



## The Water, Energy and Food Security Nexus: Understanding the Nexus Contribution from: The Global Water Partnership

The Global Water Partnership (GWP<sup>1</sup>) welcomes the initiative by the German Government to focus on the Water, Energy and Food Security Nexus, and solutions for the Green Economy, as key issues to be addressed in Bonn and taken forward to the Rio +20 Summit in 2012. The “priority questions” of the Conference were discussed during the GWP Consulting Partners meeting in August 2011 attended by representatives from all 13 GWP Regions, and at the Regional Steering Committee meetings in the following regions: Central and Eastern Europe (representatives of 13 countries), Southern Africa (representatives of 12 countries) and South East Asia (representatives of 9 countries).

With Partner organizations in 157 countries, working through regional, country, city and river basin partnerships, GWP brings together multi-sectoral groups from government, the private sector, and civil society to find better solutions to water challenges and conflicts, making a difference locally.

GWP’s mission is to support the sustainable development and management of water resources at all levels, and we have as our vision a water secure world<sup>2</sup>. GWP defines water security as “the reliable availability of an acceptable quantity and quality of water resources for health, livelihoods and production coupled with an acceptable level of water-related risks” (‘acceptable’ being defined by the people concerned). We see a close connection among all the development sectors that use water resources. We see especially powerful interconnections among water, food and energy security.

Today, more people than ever before are working together to explore how our world’s water resources can be managed in a more sustainable way. Water is a critical resource for sustainable development in our rapidly changing world – a world into which the 7 billionth baby was born just last month, in October 2011. This is a world in which there is an increasing demand for many natural resources, in particular water. As stated in the Thematic Profile for this conference, water is “running through the veins of our economies”. By considering water resources in the triple context of water security, food security and energy security, rather than as “water” per se, we here in Bonn and world leaders in Rio next year are likely to understand better why this nexus requires urgent political attention.

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<sup>1</sup> The Global Water Partnership is a global network devoted to the sustainable development and management of water resources at all levels. It has 13 Regional Water Partnerships, 80 country Water Partnerships, and over 2400 multi sectoral stakeholder partner organizations.

<sup>2</sup> The definition of water security which GWP uses is broader than the MDG definition (used in the background paper for this conference) which focuses on “access to safe drinking water and sanitation”.

Over the past five years, people around the world have faced up to a daunting array of new and increasingly inter-connected crises (the food, energy, and financial crises, together with extreme climate events such as drought and floods). These crises and events are impacting heavily on households, communities, natural resources, and national economies around the world, and are hitting the poor hardest. During these crises, we are becoming conscious of the immense risks associated with the negative impacts of climate change on the sustainability of the world's natural resources and on political stability. The lasting consequences of the financial and economic crises have drawn more attention to long term risks in the global economy. The issues of economic risk and natural resources degradation are coming together in a way that has created unprecedented opportunities for fundamental policy changes, in various economic, institutional, technological, social and political arenas.

Water security underpins many of the global risk scenarios. The failure to achieve water security has its roots in political, economic, social and environmental issues specific to each country. These **issues are intertwined** and cannot be solved unless a **broader set of actors get involved**. Water security is a "Society" subject. It is bigger than the water "sector" itself. Encouraging other sectors to take water resources more into account and to get more involved with water creates the possibility for changes on the scale at which they are needed. In the light of these challenges, GWP's message to the world is that **better water resources management is fundamental to continued economic growth and development progress**. The goal of achieving water security can become part and parcel of all strategies for sustainable development, poverty reduction, and green economies in the years ahead.

The interest and focus on Integrated Water Resources Management which came out of collective government decisions at Rio in 1992 and Johannesburg in 2002 led to GWP's current contribution to sustainable development. Recognition has grown all over the world of the need for better coordination in the "development and management of water, land and related resources in order to maximise economic and social welfare without compromising the sustainability of ecosystems and the environment" (GWP's definition of Integrated Water Resources Management or IWRM).

The Integrated Water Resources Management approach is about achieving and maintaining a balance among the three "Es"<sup>3</sup>: – economic efficiency, social equity and environmental sustainability. There are many lessons which have been learned about the application of the IWRM process. A key, indeed one of the most poignant, is that **unless integrated management is fully owned by national governments, above and beyond sectoral preoccupations**, there will be no sustainable

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<sup>3</sup> Economic efficiency - making water resources go as far as possible and allocating water strategically to different economic sectors and uses. Social equity – ensuring equitable access to water and to the benefits for all children, women and men. Environmental sustainability – protecting the resource base and related ecosystems and helping to address global environmental challenges.

implementation or development. Another important lesson which the GWP regions have learned through sharing their experiences over 15 years is that every country and region is different (socially, politically, culturally, and economically), and there is no one magic bullet solution. Here are some specific responses from GWP and its Regions to the questions posed by the Bonn organizers about the nexus.

If we consider what issues are seen as key within the nexus of water, food and energy security, we would suggest three **priorities**: coordination, infrastructure and ecosystems:

- It is important to recognize first of all that very often, there is little **real coordination**: policies and strategies for water, agriculture, land, energy (and others) are not fully complementary and often do not truly address the three “Es” (efficiency, equity and environmental sustainability);
- Since **infrastructure** plays a crucial role in water, food and energy security, it is important that efforts to address the investments in infrastructure gaps in developing countries are coordinated, based on sound integrated strategies and plans, if there is to be development progress that improves livelihoods;
- Several GWP regions emphasize the importance of the ecosystem aspects: that food and energy sectors both have strong interest groups and a political voice; but that ecosystems do not. Unless we acknowledge the **vital role of our ecosystems** in maintaining a sustainable environment while providing essential goods and services for the livelihood of millions of poor people, we cannot achieve real “Green Growth”. We need to focus on **balancing economic and social development** while maintaining ecosystems functions and services, i.e., focus on the “triple bottom line”, or the three E’s” of IWRM.

Given the focus and interest in the nexus of water, food and energy security, it is valuable to look at where there are real **opportunities** for synergies. We suggest three:

- Again, **coordinated investments in infrastructure** related to water, food and energy security, provide real opportunities for synergies;
- Finding the **trade-offs which maximize the beneficial uses of water amongst competing uses and users**, not only between the food and energy sectors, but also considering the demands of an accelerating urban population, and of other sectors such as industry, fisheries, navigation, tourism, etc., while maintaining respect for essential cultural values. Proper water allocation mechanisms are important in this respect. Also, such trade-offs and synergies need to focus on the equitable **sharing of these benefits** locally, nationally and regionally, in addition to the allocation and sharing of the water itself;

- **Applied research, capacity building and sharing of practical solutions** at national and basin levels, where professionals working on the management of water resources, the agriculture sector, and the energy sector, can work together with the common objective of achieving security. The GWP South Asia Workshop on the Water-Food-Climate nexus in February 2011 focused on the importance of broader dissemination of existing knowledge; generation of new knowledge; learning lessons for scaling up; longer term and more consistent exchange of ideas; and targeted messaging to key stakeholders while increasing mutual trust and confidence among partners.

If we consider what **solutions** there are for addressing water, energy and food security in a more integrated way, there are again three that we would like to offer;

- Facilitate investments in **infrastructure development** that can serve multipurpose needs at local, basin and national levels, while also helping to mitigate extreme events such as floods and droughts. The Lower Kafue dam in Zambia for example, is multipurpose, used for irrigation, domestic water supply and hydropower generation. The Fergana Valley system of water canal infrastructure (in Central Asia) applied an IWRM approach over the 5 years and has demonstrated the potential to increase water productivity by 55 to 95%, with a 30% reduction in water use through effective management of the water at the on-farm level. Such infrastructure, both existing and future, needs to be planned and operated as **multipurpose**, in proper dialogue with all interested parties;
- **Extreme water-related events** are crucially linked to the issues of food security (e.g., irrigation needs) and energy security (e.g., hydropower), as well as water security. Food price rises are connected to these events in many countries. Hydropower generation and cooling of fossil fuel based power plants are both fundamentally affected by droughts, which pose a real energy security issue in drought prone countries. **‘No regret’ adaptation** actions (including using IWRM as an adaptation tool) are “a must” to help build resilience to the increasing number of extreme climatic events;
- **Integrate water, food and energy security planning** at local, basin and national levels. For example, the SADC Regional Infrastructure Plan promotes joint planning for water, food and energy projects. It opens opportunities for specialization within countries, and locating power generation and agriculture production in the countries that have better comparative advantages for this. In this way regional efficiencies in water use, energy generation and agriculture are promoted. Also, a recent GWP regional workshop identified specific opportunities for synergies and provided groundwork for greater regional collaboration, particularly cooperative strategies with the private sector to improve lives and livelihoods, as well as to grow products and profits.

Finally, in looking at opportunities for institutionalization at local, national international levels, there are three **proposed ways forward**:

- Focus on the **horizontal and vertical integration through cross-sectoral dialogue and involvement of all relevant stakeholders**, both public and private, civil society and academia - professionals from the agriculture and energy sectors working closely with water resources professionals. A particular characteristic of the water, food and energy nexus is the **increasing role of the private sector** in both the development and management of water services and infrastructure, calling for new partnerships between the public and private sectors to be developed. Such dialogues and stakeholder engagement need to be part of the entire process, with proper notice and real involvement, and based on adequate and timely information on the water, food and energy issues concerned. Dialogues are required at all levels, calling for institutional mechanisms, such as inter-ministerial bodies at the national level, river basin committees at the basin level and relevant institutional structures at various local levels, both rural and urban. Joint water-energy and/or water-agriculture institutions/ministries in some countries demonstrate the potential for synergies within the nexus. In Mali, the IWRM planning process included multi-sectoral, multi-stakeholder involvement and the final plan was integrated into the national development plan for implementation. Linking water and agriculture is an outcome of years of stakeholders working to find suitable solutions.
- Focus on **multi-disciplinary research, development and innovation**. Bringing water, energy and food together is critical for the nexus. We have no excuse not to act on the basis of available information, but with the rapid increase in demand for food and energy, new knowledge and new technologies are essential if we are to close the projected gaps between demand and supply. Related to this, the present **disconnect between science and policy** is seen as a major constraint – by both sides. We need to bring the scientific and the managerial/decision-making communities closer together.
- Finally, a strong focus on the **strengthening and development of institutional capacity** for all of this to actually happen! The developing countries need, among other things, to maintain adequate structures, technical, managerial and financial capacities, and good data generation and sharing, in order to address the increasing challenges of the water, food and energy nexus.

The overall outcome of these discussions within GWP has been very clear -- financed infrastructure, coordination, capacity, and information at all levels and with multi-sectoral stakeholders in an integrated manner -- are key aspects of successfully addressing the water, food and energy nexus. Integrating the management of the water resources as they “flow through the veins” of water supply and sanitation, agriculture, energy sectors, and other sectors **is crucial for achieving security, while**

**demonstrating the central role of water resources in our economies.** This is not an easy task, given the tendency for the uses and users of water resources to exist and operate in silos.

The responses described here are underpinned by three **keys for success** with respect to the nexus and using IWRM as an adaptive management process:

- **The first key is measurement to assess and improve performance, supported by clear policies:** in all work to improve water resources management and thereby increase water security, it pays if practitioners measure the current status and ‘performance’ first, and do so against clear policies from all water use sectors. Only then can realistic future scenarios be constructed to guide policy. In that connection, we recommend that more effort is given to measure water security, study and understand the inter-connected “systems” of water resources, their quantity, their quality, their current and expected uses, as well as the current and projected needs and demands.
- **The second key is to convene the players needed, supported by institutional arrangements, to develop better solutions across sectoral boundaries:** water can no longer be treated as one sector of the economy. It must be managed as a resource for the entire economy. In keeping with 21<sup>st</sup> century governance, we recommend the establishment of multi-stakeholder platforms at national, city and river basin level, as the case may be. This will help to mainstream water in socio-economic development planning, and to allocate, raise and invest resources to support implementation.
- **And the third key is to lead change locally through government-corporate-civil society partnerships, supported by financial instruments:** experience across developing economies in all regions has shown that, with a better understanding of the issues and possible solutions, coalitions of partners can be mobilized to make transformational changes happen. For necessary changes to be sustained, a new generation of financial instruments will be needed to value water resources, charge for water services and used water emissions, and to help manage the risks associated with increasing floods and droughts. To make this happen, governments are encouraged to mobilize inclusive government–corporate sector–civil society partnerships as coalitions for transformational change.

GWP recalls the **important role of the previous Bonn Conference in 2001**, in the run-up to the World Summit for Sustainable Development (WSSD) in Johannesburg in 2002, or Rio +10. The Bonn process ten years ago was pivotal in confirming the importance of Integrated Water Resources Management (IWRM) for sustainable development, leading to the important Article 26 in the WSSD Plan of Implementation by world leaders, calling on all countries to “**develop IWRM and Water Efficiency Plans**” and thereby catalyzing action at all levels from international to local. The importance of this outcome in Johannesburg, as one of the key drivers setting the majority of the world’s countries,

particularly in the developing world, on a firm course towards adopting and implementing IWRM, can hardly be underestimated. Furthermore, there needs to be a recommitment to this agenda by governments. Although 64% of countries worldwide now have IWRM plans, implementation of the recommendations of those plans is at a much lower level. Real, financially supported action needs to be taken by all governments.

In conclusion, there needs to be political leadership in developing countries in order to shape the way forward. Furthermore, the developing countries need the commitment of the bi-lateral and multi-lateral agencies that support them to make the necessary investments. Bonn 2011 can again help to shape the future, by drawing the attention of leaders to this development imperative, using the nexus as a model.