenarios Initiative (referred to herein as the WFaS Initiative) started through a partnership of the International Institute for Applied Systems Analysis (IIASA), the International Water Association (IWA), the Ministry of Land, Transport and Maritime Affairs of the Republic of Korea, the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Water Council (WWC), and continues to add new partners. The Initiative’s principle goal is to provide a sound scientific basis for responding to future global water challenges by testing possible optional measures proposed as solutions against a range of scenarios for future socio-economic changes and technological innovations in a context of global environmental challenges such as climate change and land use intensification. The WFaS Initiative aims to bring together decision makers from around the world to share experiences, solicit their priorities and discuss a common vision of possible water futures as input for developing a new generation of global, regional and country-based water scenarios and options to address current and future water needs.

The five-year initiative will build on accomplishments by UNESCO through the World Water Assessment Programme and will utilize ongoing scenario work with the Shared Socioeconomic Pathways (SSPs) that are being developed in the context of the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report (AR5). The WFaS Initiative will follow IIASA’s Applied Systems Analysis approach, which has enabled groundbreaking assessments such as the recent Global Energy Assessment (www.globalenergyassessment.org). The scenario development will be augmented with existing methodologies, data sets, information exchange networks, and impact calculators that the WFaS Initiative will make available in useful formats to serve as tools that decision-makers can use to set goals, make plans and identify robust options for action. The initiative is a multi-layered cross-sector assessment of the state of water resources and water demand using state-of-the-art socio-economic and hydrological models combined with stakeholder-informed scenarios of key drivers to identify and test a full set of robust strategies, policies, technologies and solutions.

The launch meeting of the WFaS Initiative took place on 4-5 February 2013 at IIASA, Laxenburg, Austria, jointly organized by its lead partners IIASA, UNESCO, The Ministry of Land Transport and Maritime Affairs - Republic of Korea, WWC, and IWA, in coordination with the Austrian Government. The meeting provided a platform to present the objectives and underpinnings of the WFaS Initiative and created an opportunity for prospective partners to discuss current and anticipated challenges in the water sector and to explore opportunities on how to participate in the initiative. Some 80 participants from a broad range of institutions attended the WFaS launch meeting, including senior representatives from government and non-government organizations, the business sector and academia.

This report provides a summary of the rich discussions and key conclusions of the launch meeting. It includes also the expression of interest and financial commitments received from participating organizations and the follow-up activities that will lead to the 2015 7th World Water Forum in Korea where the results of the initiative will be presented. Supplementary information is provided in three annexes: Annex I - Programme of the Launch Meeting; Annex II: List of Participants at the Launch Meeting; and Annex III: Background Document - Water Futures and Solutions: World Water Scenarios Initiative.
EXPRESSION OF INTEREST & (FINANCIAL) COMMITMENTS

The text below provides an overview of expression of interest and (financial) commitments from some of the participating organizations and governments.

- The initiating partners of the WFaS Initiative, namely, the International Institute for Applied Systems Analysis (IIASA), the Ministry of Land, Transport and Maritime Affairs of the Republic of Korea, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Water Association (IWA) and the World Water Council (WWC) reaffirmed their initial commitment to support the initiative in several ways. This included a reassurance of financial contribution and various forms of in-kind contribution from all initiating partners.

- IIASA initiated the project and provided initial funding at the level of € 250,000 in 2012 and € 400,000 in 2013. This contribution of € 400,000 per annum will be sustained during the entire duration of the project.

- UNESCO brings to the partnership the background of work done on World Water Scenarios by its World Water Assessment Programme with support from Italy, the World Water Council, the 6th World Water Forum, and Norway. A second tranche of funding provided by Norway to UNESCO via UN-Water will finance part of the work being done in Perugia and meetings of the SFG and SAG.

- The Government of the Republic of Korea, represented by the Ministry of Land, Transport and Maritime Affairs and the Korea Water Forum has co-initiated and is providing a substantial organizational and funding support to the entire initiative. This support is centered on project contribution to the 7th World Water Forum.

- WWC has been a partner since it supported the World Water Scenarios Project and the presentation of the first reports at the 6th World Water Forum in Marseille. The Board of Governors WWC continues to support the WFaS Initiative and to encourage its presentation at the 7th World Water Forum in Korea (WWF7). Possible financial support will depend on the arrangements for financing of WWF7.

- The Asian Development Bank (ADB) was pleased to learn about the WFaS Initiative. As water could become a major limitation for Asian development, the ADB is prioritizing improved water use efficiency and demand management. Currently ADB is conducting country-level water assessments in pursuant of its Asia 2050 development agenda. IIASA and the WFaS Initiative can be a good venue for collaboration with the intended Asia Water Information System and the Asia 2050 water study. ADB is keen to explore co-funding arrangements for the WFaS Initiative through a regional study and expressed its interest in using the results to inform its decision making process.

- The African Development Bank (AfDB) has many projects at different levels in Africa. AfDB needs information and data to guide its investment strategy in Africa, e.g. to increase resilience to climate variability in the Horn of Africa, or to better manage the abundance of water in the Congo Basin. Data collection is ongoing and AfDB is ready to share data and information with the WFaS Initiative. At the same time, AfDB is interested in funding sub-regional studies in a number of priority basins in Africa.

- The Federal Government of Austria will participate in the WSaF initiative and explore funding of the initiative.

- The Government of Hungary has invited the WFaS Initiative at the Budapest World Water Summit (2013, 8-11 October) and will support financially the hosting of the second Governing Board meeting as an adjacent event during the summit.
The Academy of Sciences in Malaysia (ASM) is inviting IIASA to their May, 2013 meeting to brief stakeholders in Malaysia on the WFaS Initiative. ASM has launched its mega-science framework and is expanding research into sensitive areas, e.g. palm oil plantations, related water issues and sustainability of the industry and the potential of palm oil to contribute to the energy sector. ASM expects through this study that water groups within the academy will collaborate with IIASA and its partners in the initiative. ASM is looking forward to the results of the initiative, especially with regard to the nexus issues of water, energy and green industry.

AQUAFED, the International Federation of Private Water Operators, works with governments and with industry and business communities. AQUAFED can bring inputs to the scenario process and provide a reality check of the scenarios based on their practical experiences and understanding of global water challenges.

The Bibliotheca Alexandria (BA), Egypt will lead the Scenarios Focus Group. They will facilitate links with stakeholder groups globally and lead a country specific study in Egypt.

The Food and Agriculture Organization (FAO) of the United Nations will contribute data – AQUASTAT and FAOSTAT – as well as agricultural technical knowledge and its experiences, in particular with increasing water productivity in agriculture. FAO acknowledges the importance of the initiative. The organization has only limited regular funds available and will participate in resource mobilization.

The International Water Management Institute (IWMI) has been undertaking a “Comprehensive Assessment of Water Management in Agriculture” including various scenarios that can be linked with the WFaS Initiative and several work programs dealing with sustainable intensification of agriculture, climate variability management, improved irrigation systems, etc.

The Joint Research Centre (JRC) - the European Commission’s in-house science service - needs water scenarios to support decisions about investments and future directions to match water availability and water demand. JRC is engaged in new water activities to build an evidence information base on the water-agriculture-energy nexus in the Danube basin, a Niger sub-basin and the Mediterranean region.

The Ministry of Foreign Affairs, Italy perceives an urgent need for holistic approaches to address the water-food-energy-nature nexus and is looking forward to the results of the WFaS Initiative. They are looking for specific targets and indicators regarding water to assist with guidelines on water resources management, and they expect a tool for managing cross-sector water demands.

The OPEC Fund for International Development (OFID) would like to collaborate on issues relating to water-energy nexus in Africa and Asia. The predictions of scenarios will direct OFID on the right path to follow for their activities in the two regions. OFID will explore funding possibilities to support the WFaS Initiative.

The Organization for Economic Cooperation and Development (OECD) is investigating the intersection of climate, biodiversity and water with economic growth. A new research focus is to look at the implications of resource scarcity and degradation on economic growth. OECD’s experience from its Environmental Outlook to 2050 could complement and contribute to the WFaS Initiative. Collaboration to identify synergies and how these factors can be included in the models would be of interest.

The Pakistan Academy of Sciences, a National Member Organization of IIASA, has invited IIASA to present the WFaS Initiative at the First International Conference on Intelligent Water Grids (IWG) where national and international experts will discuss the grand challenges related to the management of water resources in Pakistan. The WFaS Initiative will be useful for the Pakistan water scenarios that will be developed through a new 5-year study. Currently, research in Pakistan focusses on
linkages between sectors and is extremely interested to learn about the tools that will be developed by the WFaS Initiative. In particular, the energy-water-environment nexus provides an ideal opportunity for joint research in Pakistan.

- The **Qatar National Food Security Program** (QNFSP) will support and work with the initiative by contributing data and sharing their knowledge on scenarios development. QNFSP will also explore the possibility of making funding available.

- The **Watercycle Research Institute** (KWR), Netherlands will lead the Sector Actors Group. They will facilitate links with the water utilities network and offer information on benchmark projects and demo-sites they have implemented in the past.

- The **Water Research Commission** (WRC), South Africa can offer itself as a very interesting laboratory for the WFaS Initiative. With research networks across sub-Saharan Africa and river basins that are data-rich and fairly well researched, South Africa is well prepared to serve as a research hub in the region.

- **Suez Environment** is committed to the WFaS Initiative. They will bring to the initiative their experience and knowledge, can help assess the robustness of proposed solutions, and can cooperate in defining realistic transition pathways for water technologies.

- The **World Bank** has good contacts in many countries around the world and can offer collaboration in the areas field of water-for-energy within six geographic areas. World Bank is also willing to make some funds available.

- The **World Wide Fund for Nature** (WWF) like the **International Union for Conservation of Nature** (IUCN) will provide opportunities for testing scenarios and options within their networks.

**FOLLOW-UP ACTIVITIES**

The following activities are envisaged leading up to the 7th World Water Forum:

1. **Further Expansion and Inclusion**: Efforts to expand the initiative’s reach beyond the meeting participants to include additional partners and co-funding institutions has been initiated. Meetings will take place in India, Pakistan, Philippines and the US (2013, February and March).

2. **Meeting of the Initial Project Group**: Invited project parties will meet at IIASA (2013, 6-8 May). The meeting will bring together water scenarios researchers and modeling experts to prepare the work plan and finalize revised stylized scenarios and indicators of critical dimensions for the stakeholder groups meetings.

3. **Negotiations with Funding Parties**: Discussions have been initiated with several funding parties to explore funding mechanisms. These include World Bank, the Asian Development Bank (ADB), the African Development Bank (AfDB), the Qatar National Food Security Program (QNFSP), and the OPEC Fund for International Development (OFID). Similar discussions are ongoing with the Organization of American States (OAS) and the Inter-American Development Bank (IDB), the United States Agency for International Development (USAID), and the United States Army Corps of Engineers - Institute for Water Resources (US ACE-IWR) on funding possibilities linked to specific regions or collaboration on basin-specific projects, as well as support for central activities.
4. **Presentation of the WFaS Initiative:** The WFaS Initiative will be presented to the preparatory meeting of the 2015 7th World Water Forum in Korea (2013, 13-15 May) and the Budapest World Water Summit (2013, 8-11 October).

5. **Meeting of the Project Group:** The whole project group, including regional leads will meet at IIASA (2013, 17-19 June). The meeting will bring together water scenario researchers and experts to strengthen the work plan of the initiative.

6. **Establishment of the Interim Governing Board:** The WFaS Initiative will be steered by a Governing Board. An agreement was reached on the initial composition of the Governing Board, and a process leading to the finalization of the governance structure was initiated. Within two weeks after the launch meeting, additional members among the participants of the launch meeting will be invited to join the Governing Board.

7. **Meetings of the Governing Board:** The first meeting of the Interim Governing Board will take place in Korea beside the preparatory meeting of the 2015 7th World Water Forum in Korea (2013, 13-15 May), the second Governing Board meeting is scheduled to take place at the Budapest World Water Summit (2013, 8-11 October) upon the invitation of the Government of Hungary. The third meeting will take place in November, 2014. Its location has not yet been finalized.

8. **Formation of Stakeholder Groups:** Discussions on the composition of the Sector Actors Group (SAG) and Scenario Focus Group (SFG) was initiated during the launch meeting. Both groups will provide guidance to ensure the global and regional relevance of the scenarios. The SAG will be led by Prof. Dr. Wim van Vierssen, (KWR Watercycle Research Institute, The Netherlands) whereas the SFG will be chaired by Dr. Ismail Serageldin, (Bibliotheca Alexandria, Egypt).

9. **Meetings of the SAG and the SFG:** The first meeting of SFG is scheduled for 17-19 June 2013. Sector representatives participating in the SAG will hold their first meeting on 19-21 June 2013. Both groups are scheduled to meet for the second time on 2-6 December 2013. The third meeting of the SFG and the SAG is tentatively scheduled for November 2014.

10. **Regional Workshops:** The initiating partners are discussing the possibility of holding respective regional workshops around the SAG and SFG group meetings, to foster communication and synergies among the global stakeholder panels and the regional workshops.

11. **Publication of Phase 1 Report:** A report on the first phase of the WFaS project, presenting new global water scenarios and the status of regional and other analyses, will be published at the 7th World Water Forum being organized in Korea (2015 May).
PROCEEDINGS OF THE LAUNCH MEETING

Day 1: Plenary - Opening Remarks:

*International Institute for Applied Systems Analysis (IIASA) - Professor Dr. Pavel Kabat:*

IIASA Director/CEO, Professor Dr. Pavel Kabat welcomed the participants on behalf of IIASA and partners of the initiative. The initiative brings several innovations to the study of water resources. It is a unique partnership between academia, business, non-governmental organizations, and the UN. Secondly, it will apply a number of different models and methodologies of water-related research at both global and regional scales to provide a set of scientifically strong and robust water scenarios to support decision making under future uncertainties.

*Austrian Government - Ambassador Erwin Kubesch, Ministry of Foreign Affairs:*

Ambassador Erwin Kubesch from the Austrian Federal Ministry for European and International Affairs emphasized the relevance of the initiative in the face of mounting global water challenges. The increasing intensity and frequency of floods and droughts, as well as the overall high levels of water demand of a growing and wealthier global population are likely to further increase the pressure on water resources and aquatic ecosystems. Improved data and comprehensive knowledge of water resources and water demand are needed to respond to the challenges that global, regional and local water systems will face in the future. The water scenarios to be developed by the WFaS Initiative should be consistent with other global scenarios, e.g. such as those being developed for IPCC AR5 or in international energy assessments and they should bring together inputs from a full range of stakeholders including decision makers, scientists, experts from government, private sector and other stakeholders.

*United Nations Educational, Scientific and Cultural Organization - Mr. Hans D’Orville:*

Mr. Hans D’Orville, Assistant Director General for the Bureau of Strategic Planning at UNESCO, highlighted the importance of improved management and planning of freshwater water resources for building a sustainable society. Water is seen as the epicenter for peace and health and it is a key component of sustainable development. Information of future water resources and demands and the development of robust solutions are important to reduce the risks of potential water conflicts in the future.

*Ministry of Land, Transport and Maritime Affairs of Korea - Mr. Yang-Jin Oh:*

Mr. Yang-Jin Oh, Director, Ministry of Land, Transport and Maritime Affairs of Korea, revealed some of the steps taken by the Korean Government to respond to climate change and improve water resources management in the country. The Korean Government is aware of water related global problems; heavy rainstorms have almost doubled in the last few years and at the same time droughts are predicted to intensify in the future. These global issues need to be addressed for a better future by sharing knowledge and experience, hence the importance of participating in the WFaS Initiative. Korea will host the 7th World Water Forum in 2015. Among other things, the forum will provide a global platform to discuss water related challenges and solutions. Korea is looking forward to a successful project from the WFaS Initiative, and eventually the presentation of the findings at the Forum in 2015.
World Water Council (WWC) - Professor Dr. Ben Braga:

According to Dr. Ben Braga, President of WWC, the best way to predict the future is to invent it. The WFaS Initiative is a stepwise process to both predict and invent the future with respect to water. He referred to the ongoing efforts to formulate post-2015 sustainable development goals, as well as subsequent scenarios of the World Water Assessment Programme. There are enormous challenges ahead of us and the WFaS Initiative will be a joint vehicle for inventing the future. Water should be used to catalyze change, which requires above all maintaining healthy ecosystems, to overcome the challenges ahead. Any proposal for creating a pact for water security, guaranteeing economic and social security, requires the consideration of more efficient water systems. The WWC provides a unique platform for developing solutions and recommendations to trigger the changes that are necessary. The WWC will support the initiative and will approach policy makers and decision makers, with a focus on providing options for high-level decision making.

International Water Association (IWA) - Dr. Glen Daigger:

IWA President, Dr. Glen Daigger was impressed with the diversity of participants present. The launch meeting brought together water professionals from governments, water utilities, the private sector, several UN agencies, renowned research organizations and several international financing institutions, including the World Bank, the Asian Development Bank (ADB) and the African Development Bank (AfDB). The decisions being made today are creating the future. Continuing to do business-as-usual is not acceptable because implementing merely a few small changes will not fix the challenges of the future water system. With the international and intellectual resources of the WFaS Initiative, it is advisable to move on to a common vision and possible trajectories that the world can rely on. Most importantly, we should consider how we can achieve the behavior changes that are needed in many sectors to avoid continuation of the business-as-usual approach.

Day 1: Plenary - Key Speeches:

Water Challenges, Transitions and Innovations - Professor Dr. Pavel Kabat:

IIASA Director/CEO, Professor Dr. Pavel Kabat presented the rationale for the initiative, with emphasis on transitions and innovations to reach water security by 2050. Previous initiatives to tackle global water challenges have yielded only marginal outcomes. So what is new this time? Key for the current initiative is the multi-model, multi-purpose and multi-scale approach, with a focus on regional scale and cross-boundary issues. This has not been done before. “Previously we published successfully and we commonly did that with one single tool, but other colleagues have other models and good ones too”. For finding robust solutions, the science community should try to combine all useful and available global models. The tools and data will for the first time be completely coherent and consistent with other on-going work and databases. Currently, IIASA is hosting major global databases of GDP, population and land use, for example. In addition, partnership in knowledge is needed. For this reason, the WFaS Initiative is partnering with governments, the private sector, NGOs and several UN agencies, renowned research institutions and international organizations. The WFaS Initiative will view water futures as an opportunity. Future water is also about doing business. The focus is not only on how many hotspots of water crisis exist, but foremost about transitions that can provide solutions. One of the possible solutions
is progress in technology. For example, desalination techniques can produce freshwater from saline water but this is currently too expensive to apply for countries like India and Bangladesh. Yet, innovations in technology can bring costs down and can make desalination less expensive and economically viable. Our partners in the private sector can suggest to us what is feasible and plausible.

Strategic Foresight and Insight based on Scenarios and Modeling - Dr. Olcay Unver:

The Coordinator of UNESCO’s World Water Assessment Programme, Dr. Olcay Unver gave a synthesis of recent scenarios and modeling studies in a number of sectors that have influence on high level policy and decision making for strategic water issues. The Millennium Ecosystem Assessment (MEA) looked at differentials – reactive ecosystem management versus proactive management; UNEP’s Global Environmental Outlook (GEO) considered a conventional versus a sustainable world. The IPCC 5th Assessment Report, expected to become available next year, is based on a new set of global scenario storylines, the Shared Socio-economic Pathways (SSPs). There are several energy scenarios with various shapes and formats. The Global Energy Assessment (GEA) defines a new global energy policy agenda and is transforming the way society thinks about energy. The World Energy Outlook scenarios of the International Energy Agency discuss trends in the energy market, as well as insights into energy use. The UN Food and Agriculture Organization (FAO) has taken the lead in the development of agricultural scenarios. For example, Agriculture at a Crossroad provides perspectives on food and agriculture up to 2050, with knowledge, science and technology for improvements in livelihoods. The OECD/FAO Agricultural Outlook scenarios provide market projections into the next decade and discuss emerging issues such as food prices and non-food biomass use. The last global water scenarios were published over ten years ago by the World Water Council with a set of drivers as externalities causing the changes in the water domain. UNESCO’s partnership with IIASA led to this new WFaS Initiative, to develop a new set of water scenarios and solution options with the understanding that technologies, socio-economic conditions and the political scene in the world have dramatically changed during the last decade.

Water Industry: Needs and its Role in Water Transitions- Dr. Glen Daigger:

IWA President, Dr. Glen Daigger outlined the concerns of the business community for future water development. He provided some insights on how the WFaS Initiative may collaborate with governments, NGO’s and the business sector to identify sustainable solutions. His talk focused on the water industry, innovation and the role the industry can play. “We need to understand how technologies will develop and need to look at the full range of issues including information technology and biotechnology”. Despite fast developments in technology (e.g. ICT), in orders of magnitude that were hardly imaginable years ago, seemingly great solutions don’t get applied. These technologies can really help water sector practitioners to advance what they are currently doing to address the challenges in the water sector. Patterns of water use differ with regions and between developed and developing countries. The water sector is important but other sectors are essential as well, given that decisions in the water sector affect other sectors and vice versa. Such cross-sectoral perspective “is what excites me and gives me food for thought as we look for ways to go forward”.
Project Director Dr. William Cosgrove of IIASA’s “Water Futures and Solutions: World Water Scenarios”, gave an overview of the WFaS Initiative with emphasis on the approach, the expected outputs and benefits for different stakeholders. On the approach, he reiterated that a lot has been learnt from past mistakes. Important social science dimensions were lacking in previous water scenarios - this time, people’s behavior needs to be taken into account, with a focus on specific questions and relevant scales. Sub-global studies at the river basin scale with consideration of the interactions between different actors are particularly important. The WFaS Initiative will work with other ongoing and planned initiatives on regional water scenarios, for example, the initiatives of the Asian Development Bank (ADB) in the Asia-Pacific region, the US Army Corps of Engineers (USACE) on the Columbia River Basin concerning transboundary issues and negotiations with Canada, and the Guarani Aquifer in South America on groundwater issues. The WFaS Initiative will also account for the need to share water with ecosystems in a sustainable way, which is a shift away from the previous mundane focus on human needs only. Another confounding factor is climate change, which directly impacts on regional water resources. “We don’t want decision makers to be confused; so the initiative will use the most recent approach of the IPCC with the Shared Socio-economic Pathways to achieve globally consistent water scenarios”. There are ongoing discussions on how best to include politics and governance mechanisms in the scenarios. Application of an advanced system analysis approach to address water futures is important, because of their complexity and the necessity to include different kinds of knowledge and disciplines. From the very beginning of the WFaS Initiative, stakeholders will be involved in the entire process through the Sector Actors Group (SAG) and the Scenarios Focus Group (SFG), which are two vital organs the initiative will rely on for developing the scenarios. Both the SAG and the SFG are key constituents of the Initiative’s scenario building exercise (Annex III: Background Document - Water Futures and Solutions: World Water Scenarios Initiative).

Day 1: Breakout Sessions

Breakout sessions provided an interactive workshop setting for participants to discuss several priority issues: i) key actions needed to meet increasing water demand; ii) knowledge and information requirements, as well as transitions (technology, policy, institutions, etc.) needed to address current and future water challenges; and iii) value-added and key contributions expected from the WFaS Initiative. The discussions provided insights from a large number of participants that will define the tasks of the Sector Actors Group (SAG) and the Scenarios Focus Group (SFG) over the next 24 months.

Actions for Addressing Increasing Water Demand:

The participants in the breakout sessions emphasized the need for an integrated assessment of water futures, including water resources, water governance and the global drivers of water demand. Many contributions were focussed on irrigation and on agricultural water use, because the sector is globally by far the largest water user and can therefore play a key role in finding solutions to reduce overall future water withdrawals. Participants discussed the efficiency of water use in agriculture, how to optimize agricultural production without necessarily increasing the water demand. Notably, in some regions up to 50% reduction in water use could be achieved through better practices in agriculture. Various suggestions
were also made to reduce food wastage. Estimates suggest that roughly 30 to 50% of food is being wasted and agricultural water use could simply be reduced by diminishing current food wastage.

Other participants spoke of the need to reduce water withdrawals in other sectors like energy, industry and urban domestic water use. Improved water demand management is crucial to reducing leakage and wastage of water. Development of water infrastructure and water supply must go hand in hand with demand management. For the urban water sector, there is a need to provide and collect information through, for example, smart metering in order to raise awareness among water users. This should be transparent and the information must be made available in real-time on a daily basis. The question, however, is how to best create awareness among the largest users, the agricultural, energy and industry sectors. Also, additional research and sharing of experiences is needed regarding the type of measures that work and those that do not support effective implementation of more advanced management systems.

There were also discussions on groundwater resources – their potential to cope with projected increases in water demand. Severe limitations were noted in the knowledge of groundwater availability in many regions of the world. New prospective technologies to detect and measure groundwater resources are being developed, for example interpretation of satellite imagery to estimate groundwater availability.

Finally, participants emphasized the importance of institutional issues, management systems and governance mechanisms, the role of a bottom-up water management approach (vs. top-down planning), and the need to listen to water users because of the important information they have to contribute to demand management.

Transitions Required to Address Water Challenges:

Timely access to basic information and integrated planning tools are required to address future water challenges and to enhance water management. In addition, a better understanding of policies and institutions and their effectiveness is needed including the role of communication and information sharing. In order to accelerate transitions into the future, additional information and decision support tools have to be available for the choices that have to be made under different development pathways. However, the required transitions demand more than improvements in information and the availability of decision support tools. For instance, effective communication and information sharing is essential to facilitate the transformations that are required. Moreover, the genuine organization of policy, institutions, education, technology, and investments opportunities is needed to make transitions happen. Major transitions could come from pressure on policy makers by the public, and the media can be helpful in that regard.

Participants’ Expectations of the Water Futures and Solutions Initiative:

Participants widely expressed the expectation that the water scenarios will be developed in a way that the process and results are owned by all stakeholders. Partnerships should be established for collective ownership across public and private sectors. The WFaS Initiative should aim to reach out to those actually making the decisions on water management. While being responsive to water sector concerns, the scenario development is clearly not only a water sector driven exercise. Consensus building across sectors
must be a goal throughout the process and the results should be used to support and coordinate planning across all sectors that depend heavily on water. Hence, scenario development must involve the energy and agricultural community and the results and solution options must be communicated and shared with these stakeholders. Water is an integrative and cross-cutting resource. Scenarios must be interdisciplinary and elaborate the nexus between water, poverty, food, energy and security. The scenarios should explore the impacts of different choices in the water sector and should offer practical guidance for the policy debate, providing tangible options and solutions. Multi-models assessments are useful to account for uncertainties and increase the robustness of policy responses and the effectiveness of solution options. Finally, the WFaS Initiative should provide widely accessible data sets that are consolidated, integrated and applicable across different scales. In particular, the initiative should aim to provide datasets and scenario information at the country-level, which was regarded as the most appropriate level for policy making. The initiative needs to mobilize individual countries or regions with shared needs and priorities to address them jointly. The initiative can be helpful to better assess ecosystem services to frame the discussion of water sector trade-offs and identification of win-win outcomes. Therefore, sustainable water sharing with nature must be an integral part of the scenarios building process. Lessons should be learnt from the climate debate by avoiding the alarmist way of presenting the issues and instead provide acceptable science-based solutions and new opportunities.

Day 2: Panel Discussions

During the five panel discussions, each with five to six participants from participating organizations, the panelists introduced their organization and stated the current priorities and challenges they are facing in the water sector. Panelists spoke of measures they are currently taking to address water challenges and they commented on how they expect to benefit from the WFaS Initiative and how they could support the initiative through joint pursuit of research opportunities, sharing of data/knowledge and/or through financial contributions.

Challenges, Needs and Priorities:

There was agreement that in addition to biophysical limitations a major challenge for the water sector is about the “software” component, in particular political support, regulations and financial commitment. Also, for most countries, long-term reliable hydrological data, which is needed for water management, is lacking at the local scale. Missing as well is the understanding of the interconnectedness among various sectors and the links between climate variability and the rise in natural disasters such as floods and droughts. In countries like Croatia, there are no acute problems with water scarcity but due to seasonality and climate variability there are technical problems with water supply. Water withdrawals in Croatia are expected to increase with increasing demands for irrigation, electricity generation, tourism and fish farming. Securing water systems and protecting aquatic ecosystem while addressing droughts and floods is a main challenge in Korea. In Indonesia, a number of surface water bodies are suffering from pollution, with potential problems of water shortage expected. The continued degradation of natural capital has an impact on economic growth. According to the Asian Development Bank (ADB), water availability may become a major constraint for Asia’s economic development and water use efficiency is pursued in ADB’s development programs.
Competing water demands call for innovations and transitions in the way things are currently being done, but different regions have different priorities and needs. In Uganda for example, the priority is residential water supply and distribution, but also water for irrigation and hydropower generation. There are poor water management practices in use, which must be addressed but the lack of reliable data and limited financial resources are making management and regulation difficult to undertake. In Egypt and Bangladesh, sea level rise is important and its impacts on agriculture are large due to salt water intrusion. Overall, the population densities are high in the delta regions at risk of salt water intrusion. The likely impacts of salt water intrusion should be reflected in water scenarios to understand the consequences for water availability in the future. Transboundary water management is crucial for the International Union for the Conservation of Nature (IUCN), especially for addressing conflicting national and sectorial interests and for implementing climate change adaptation and mitigation measures. The OPEC Fund for International Development (OFID) is keen to unveil the water-food-energy nexus, especially with regard to water for irrigation and electricity generation. Africa and Asia will be the main focus of OFID’s activities in the coming years, and the modeling of future scenarios can direct OFID toward making the right decisions in supporting development. Croatia has established a country water resources assessment program in view of the EU requirement for harmonization of the environmental status of its waters. Results are showing that scenarios can assist in achieving better national management of water resources that is consistent with international development objectives. For Italy, the transfer of knowledge in water management is a priority to support planning and adoption of special guidelines for water resources management. Many organizations are looking for data and information, for integrated planning tools and a better understanding of policies and institutions and their effectiveness. It is important to develop tools and communication mechanisms for those who are actually making decisions. For example, the African Development Bank (AfDB) is seeking information and decision making tools that will help them to make effective and robust investment decisions. Several organizations indicated that the initiative should have a close link with the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs) process in order not to forget the bottom billion people who currently lack adequate water supply and improved sanitation. Water futures will be different if the world can agree on common sustainable water sector goals and the WFaS Initiative could contribute to the process of setting post-MDG water targets, a process which is already underway.

CONCLUSION

The first step of engaging and building partnerships for the “Water Futures and Solutions - World Water Scenario Initiative” was achieved with this launch meeting. The active engagement of participants resulted in vibrant discussions and informative exchange with a clear direction and approach for the WFaS Initiative. The launch meeting outcomes will be used to guide further development and implementation of the initiative. The encouraging enthusiasm among the participants strongly affirmed that the initiative can be a mechanism of change to stimulate thinking and action on water management globally. There is a shared vision to develop a stakeholder-driven set of global water scenarios that are consistent with recent global energy and climate change scenario efforts to explore water futures towards robust solutions under different future development pathways.
ANNEXES

Annex I: Programme of the Launch Meeting
Annex II: List of Participants at the Launch Meeting