

The Water Resources Group

Background, Impact and the Way Forward



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Preface

Water is critical for human survival. Today, the world faces a significant challenge – that of ensuring water security. Without concerted action by all, the gap between the demand and supply of water will widen dramatically in many parts of the world with significant social and economic repercussions. If present trends continue, the livelihood of one-third of world's population will be seriously affected by water scarcity by 2030. Most of these people will be in developing countries.

The private sector, be it large corporations, mid-sized enterprises or small farmers, has an important stake in water security. Both as a user and provider of water services, the private sector is a major source of innovations and good practices that enhance the efficiency of water use. Working in partnership with government, civil society and other stakeholders, the private sector can provide complementary knowledge, experience, insights and convening power to address issues of water resource management.

Motivated by this potential, IFC has partnered with the World Economic Forum and a number of private companies and official development agencies to establish the 2030 Water Resources Group. The first major initiative of this Group, the ground-breaking report *Charting Our Water Future*, published in 2009, drew attention to the water security challenge and offered countries a new, more holistic way to look at the water sector, weighing the needs of various users. As countries reacted to the report and asked for help, the Water Resources Group carried out diagnostic work and set the stage for stakeholder dialogues and partnerships. IFC is proud to have been part of the WRG response.

At the 2011 World Economic Forum Annual Meeting in Davos, in response to growing developing country interest in the work of WRG, IFC joined with other partners in deciding to give a formal shape to the WRG platform. At the request of other partners, IFC agreed to be the host of the formal WRG entity and, over the past year, we have worked closely with our partners to help design the new entity. It gives me enormous pleasure to observe its official launch at this year's meeting in Davos. We are very excited that Anders Berntell has been appointed to be the WRG's first executive director. IFC, and the World Bank Group, feel very privileged to be part of this unique initiative and I would like to express our full commitment to making this a success.

IFC's interest in the water sector has grown as water has become an increasing business risk for both IFC and its clients. As a partner organization of WRG, IFC will strengthen its commitment to bring affordable drinking water to the underserved populations out of the reach of piped networks, improve water use efficiency in municipal, industrial and agricultural sectors, foster energy efficient technologies to reduce water's carbon footprint on this planet, and create new opportunities in the water sector through innovative technology, delivery models and financing.

Lars Thunell

Executive Vice President and CEO, International Finance Corporation

Foreword

Water scarcity is one of the most important issues that we are currently facing and the symptoms are getting more acute every day. The gap between water supply and demand is projected to be of 40% in 2030. In many places, the demand is already exceeding the sustainable supply, causing an imbalance and depletion of water resources at a faster rate than can be replenished. In other places, water is already a brake to economic growth. For instance, according to a report by the World Bank, Ethiopia's highly variable rainfall, both across the country and over time currently costs the Ethiopian economy over one-third of its growth potential. This shows that not only is water a vital resource for humans and their environment, but also to almost all economic activities across sectors.

While the management of water resources must be dealt with locally, localized water scarcity has potential for global impact. Countries or regions with abundance of water are and will increasingly be affected by water scarcity in some other places. For instance, Russia's heat-wave in 2010 led to water shortages and fears of a reduction in grain supply, which in turn led to an increase in food prices and a wider anxiety in global commodity markets. This illustrates how the localized water shortages in Russia had significant economic and political implications worldwide. Within the next 15-20 years, the worsening water security situation risks triggering a global food crisis, with shortfalls of up to 30% in cereal production. Also, scarcity increases the competition across users for the access to water. It impacts very different groups of stakeholders, such as citizens, farmers, industries, power plants, environmental protection organizations, water technology providers, religious groups or experts. As a result of all these linkages, the process of designing and implementing solutions to address the challenge of water scarcity needs to engage a broad base of stakeholders across ministries, across sectors and across regions to share international good practices. It must involve user groups, experts and decision makers from the public and private sectors and from the civil society.

At the 2008 Annual Meeting of the World Economic Forum in Davos, I was part of the Call to Action on water, where the United Nations Secretary-General, Ban Ki-moon, challenged businesses to mobilize and engage with governments in addressing the issue of water security. As a result, the Water Resources Group (WRG) has been created to support a holistic approach to water scarcity. There are too many cases of policies being devised in silos, such as biofuel policies in the European Union and in the United States, which neither account for the impact on the water resources nor on food security in the cost-benefit analysis. WRG is innovative thanks to its integrated cross-sectoral approach and to its convening power through its multi-stakeholder platform. WRG has demonstrated its high impact in Jordan, Mexico and in the State of Karnataka. New countries and regions are now willing to engage with WRG. The desire for new partnerships expressed by the governments of South Africa, Mongolia and the Province of Shanxi in China are encouraging and demonstrates demand for the WRG multi-stakeholder concept. This is why after 24 months of pilot project we wish to increase the capacity of WRG and scale up its concept to allow for more government engagement. I am delighted that we can launch WRG as a new global entity. WRG has learnt from its first government engagements to date and has been able to iteratively design how its new global operation will work, through a unique learn-by-doing approach. The design of the new WRG entity has also benefited from deep discussions involving development agencies, businesses and organizations from the civil society, so as to pin point exactly where it can have most impact.

As the Chairman of the Water Resources Group over the past two years, I wish to acknowledge and thank our partners and core sponsors to date, including the World Economic Forum, in particular its Chairman Klaus Schwab for his support and encouragement and for creating the space to develop this initiative, the World Bank Group through the International Finance Corporation, the Swiss Agency for Development and Cooperation, the Global Green Growth Institute, the United States Agency for International Development, PepsiCo, SAB Miller, The Coca-Cola Company, as well as our knowledge partner, McKinsey & Company for their leadership, commitment and support of WRG activities in 2011. WRG has come a long way in a short timeframe thanks to the involvement and contributions of all these partners. Moving forward we are delighted that the IFC, on behalf of the World Bank Group, agreed to host the new WRG entity. Many more companies, agencies and organizations have provided their time and money to help develop the work in countries to date. My sincere thanks go to you all.

While significant progress and achievements have been made, we must not be complacent. We must continue to strive for improvements. As a World Economic Forum Foundation Board Member and a representative of the initial sponsors of the Water Resources Group, I am honored to have the privilege to chair this new entity during its first stage and ensure even wider and deeper impact. I sincerely encourage new governments, businesses and organizations from the civil society to join us in this new stage of the World Resources Group to together address the water scarcity challenge and its consequences around the world.

Peter Brabeck-Letmathe

Chairman, Water Resources Group

Chairman, Nestlé SA

Foundation Board Member, World Economic Forum

Introductory Message

The World Economic Forum is committed to helping the global community address the structural challenges which face the world economy today.

While much focus is given to addressing the macro-economic fault lines that currently hold back global growth and job creation and which promote inequality, it is also clear that our historically poor management of natural resources will also create a choke-point on growth if we do not act soon.

The work of the Water Resources Group has highlighted one of the most immediate and pressing natural resource risks to delivering the growth we will need: sustainable access to freshwater.

There may be a 40% gap between the required demand and the safe available supply of freshwater by 2030 under business as usual practices. This was a centerpiece statistic of the Water Resource Group's first report "Charting our Water Future." In just two years it has become one of the most widely quoted statements to summarize our freshwater challenge.

I am delighted that collaboration between the World Economic Forum and the Water Resources Group over these last two years has now helped turn this breakthrough analysis into practical action.

The focus on water security and economic growth for the World Economic Forum began with a special focus on water at the Davos meeting of 2008. For the first time, heads of international agencies, NGOs and business leaders came together to collectively discuss our future water needs.

2009 saw the World Economic Forum launch a groundbreaking political and economic forecast of the water challenge. Driven by our Global Agenda Council on Water Security, this forecast grew into a landmark book published in 2010 on the Water-Food-Energy-Nexus. It is safe to say that the "nexus" has now become a widely-referred to framework for looking at our interconnected natural resource management challenge of food, energy and water.

At Davos in 2010, led by the international experts in our Global Agenda Council on Water Security was the announcement of the "Davos Initiative". This was the launch of a breakthrough new partnership on water, involving the Water Resources Group and the industry, government and expert constituents of the World Economic Forum Water Initiative. The aspiration was to forge a groundbreaking concept – the creation of a global public-private-civil society partnership with access to international best practices and best practitioners, designed to support those governments who wished to undertake water resource reforms, in order to secure sustainable and equitable economic growth.

The aim of the new initiative was to show, over a 24 month period, proof-of-concept that such collaboration could work with three government partners, and to stimulate interest such that an "order-book" emerged of further governments seeking support from the Water Resources Group Partnership.

The World Economic Forum agreed to incubate the initiative.

Now in 2012, I would like to acknowledge the leadership shown by the Governments of Jordan, Mexico and India – at national level and particularly through the State Government of Karnataka - who took the bold step of engaging with the new WRG partnership and working with us to create the proof-of-concept. 24 months later, the results speak for themselves – new water strategies to 2030 created with each partner government, each taking an integrated food-energy-water approach involving new multi-stakeholder engagement processes and institutional arrangements. I am also delighted to acknowledge the Governments of Mongolia, South Africa and Shanxi Province of China, each of whom has also catalyzed an engagement with WRG to form the next phase of government partnerships.

Much has been learned in this process. The leadership of corporate champions from the Forum's International Business Council notably Peter Brabeck-Letmathe, Chairman of the Board of Nestlé (and a Foundation Board Member of the World Economic Forum), Muhtar Kent, Chairman and CEO of the Coca-Cola Company and Indra Nooyi, Chairman and CEO of PepsiCo Inc. alongside many others from our Industry Partner Community has proved invaluable. I am delighted that 21 Forum Industry Partner companies and a number of key NGOs have now joined the strategic water partner's network that supports

WRG. In addition, the leadership and innovation shown by our development agency partners and partner institutions such as the Swiss Agency for Development and Cooperation, USAID and the Global Green Growth Institute has been crucial to WRG's global and regional success. The range and depth of public, private and civil society expertise provided by our Global Agenda Council on Water Security has provided the intellectual backbone to the work. I would also like to thank McKinsey & Company who have been project adviser to the WRG initiative and driven the development of its unique analytical capabilities. Finally, my special thanks are due to Lars Thunell, Executive Vice President and CEO of the International Finance Corporation and his outstanding water team. IFC have been founding partners in this collaboration alongside the World Economic Forum.

I am thrilled that the IFC on behalf of the World Bank Group have agreed to host the next stage of growth for WRG, as this innovative partnership seeks to establish itself within the international architecture. The World Economic Forum is also very grateful to Peter Brabeck-Letmathe who will continue to champion WRG by agreeing to be the first Chairman of the new entity. It is also my pleasure to welcome Anders Berntell - for 10 years the executive director of the world renowned Stockholm International Water Institute - in his new role as the inaugural Executive Director of WRG. I would like to thank those public and private entities who have already agreed to support this next phase of WRG and look forward to more joining them in the coming months. The future of WRG looks bright indeed.

The conceptualization and development of the WRG partnership has been a truly multi-stakeholder activity. The World Economic Forum looks forward to working with WRG as a partner in the months ahead, leveraging our public-private-civil society networks and convening expertise to help the entity grow its brand still further. More fundamentally however, the World Economic Forum is proud to be associated with what we hope can prove to be a truly new model for impact-orientated development.

Robert Greenhill

Chief Business Officer, World Economic Forum
January 2012

Executive Summary

The rapidly increasing demand in natural resources driven by population growth, industrialization and economic growth is questioning our ability to deliver additional supply to sustain this development. The drastic rise in resource prices over the past decade is one indicator of the uncertainty around resources going forward. The challenge is particularly complex as resources are interconnected and a solution addressing one resource (e.g. energy) might negatively impact other resources (e.g. water or food security). Thus, a new mindset should drive collaboration on and innovation among governments, industries, companies, development organizations and the civil society to ensure that future resource constraints do not lead to continuing energy, food and water insecurity.

Water, in particular, is at the heart of the resource nexus. There is an emerging gap between safe freshwater availability and water demand in many developing and fast-growing economies around the world. Recent analysis suggests that the gap between freshwater demand and supply will be about 40% globally by 2030 if business as usual water management approaches continue. The economic, environmental, social and political challenges that this water gap involves for governments are very real. Agriculture is currently responsible for about 70% of annual global freshwater withdrawals and up to 90% in some parts of Asia; yet governments across Asia will also need on average 65% more freshwater withdrawals for their industry and energy sectors by 2030 in order for their national economies to grow as forecast. With limits to freshwater availability (including for environmental sustainability) facing many governments across Asia, Africa and Latin America, there is a need to organize and manage water resources to deliver the water needed to create growth as well as for human and environmental well-being.

“WRG addresses one of the most important and urgent issues today. The biggest part of freshwater withdrawn is being used for agriculture. If we continue overusing this valuable and scarce resource the way we do today, a major food crisis will become inevitable.”

Peter Brabeck-Letmathe – Chairman of the Water Resources Group, Chairman of Nestlé SA, Foundation Board Member of the World Economic Forum

The water resource challenge is rapidly emerging as a very real economic issue for the governments of many developing and fast growing countries, as well being a key risk to global economic stability. As a government in a water stressed region seeks to deliver on its economic growth plans, how should it best manage competing demands for freshwater between its agricultural, energy and industrial sectors? How much freshwater should be protected to ensure sustainability of the freshwater resource base and adequate environmental flows, noting that increased climatic variability and demographic pressures such as urbanization will likely add extra stress on the system? From whom can a government obtain neutral, practical and comprehensive economic advice in these matters? And, perhaps most importantly of all, given the complex and fragmented nature of the water sector, who can help government water officials and other water professionals bring new actors substantively into the debate (private sector, other government Ministries, civil society), so as to change the political economy of water resource management and help trigger a substantive national process for reform?

WRG and its value proposition

The 2030 Water Resources Group (WRG) has been established to help address these challenges. WRG is an innovative and neutral public-private-expert-civil society platform that provides a partnership to help government water officials and their partners accelerate reforms that will ensure sustainable water resource management for the long term development and economic growth of their country. It does so by helping to change the “political economy” for water reform in the following ways:

“To make a difference on the water challenges we all face, governments, civil society and businesses must work together as never before. For business leaders in particular, we need to speak up, stand up and scale up our efforts on water sustainability.”

Muhtar Kent – Chairman and CEO of The Coca-Cola Company

- Drawing on a partnership between the World Bank Group (coordinated by the International Finance Corporation, IFC) and the World Economic Forum, WRG can leverage a unique public-private-expert-civil society network to help government water officials and water professionals bring new actors, for example private sector, multi and bi-lateral

development agencies, and domestic and international development finance institutions, into the national water debate.

- WRG can then use its powerful convening platforms to help government water officials and water professionals draw these various new actors into substantive and ongoing national interactions with government or international agency officials, including those who are not immediately responsible for water resources reform - such as Ministers and senior officials of energy and agriculture and the offices of the Principle (President, Prime Minister, etc).
- WRG also helps to build bridges between the water expert and non-expert. To ensure that these new discussions on water gain traction, WRG works with water officials and its public-private-civil society-expert network to create a digestible, comprehensive economic overview of the water challenge the country faces; the economic value at stake to the nation from non-action; and the costs and benefits of the various options and trade-offs on offer. In this way, a wider set of government and business leaders can become engaged in the water reform process, based on the potential for growth that sound water resource management can secure.

From the in-country work that WRG has engaged in over the last 18 months, it has found that this model is a tangible “value-add” for water sector professionals and water officials as well as the other stakeholders, whether from other government departments, private sector or civil society, engaged in the process. The analysis helps to facilitate the multistakeholder discussion, by bringing all actors onto the same economic “page” of conceptualizing the problems, trade-offs and solutions (projects, programs, policies) surrounding integrated water resource management as part of the wider planning conversation on national economic growth.

While the focus of WRG is to enable sustainable water resource management, WRG has a holistic approach which takes into account the linkages of water with energy, food security and the environment to develop integrated solutions. WRG aims to bring together relevant expertise from diverse disciplines to support governments in developing and implementing the right policies, programs and projects to accelerate water reforms. By convening a diverse set of stakeholders in the broader water sector around an extensive fact-base, WRG proposes a new model which brings substantial innovation to the way in which water security is approached around the world.

“The complex issue of sustainable water management requires the diversity of thought and capabilities that only collaboration among businesses, governments and international agencies can bring. As a global food and beverage company, PepsiCo has an imperative to lead on the issue of water efficiency, and we have committed resources and entered into public-private partnerships that enable responsible water use. The solutions we develop together are not about philanthropy; they are about long-term survival and prosperity – of people, of business, of governments and of society.”

Indra Nooyi – Chairman and CEO of PepsiCo, Inc.

The WRG approach is based upon the need to “ACT”: first, to leverage existing data and engage with existing players to create a fact-based economic **A**nalysis with broad agreement to support better decision-making including future demand scenarios based on economic plans, economic options and trade-offs, solution cost curve, and scenarios and transition paths; second to **C**onvene networks of public-private-civil society expertise to react to the analysis, build in-country **C**apacity and help develop ways forward based on best-practice; and third, to support the government as required in developing specific public-private **T**ransformations in the water sector.

WRG has been financed and nurtured for the past 24 months through informal collaboration between the IFC, the World Economic Forum and a number of bilateral aid agencies (notably the Swiss Agency for Development and Cooperation, and USAID Jordan), private sector companies (notably Nestlé, PepsiCo, SABMiller, The Coca-Cola Company and Veolia Environment) and other organizations.

WRG activities 2011

WRG works solely at the invitation of governments to undertake in-country activities. To date, WRG has responded to invitations from India (the Government of Karnataka and the National Planning Commission), Jordan and Mexico and has invitations to engage with the Governments of Mongolia, South Africa and the Province of Shanxi in China. Within the limits of its resources, the WRG platform is available to support further developing country governments whose economic growth is threatened by water security issues and

who are committed to accelerate progress on national water sector reform. Below is a summary of current WRG partnerships.

India (State of Karnataka). Karnataka has a vision to grow its agricultural gross state domestic product (GSDP) at 4% and its overall GSDP at 9-10% over the next 10 years. However, it is India's second most water scarce state. Given the efficiency at which Karnataka currently uses its scarce water, the demand for water in 2030 is expected to far exceed the supply, which would severely hamper the ability of the state to achieve its vision. In November 2010 the Government of Karnataka and WRG entered into a pioneering collaboration on water resource management with the aim of catalyzing a water reform process. As part of Phase 1 of this effort, WRG fielded a team to analyze agriculture demand and the limitations of the supply infrastructure. The key analysis completed focused on (i) Karnataka's future water requirement in agriculture, (ii) an estimation of the current sustainable ground water and surface water supply, and (iii) an economic analysis of the practical solution options available for meeting the future water requirement.

Based on this work, the team developed a set of six interventions to transform water use in the state, together with the enablers required to implement these interventions and the impact on farmer incomes. WRG is currently supporting the Government with the process of designing pilots before the implementation stage. As part of Phase 2 of the effort, the team will analyze, in detail, the expected growth in demand for water from industry and domestic sectors and work closely with the Government of Karnataka to develop implementable solution options to promote economic water use in the state.

India (National Planning Commission). The National Planning Commission and WRG have collaborated to answer a set of strategic questions on the Indian water sector. The output of this collaboration, called the National Water Resources Framework Study, focused on a detailed analysis of the institutional, legal, regulatory and capacity deficiencies in water-related sectors in India. The study covered large scale irrigation reform, groundwater management, river basin planning, legal and regulatory reform, urban and industrial water supply and conservation, and the role of a possible National Water Commission. The study features 12 working papers which collect the local and international knowledge necessary to answer the initial strategic questions. To take forward those working papers and reflections that it triggered, the interdisciplinary expert team has developed a roadmap that will be used as an input to India's 12th Five Year Plan.

Jordan. Jordan is one of the most water poor countries of the world and water availability is a key challenge to its future economic and social development. The recently completed WRG project "Accelerating Water Sector Transformation in Jordan" aimed to provide a fact-based analysis of how Jordan can take an economy-wide approach to water, ensuring the most economically and socially productive use of this scarce resource. The project highlighted the future water supply and demand situation, identifying the need for an additional ~650 Million Cubic Meters (MCM) of water by 2030 to meet Jordan's economic plans and national agenda objectives. It identified opportunities for a step change in water productivity of agriculture (driven particularly by the low value add of agriculture in the Highlands) and in water efficiency across the economy. The conclusions of the analysis have been presented to the Minister of Water and Irrigation as well as senior leadership from the Ministry of Planning and International Cooperation, the Ministry of Agriculture and USAID Jordan. The work has been warmly received and the analysis will be used to help review and revise "Water for Life", Jordan's Water Strategy 2008-2022. Jordan has also invited WRG to support the creation of a "National Water Council", a cross-ministerial, cross-sector group to plan and manage water resources. WRG is now working with Jordan to establish the process and specific action plan for 2012.

"Water is not only life, not only food, not only environment. It is also a vital contributor to economic growth. We want to move from the era of challenges to the era of solutions in the water sector, that we can showcase to the world."

Basavaraj S. Bommai – Minister of Water Resources of the State of Karnataka, India, speaking at the India Economic Summit in Mumbai, November 2011



"We are working with WRG ... to help us understand demands for water across the economy and with this type of knowledge ... we will review and revise our national 'Water For Life' strategy, and find it easier to plan for the solutions to meet the country's National Agenda aspirations."

HRH Prince Feisal of Jordan and Chairman of the Jordan Royal Water Commission speaking at the World Economic Forum Special Meeting on Economic Growth and Job Creation in the Arab World in Jordan, October 2011



Mexico. WRG has been working with the national water commission, CONAGUA, to develop a fact base on a sustainable water pathway for Mexico that is robust in the face of climate change and additive to the adaptation agenda. This pathway includes a range of transformation levers: infrastructure investment, technical measures or process optimization, behavioral change and risk transfer for those extreme weather events for which the cost of prevention would be prohibitive. The WRG analysis was an important input to help Mexico shape and design its 2030 Water Agenda, launched by President Felipe Calderon, featuring 38 initiatives to improve the country's water sector management. To help take forward some of these initiatives, CONAGUA requested a continuation of its WRG partnership. WRG is currently helping CONAGUA in developing the financial mechanisms to promote a sustainable water economy in Mexico. The Inter-American Development Bank has expressed interest to partner with WRG as a champion to take a regional approach.

"By combining the analytical framework of the Water Resources Group with CONAGUA's own expertise, we have been able to gain a deeper understanding of Mexico's current and projected water situation."

José Luis Luege Tamargo – Director-General, CONAGUA, letter to World Economic Forum 15th April 2011



Mongolia. Mongolia is embarking on a program of rapid economic growth, driven by the mining sector due to its mineral wealth. This growth will lead to a significant increase in demand for water resources, potentially becoming a brake on the economic activity. At Davos 2011, the President of Mongolia invited WRG to partner to explore a sustainable pathway for water security. WRG conducted a pre-diagnostic of water issues based on available data, which confirmed three major challenges: i) Ulaanbaatar water supply; ii) Mining in South Gobi area; and iii) Irrigation and livestock in the Central region. With the Office of the President of Mongolia, WRG co-hosted a workshop in June, which brought together more than 120 domestic and international participants from the public, private and civil society sectors as well as international institutions to explore the challenges and opportunities in the three identified areas. The initial diagnostic and the workshop leveled up the awareness of the water issues across the public and private sectors and the civil society. This has increased the will to act jointly and set the path for action. In a follow-on meeting, the President of Mongolia and WRG committed to form a Mongolian Water Alliance of key government entities, civil society representatives and private sector participants. The Mongolia Water Alliance will be formalized at an inaugural kick-off meeting in the coming months and the formal action plan will be launched. WRG is currently supporting the Mongolian Government to select and reach out to the relevant members to be part of the Alliance. WRG will continue to support Mongolia in its reform process with a detailed analysis to generate integrated options for the water sector.

"Managing our future water needs is key to sustaining Mongolia's economic growth. We must ensure fast and effective implementation of our National Water Plan. We will benefit from the international networks and experience of the Water Resources Group to help us do so."

Tsakhia Elbegdorj – President of Mongolia on the announcement of the WRG – Government of Mongolia Alliance on Water, June 2011



South Africa. Minister of Water and Environmental Affairs Edna Molewa and Peter Brabeck-Letmathe, Chairman of Nestlé and Chairman of WRG launched a declaration of partnership between the South Africa Department of Water Affairs (DWA) and WRG at the World Economic Forum on Africa 2011 in Cape Town. The partnership is helping South Africa address three priorities: i) water use efficiency / leakage reduction; ii) supply chain in agriculture; and iii) effluent partnerships (waste water treatment and reuse). WRG is assisting the DWA to develop sector strategies, identify pilot projects and take them forward through public-private-expert collaborations. A crucial component of the DWA-WRG partnership is government ownership of the process and the domestic development of public-private support structures. To this end, a public-private-expert leadership group called the South Africa Water Partners Network (SWPN) was formally established in November

"South Africa recognizes the need for better and smarter ways to manage our water resources and in particular the need to collaborate with all stakeholders... I am delighted to announce the Declaration of Partnership between my Department of Water Affairs and the 2030 Water Resources Group."

Edna Molewa – Minister of Water and Environmental Affairs of South Africa at the World Economic Forum Summit on Africa, Cape Town, May 2011



2011 and publicly presented at the COP17 in Durban. This partnership is a significant step in helping South Africa to meet its water demand given its identified growth trajectory. At the inaugural meeting, the SWPN has decided to establish working groups to further focus its scope of activities and ensure delivery of tangible results, action and replication. WRG will continue to support these working groups as they develop and refine their recommendations towards a South Africa Water Summit that will take place early 2012 to jointly develop the action plan.

China (Province of Shanxi). Since the launch of introductory discussions on WRG at the AMNC in September 2010 in Tianjin, WRG has been interacting with various Chinese and international stakeholders to identify how it might support the efforts on water reform activities in China, particularly as expressed through the 12th Five Year Plan released in March 2011. The potential for comprehensive WRG engagement at the provincial level has emerged as a key opportunity. Government officials in Shanxi Province in North West China have expressed particular interest to engage with WRG. Shanxi is a stark example of a Chinese Province whereby fast economic growth is straining the availability and quality of water resources across the food-energy-water nexus. The Government of Shanxi and WRG are currently discussing the scope of the potential engagement.

In addition to in-country activities, WRG has been developing an **open source, global, public-private knowledge base of good practices** to help governments access information on water transformation. The Stockholm International Water Institute (SIWI) has been collaborating with WRG in creating a pilot model of this catalogue. In this pilot phase, WRG has reached out to three engaged governments - Jordan, Karnataka and South Africa, to identify their priority areas of action in the water transformation space. Based on these government led priorities, SIWI has initiated the process of pulling together local and international good practices, solutions and advisors for the identified priorities.

Finally, WRG has **built its reputation** as an innovative partner and content expert in the water landscape and has **raised awareness** about the water scarcity challenge among high-level decision makers. WRG has done so by leveraging the Forum platform of partners and events to organize 11 high-level water sessions and to produce and disseminate knowledge. The investment in the organization of these sessions and the production of briefing notes helped to position WRG as a major player with the power to catalyze concrete country water transformation programs. The recognition of WRG's broad network of expertise has led other organizations to ask WRG to organize water sessions as part of their programs, for instance during the Global Green Growth Forum in Copenhagen or at the Bonn Conference on Managing the Water, Energy and Food Security Nexus. This work has also profiled WRG as a reliable partner for businesses and governments to engage with.

A new global entity to scale up WRG operations

At the World Economic Forum Annual Meeting in Davos 2011, the progress of WRG was deemed strong and the decision was taken to transition the current WRG program into a scalable operation, while retaining its status as a neutral platform. IFC, on behalf of the World Bank Group, agreed to host the new WRG entity and, to this end, has worked with the Forum and other partners to establish the entity with an initial 24 month horizon (January 2012- December 2013). This next phase of WRG will replicate and deepen the work underway, while creating sustainable public-private-civil society platforms both at the global and country levels to promote the change in political economy such reform processes require. The plan is for WRG to catalyze at least five additional country water sector programs (including the engagements in Mongolia, South Africa and the Province of Shanxi which have just been

"The Water Resources Group is innovative in its power to bring people from different backgrounds together. This initiative will contribute to the transparent and equitable planning and management of water resources. It draws to large extent on the know-how from the private sector. This is why it stimulates additional private sector investments. The next stage will be to expand first positive results to least developed countries providing a significant contribution to poverty reduction."

Martin Dahinden, Director-General of the Swiss Agency for Development and Cooperation

"By 2030, global demand for water could be 40 percent higher than it is today—and even more in developing countries. Water is an indispensable resource for economic growth and human development. By acting quickly and collaboratively, we can make sure it doesn't become scarce. I am confident that the Water Resources Group, by encouraging innovative partnerships and new business models, will help achieve that goal."

Lars Thunell – Executive Vice President and CEO of the International Finance Corporation

commenced). WRG will also further develop its proposition to help water sector professionals and government officials from the relevant ministries harness private sector solutions and investment as well as existing expertise from the private sector, civil society and from other governments to help develop inclusive transformation plans. If successful, and following an independent review in the summer of 2013, a further phase of WRG will be launched (January 2014 – January 2016), where at least 7 additional country water sector transformation programs will be catalyzed – bringing the total of country engagements to at least 15 by January 2016. A key objective of the second phase would be to support lower income countries or provinces which are water stressed. The design of the WRG entity has been heavily informed by the in-country learning and from bilateral and multilateral agency feedback as to the unique value-add the WRG proposition can bring.

The WRG secretariat requires \$12 million for its operations over 24 months, 2012-2014. These funds will be used as seed money for jump-starting country engagements, and to fund global products and secretariat expenses. A small anchor group of development agencies together with a group of private sector actors called the Core Champions will be supporting the central secretariat. To qualify as a WRG Core Champion, an organization must be willing to provide \$1 million a year and will receive a key role in WRG governance. The World Bank Group via the IFC, has already committed to provide \$2 million over the two coming years and is therefore a WRG Core Champion. Support from private sector partners and other development agencies is under active discussion, such that at its core, WRG can be a truly public-private initiative.

WRG has a uniquely decentralized business model to enable the effective design and financing of each in-country package. In each of its new country partnerships, WRG will seek Country Partners, which are public sector organizations who are principal players in the country's water resource agenda, and "Country Champions" from the private sector and civil society to support the program. In addition to leading private sector engagement with the Government, a Country Champion also typically leads the formulation of an in-country business-expert coalition on water which will work with national stakeholders in putting in place a multi-year program of sector transformation.

This next 2-year stage of WRG offers a unique opportunity to participate in an international public-private-expert-civil society platform which is being established to help water professionals and other government officials catalyze transformation in global and national water sectors, and to address water access and scarcity issues in the developing world. WRG is seeking committed organizations to join as funding partners as this important initiative begins to scale up its operations.

"Water security is one of the biggest issues facing the world in the twenty-first century. It presents a profound challenge to our social wellbeing and our economic growth. To address it, we need new models of collaboration between public, private and civil society communities. I welcome the efforts of the Water Resources Group, which is an excellent example of joint leadership from the Forum's Strategic and Industry Partner communities with government and civil society to address the global water challenge. I am delighted the World Economic Forum has been able to play a role in supporting this important initiative and pleased to continue our support in its endeavour to scale up."

**Klaus Schwab – Executive
Chairman of the World Economic
Forum**



PART I

THE WATER RESOURCES GROUP – APPROACH, PROGRESS ACHIEVED AND IMPACT

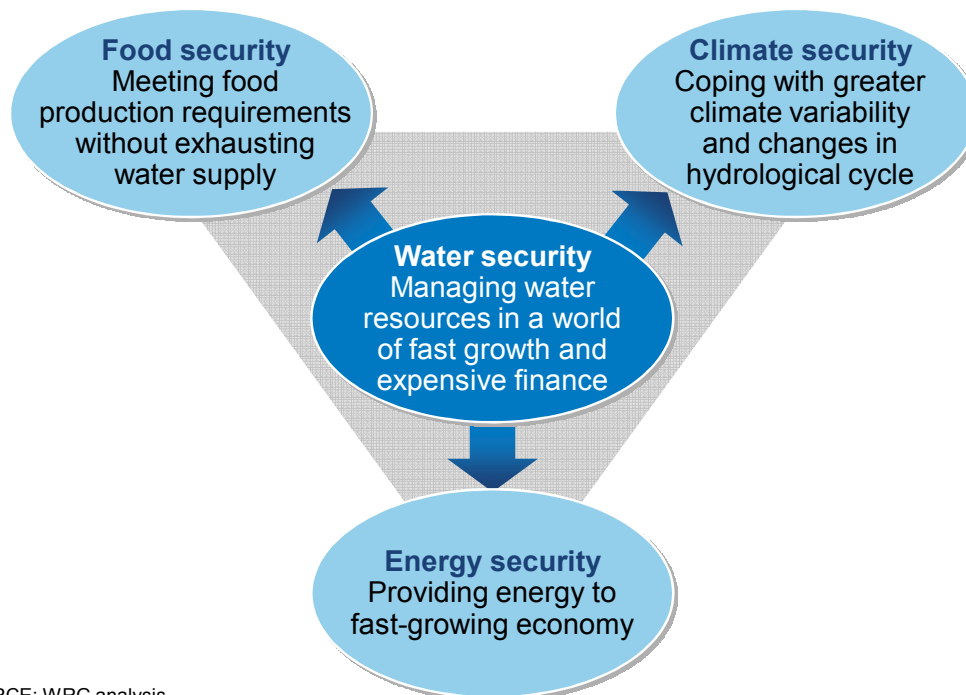


1. Background, Value Proposition and Approach

A. The Issue

By 2030, global freshwater withdrawals will have exceeded the current capacity to supply by over 40% and close to 4 billion people will live in areas of high water stress. Water stress and scarcity are already endemic in large parts of the developing world. They impact economies, society, and the environment. Growth, business continuity, food and energy security, and drinking water supplies are all seriously under current and increasing threat. The scale of the water security problem makes it an interconnected global issue, not just a series of local or national ones. Global demand for food is projected to grow ~40% by 2030, yet some predict that due to potential shortages of water for agriculture there is a risk of a 30% shortfall in cereal production by 2030. Such a shortfall occurring at the same time as rising global demand makes it likely that an increasing number of local water challenges for agriculture would turn into a global crisis in our interconnected economy. Recent fluctuations in food commodity prices and the social, economic and political challenges they create offer some sense of the potential future. EXHIBIT 1 presents the interconnections between water, food, energy and climate security. This shows that an overall water crisis will have serious political and social repercussions with adverse effects on growth and job creation.

Water has moved from a marginal input towards a central enabler of food, energy and climate security – and a vital prerequisite for growth



SOURCE: WRG analysis

Box 1: Some key issues in water security

- **40%** – The gap between safe freshwater demand and supply by 2030 if business as usual water management approaches continue;
- **2.5 billion** – The number of people that have no access to a basic toilet or other adequate sanitation services;
- **894 million** – The number of people without access to safe freshwater for drinking, cooking and cleaning;
- **US\$ 109 billion** – The global annual GDP loss due to droughts;
- **70%** – The average annual use of global freshwater withdrawals for agriculture, which is unsustainable in many places; if current trends continue, by 2030 increasing water scarcity could cause annual grain losses equivalent to 30% of current world consumption;
- **50,000 to 270,000 liters** – The water needed to produce one Gigajoule (GJ) of bio-fuel energy from irrigated soy; 9,000 – 100,000 liters/GJ for corn bio-fuel; 3 – 7 liters/GJ for traditional oil;
- **Over 70** – The number of the world's major rivers that are already so over-allocated that little of their water actually reaches the sea;
- Climatic variability amplifies the water security challenges mentioned above; the vast majority of adaptation to a changing climate will effectively be a water challenge.

Sources: 2030 Water Resources Group, Charting Our Water Future, 2009; Water Supply and Sanitation Collaborative Council (WSSCC); World Health Organization (WHO) and United Nations Children Fund (UNICEF); Joint Monitoring Programme on Water Supply and Sanitation (JMP); United Nations estimates cited in Background Paper on Drought 2007; United Nations Economic and Social Commission for Asia and the Pacific; Frank Rijbersman, IWMI, 2003; US Department of Energy (Energy Demand on Water Resources, 2006); WRG analysis

B. The Prospect

The issue must, and can, be addressed, but in different ways than attempted previously. Despite the resources and efforts devoted to solving the “water crisis” on the part of Multilateral Development Banks (MDBs), Official Development Assistance institutions and NGOs, political progress has been slow when considering the water gaps forecasted for 2030. The water sector has historically been managed at the technical and sub-national level, and has not been considered an issue of national economic importance. The role of water as a public good imparts complexity into any government-led transformation of water management. While governments are the ultimate custodian of the national water resource and play a critical role in creating the enabling environment, other stakeholders also play a vital role in formulating and delivering actionable and inclusive solutions. This requires use of public-private-civil society coalitions focused on meeting the water security challenge, each leveraging their comparative advantage within a common dialogue and policy framework. Yet creating and mobilizing such collaboration at scale is hard; even governments and MDBs find it difficult to do.

Changing the “political economy” for water reform in this manner has been a key and well recognized challenge for government water officials and water professionals. In particular:

- how to bring new actors into the national water debate – for example economic policy experts; large water-using companies such as in the food, energy and mining sectors; the latest technology pioneers; non-water-specific civil society groups (e.g. trades unions, farmers, religious groups); young business or social leaders; and investors and private sector lenders from the international financial community; and
- how to package water resource information in a compelling format for influential, non-water specialists, especially in ways that enable a wider set of government and business leaders to become engaged in the water reform process

C. The Formation of the Water Resources Group (WRG)

WRG was formed in 2008 to contribute new economic insight and analysis for quantifying the water security challenge and to mobilize diverse stakeholders in the sector to help developing country governments address these issues. WRG was led by the IFC and nine private sector companies. In October 2009 WRG published the report “Charting our Water Future”. Using “cost-curves”, the report provided economic analysis on the gap between water supply and demand to 2030 (and the options and costs of closing it) for China, India, South Africa, the state of Sao Paulo in Brazil among other regions. The report generated considerable interest.

Concurrent to the formation of WRG, 2007-2008 also saw the World Economic Forum place a special focus on water, with the intent to change the political economy of the water agenda, from mostly an MDG-related “access” issue to an issue of “access in the context of wider resource security and economic growth”. Through the publication of reports and the use of the Davos 2008 Annual Meeting and other regional meetings, the Forum had raised awareness about the economics and politics of water resource security. The Forum also worked with other development agencies such as the Swiss Agency for Development and Cooperation and USAID and a number of private sector partners to create prototype public-private platforms to discuss water reform in a number of countries.

Through 2008-09, the Forum also helped WRG to develop and disseminate its work. At the 2010 World Economic Forum Annual Meeting in Davos, and based upon a proposal put forward by sector experts from the Forum’s Global Water Agenda Council, heads of industry and international organizations called for deeper collaboration between the World Economic Forum and WRG, in order to create a WRG Phase 2. This alignment was agreed under the banner of a Davos Initiative (see Box 2) with the guidance of Margaret Catley-Carlson and Arjun Thapan, two recognized water experts who served as the chairs of the Global Agenda Council on Water Security between 2009 and 2011. Please refer to Annex 1 for the list of members of the Global Agenda Council on Water Security.

Box 2: Davos Initiative agreed in January 2010

There is a need to move from dialogue to accelerating change. Using the World Economic Forum's neutral platforms and convening strength, a 'Davos Initiative' is proposed. The initiative will create an unparalleled network of public, civil society and private expertise on offer as a supporting partner for those countries seeking to transform the management of their water resources.

Building on analytical approaches from the 2030 Water Resources Group, the Davos Initiative will engage with countries in their path towards water reform by helping them to obtain efficient access to the best available tools, practices, partnership models and policies; build management capabilities, mobilize financial resources, and develop peer relationships across countries.

The Davos Initiative will work in collaboration with a set of countries for whom water is a high priority and who invite the Initiative to partner with them on the journey towards water security. The intention is to draw on knowledge from the public, the research, the not for profit and the private sector, and to ensure that what is learnt in those experiences can then become the basis for similar support in other countries.

The Davos Initiative will follow six principles:

- Create supportive country-level coalitions and networks, catalyzed through partnerships involving members of the World Economic Forum's Water Initiative;
- Accelerate change by using these networks to leverage and amplify existing efforts (rather than creating a parallel entity) and to disseminate knowledge widely;
- Recognize the links between energy, food and water security and that smart management of these linkages can create win-win alignments, with positive implications for growth, development and sustainability;
- Incorporate breakthrough ideas from all sources: technology and engineering companies, financial services partners, social entrepreneurs, aid agencies, international organizations, development finance institutions, civil society, NGOs, community organizations, farmers, think tanks and research centres;
- Leverage deep content experts, including networks of national and international expertise as well as those who form the World Economic Forum's Global Agenda Council on Water Security and other Forum Agenda Councils;
- Enable countries to highlight collective and individual leadership in the water space, lessen political risks of action, and leverage shared intellectual resources across countries;

Those meeting at Davos agree to form a working group to develop the frame, content, specific reform activities, governance, partnership and financing arrangements for the new Davos Initiative vehicle. The aim is to launch the new entity in 2011.

Over a 24 month period (January 2010-January 2012) this collaboration was to finance and test a full multidisciplinary WRG proposition, through in-country partnerships with three governments. During 2010, the governments of Jordan, Mexico and the State of Karnataka in India requested to participate with the WRG pilot. This country collaboration combined the WRG analytic with the multistakeholder work of the World Economic Forum Water Initiative in order to create proof-of-concept for the WRG proposition – to provide a unique multistakeholder approach, bringing in new actors and new economic insight to support governments in managing their future water needs.¹ If the pilot was successful, the agreement reached at the 2010 Davos meeting was to launch a new WRG entity from 2012 onward, to provide a scalable platform for such work.

¹ The WRG approach is based upon the need to "ACT": first, to leverage existing data and engage with existing players to create a fact-based economic Analysis with broad agreement to support better decision-making including future demand scenarios based on economic plans, economic options and trade-offs, solution cost curve, and scenarios and transition paths; second to Convene networks of public-private-civil society expertise to react to the analysis, build in-country Capacity and help develop ways forward based on best-practice; and third, to support the government as required in developing specific public-private Transformations in the water sector

The on-going in-country work involved the creation of a diagnostic framework and information database, and brought together a diverse group of stakeholders who would create a new political economy for change to help develop an action plan resulting from the economic analysis.

D. Value Proposition of WRG

WRG is a neutral platform that provides a partnership to help government water officials, the private sector and other water sector specialists accelerate reforms that will ensure sustainable water resource management for the long term development and economic growth of their country. It does so by helping to change the “political economy” for water reform in the country through convening new actors and providing water resource analysis in ways that are digestible for politicians and business leaders. WRG acts as an independent entity and offers no political, partisan or national nuance to its advice. It works closely with in-country water professionals, the private sector and the civil society, and engages with its government clients in a rapid, time-bound manner and only by invitation. It sets out clear measurable objectives for success within 24 months, through a Memorandum of Understanding (MOU) with its government partner.

Experience has shown that progress in reforming the water sector has been limited by five factors, which tend to constrain sector professionals from delivering on both the access and resource availability objectives:

- Absence of comprehensive, accurate, quantitative, sector information and accompanying strategic analysis to describe and quantify not only the economics of the problem, but also the costs, trade-offs and inter-linkages of various solutions to achieving water security;
- Lack of embedded change management and analytical capacity skills at the level of the implementing government ministries and departments; absence of appropriate governance structures and systems; and absence of national alliances and coalitions of public, private and civil society stakeholders to support the reform process (including across government);
- Difficulty for implementing governments to access real-world experience, expertise and best practices on sector transformations that have been undertaken. Sharing of best practices as well as lessons learned between implementing governments and with business leaders who have implemented efficiency and productivity programs are key to creating actionable plans;
- Low ranking attributed to water on the national or local economic growth or political agenda, making it difficult to deploy adequate resources to implement change and mobilize relevant stakeholders;
- Political sensitivity, especially around water pricing and the role of the private sector.

There is deep and wide technical expertise within the water resources community. The private sector is also a rich repository of knowledge and insights on how to address the water security challenge and on-the-ground experience in innovating and implementing a range of practical solutions, such as in water efficiency and water supply. However an underpinning challenge is how to help the water community, including the private sector, create the wider political economy conditions and momentum for change in water reform, such that this expertise can be brought to bear in the design and implementation of a comprehensive set of policies, programs and projects. This is the role that WRG seeks to fill.

- WRG is an innovative and neutral public-private-civil society platform for collaboration on water, which enjoys a unique convening capability. Drawing on a partnership between the World Bank Group (coordinated by the IFC) and the World Economic Forum, WRG can leverage a unique public-private-expert-civil society network to help government water officials and water professionals bring new actors into the national water debate – for example economic policy experts; large water-using companies such as in the food, energy and mining sectors; the latest technology pioneers; non-water-specific civil society groups (e.g. NGOs, trades unions, farmers, religious groups); young business or social leaders; and investors and private sector lenders from the international financial community.
- WRG can then use its powerful convening platforms to help government water officials and water professionals draw these various new actors, for example private sector, multi and bi-lateral development agencies, and domestic and international development finance institutions, into substantive and ongoing national interactions with government or international agency officials,

including those officials who are not immediately responsible for water resources reform - such as Ministers and senior officials of energy, agriculture, trade and industry, planning, finance and the offices of the Principle (President, Prime Minister and Heads of Development Agency etc).

- To make best use of its convening potential and its extensive public-private-expert network of stakeholders, WRG works closely with government water officials and other water related experts and institutions, including at the local, national and international level: WRG invites them to provide their content expertise to underpin these new multistakeholder discussions on national water management. In this way, government and business stakeholders who are influential, but not water specialists, gain access to best available expertise and existing programs from within the national water sector and across public, private and civil society knowledge networks, both locally and worldwide.
- WRG also helps to build bridges between the water expert and non-expert. To ensure that these new discussions on water gain traction, WRG helps water officials to package their water resource information in a compelling format for influential, non-water specialists. WRG works with water officials and its public-private-expert network to create a digestible, comprehensive economic overview of the water challenge the country faces to 2030; the economic value at stake to the nation from non-action; and the costs and benefits of the various options and trade-offs on offer. In this way, a wider set of government and business leaders can become engaged in the water reform process, based on the potential for growth that sound water resource management can secure.

From the in-country work that WRG has engaged in over the last 18 months, it has found that this approach is a tangible “value-add” for water sector professionals and water officials as well as the other stakeholders, whether from other government departments, private sector or civil society, engaged in the process. The analysis helps to facilitate the multistakeholder discussion, by bringing all actors onto the same economic “page” of conceptualizing the (often complicated) problems, trade-offs and solutions (projects, programs, policies) surrounding integrated water resource management to 2030 as part of the wider planning conversation on national economic growth. In particular, this approach helps planners and politicians assess with business and civil society how best to manage the integrated nexus of water-related issues (energy, agriculture, industrialization, urbanization etc), in the context of planning for economic growth and creating economic resilience to future climatic variability.

Box 3: WRG – A new model in the water space

The theme of the 2012 World Economic Forum Annual Meeting in Davos is “The Great Transformation: Shaping New Models”. A complex, interdependent and fast-paced world creates not only diverse outcomes but also unintended consequences that constantly test the cognitive limits of leaders and force us to shape new models. This is particularly true within the water sector, which is interconnected with most human and economic activities and can have strong externalities if not managed properly.

In alignment with the Forum Annual Meeting theme, WRG proposes a truly new model. While its focus is to enable sustainable water resource management, WRG has a holistic approach which takes into account the linkages of water with energy, food security and the environment to develop integrated solutions. This integrated approach is complex but necessary to solve the issues rather than shift them from one sector to the others or from one player to the others. It requires a strong coordination across the stakeholder organizations from the civil society and the public and private sectors. It also requires strong coordination across decision-makers, policy makers and people affected by any solution. WRG is equipped, thanks to its broad network and exceptional convening power, to create this new integrated and coordinated approach. In this way, policies, programs and projects will be coherent at the global and local levels across sectors and stakeholders. By convening a diverse set of stakeholders in the broader water sector around an extensive fact base, WRG proposes a new model which brings substantial innovation to the way in which water security is approached around the world.

A cornerstone of WRG’s work in any country is an emphasis on coordination of effort. Consequently, WRG is designed to work with and through existing national water programs, platforms or expert institutions already focusing on water resource management. It does so by providing extra assistance to help build and strengthen their capacity to convene non-water stakeholders and to articulate the case for water reform in economic and financial terms. WRG will also help key government line ministries and other water

stakeholders develop their analytic capacity in water resource economics, so as to boost domestic ability to monitor and evaluate water reform progress in economic terms and in relation to national growth priorities.

WRG is not aware of any existing water initiative offering an approach of this nature, involving new groups of private, public and social sectors, and linking local and global processes, to help improve the conditions for national water resource reform. As the proposition makes clear, WRG does not intend to substitute the water sector work of government officials, development agencies and other institutions. Rather - and having being designed and piloted in close consultation with those working in the water agenda - WRG specifically exists to tackle some of the systemic political-economy conditions that tend to hold back the policy, program and project aspirations of government officials and other water sector professionals.

Box 4: Private sector support for comprehensive national water management reform

Water is a key input for private sector operations. The industrial and energy sector on average constitute about 20% of national freshwater withdrawals. As a country's economy grows this share increases (in the United States for example close to 50% of freshwater withdrawals are for energy). The food industry of course relies on farmers who on average constitute up to 70% of a country's freshwater withdrawals.

The emerging water shortage in many countries is thus a major issue for businesses across the economy who are concerned about implications for the sustainability of their operations, their supply chain, their broader societal license to carry on business and – most importantly of all – the ability of the national economy to deliver on its growth aspirations in relation to the water constraints it faces. Given the private sector's critical role in economic growth and job creation, this concern is becoming increasingly shared by governments and other stakeholders. At the same time, as water becomes scarce, private sector demands on water compete with those of other users and a clear economic framework for allocation becomes necessary. For all these reasons, a clear and comprehensive national water management regime that ensures adequate water for environmental and social needs, and then allocates remaining freshwater resources in an economically appropriate manner, is to the benefit of all stakeholders.

Companies can undertake water-use efficiency activities within their own operations, with their immediate constituents and even along their supply chains. Many initiatives have been established to do so, for example the UN CEO Water Mandate, numerous successful business-NGO watershed partnerships and the water footprint network. However, at the national or state level, the government is the ultimate custodian of the freshwater resource and businesses can only seek to engage with reform initiatives that are driven and owned by government. Yet governments find it difficult to engage in comprehensive water sector reform activities (even many integrated water resource management activities remain water Ministry led and techno-centric). How then to offer a neutral platform that can help governments access (i) best-in-class comprehensive economic analysis on safe freshwater supply and demand to 2030 (ii) good-practice case studies from around the world on how to close the supply-demand gap so as to meet national economic growth aspirations; and (iii) the capacity and platforms to build momentum for freshwater management reform across all key stakeholders in the economy (including across government itself)?

It is for these reasons that many global and domestic representatives from the private sector show interest to engage in the WRG model and thereby support governments to develop a comprehensive national water reform strategy, alongside civil society, scientific and other expert stakeholders.

The WRG engagements have shown that the role of private companies is critical to support countries in their water reform. First, companies have unique data sets on the water sector. WRG benefited significantly from the data of its partner companies, which improved the quality and comprehensiveness of the analyses. Then, the expertise of the private sector alongside the civil society, international organizations and development agencies was key to support WRG in designing the right approach and stress-testing the analysis. They also provided input into the water strategy of the partner countries and helped the governments to take it forward into implementation. Finally, the private sector, together with international organizations and development agencies provided finance to support each WRG partnership.



2. WRG Activities and Impact 2010 – 2011

Building on the success and progress in 2010, WRG has focused on four major activities in 2011:

- First, WRG has continued its action oriented agenda to support governments of the Indian state of Karnataka, Jordan and Mexico develop and take forward water sector transformation strategies;
- It has developed new country partnerships with Mongolia and South Africa, which involved raising finance to support these engagements; WRG also initiated scoping discussions with the Province of Shanxi in China for a potential engagement;
- WRG has initiated the development of a pilot version of a global catalogue of good practices to help governments access information on water transformation;
- Finally, WRG has deployed significant efforts in raising awareness about the water security issue to key decision-makers and in building its reputation as a trustworthy player within the global water landscape.

For complementary information on any of these activities, please contact WRG (contact information given in the section Partnering with WRG).

A. Advancing the Pilot Country Programs

The engagements with Jordan, Mexico and the State of Karnataka started in 2010 and act as proof points of the validity of WRG's public-private-civil society model. With these partners WRG has delivered comprehensive economic analyses on their various water challenges, with cost-benefit pathways towards

technical and policy solutions, especially in the agricultural sector which is the key user of freshwater resources (up to 90% in some cases).

India – The State of Karnataka and the National Planning Commission

The WRG analysis mentioned in the following section is the result of a full diagnostic on the water supply and demand in the agricultural sector in Karnataka. The WRG team worked in collaboration with the Government of Karnataka and used existing data and aligned the results through an iterative process. The analysis was presented as a briefing paper and discussed at the WRG session at the World Economic Forum's 2011 India Economic Summit in Mumbai.

"Water is not only life, not only food, not only environment. It is also a vital contributor to economic growth. We want to move from the era of challenges to the era of solutions in the water sector, that we can showcase to the world."

Basavaraj S. Bommai – Minister of Water Resources of the State of Karnataka, India, speaking at the India Economic Summit in Mumbai, November 2011



Karnataka is India's second most water scarce state. The state, which has three major river basins, has a vision to grow its agricultural gross state domestic product (GSDP) at 4% and its overall GSDP at 9-10% over the next 10 years. Given the efficiency at which the state currently uses its scarce water and the agricultural productivity of its major crops, the demand for water in 2030 is expected to far exceed the supply, which would severely hamper the ability of the state to achieve its vision.

Background to the Government of Karnataka and Water Resources Group partnership

In November 2010 the Government of Karnataka and WRG entered into a pioneering collaboration on water resource management with the aim of catalyzing a transformative water reform process. As part of Phase 1 of this effort, WRG fielded a team to analyze agriculture demand and the limitations of the supply infrastructure. The key analysis completed focused on:

- Karnataka's future water requirement in agriculture
- An estimation of the current sustainable ground water and surface water supply, and
- An economic analysis of the practical solution options available for meeting the future water requirement.

Based on this work, the team developed a set of interventions to transform water use in the state. The team also assessed the enablers required to implement these interventions and the impact on farmer incomes. The results were aligned with the Government of Karnataka in an iterative process and shared with experts, farmer representatives, Water User Associations and other stakeholders from the private sector to collect their input. The partnership has been co-financed by the Government State of Karnataka, PepsiCo and the Swiss Agency for Development and Cooperation.

For more detailed information on the analysis, please contact WaterResourcesGroup@weforum.org.

Moving from analysis to action

To implement the initiatives identified by WRG, the Government of Karnataka aims to design a series of catalytic pilot projects. Workshops were held, with the participation of key staff from the Government of Karnataka, the private sector and experts to discuss priority areas in which to start the design of pilots.

The WRG - Government of Karnataka analyses were also discussed at the India Economic Summit in November 2011. The various public and private sector, civil society partners and farmers were invited by the Government of Karnataka to get involved to co-develop pilot projects to implement Karnataka's 2030 water vision. This resulted in numerous ideas and suggestions being offered.

The State of Maharashtra, which has considerable experience in water management, offered to partner in the creation of a state-to-state platform where best practices could be exchanged. Maharashtra has learned a number of lessons in this area that they are willing to share, including pipe-lining innovations to reduce losses; moving away from water-intensive crop; engaging consumers and creating ownership over water management by moving water management facilities closer to water user associations.

From the private sector came many offers to support Karnataka's 2030 water vision. Jain Irrigation and PepsiCo suggested a drip-irrigation partnership; mobile technology was proposed as a way to link farmers with the irrigation control system, allowing farmers to use mobiles to control how much water they need for an efficient irrigation management. Rotary International suggested a pilot program in which they could increase water-sanitation awareness in local schools and communities through education. Eco-sanitation could be re-used for fertilizers and would prevent water pollution at the same time. The example set by the steel mills de-silting dams in Karnataka could be followed by companies in other sectors.

As part of Phase 2 of the effort, WRG will analyze, in detail, the expected growth in demand for water from industry and domestic sectors and work closely with the Government of Karnataka to develop implementable solution options to promote economic water use in the state.

WRG collaboration with the National Planning Commission of India

Since February 2011, the India National Planning Commission has been engaging with WRG to answer a set of strategic questions that the Commission had on the Indian water sector. The output of this collaboration, called the National Water Resources Framework Study, focused on a detailed analysis of the institutional, legal, regulatory and capacity deficiencies in water-related sectors in India. The study covered large scale irrigation reform, groundwater management, river basin planning, legal and regulatory reform, urban and industrial water supply and conservation, and the role of a possible National Water Commission. The study, executed in collaboration with a team of interdisciplinary experts supervised by the Council on Energy, Environment and Water (CEEW), features 12 working papers which collect the local and international knowledge necessary to answer the initial strategic questions. This work was presented in a workshop in mid-July 2011 to the National Planning Commission Technical Committees on water. The report was well received and triggered very good reflections on India water sector reform. To take forward those working papers and reflections, the team on the ground has developed a roadmap that will be used as input to India's 12th Five Year Plan.

The roadmap proposes a vision for the future and an associated route to achieving this vision with an action plan. The vision sets high standards of water resource management for India, at all levels, for the benefit of all uses and users. A fair and transparent water resources allocation is also envisioned, with water users participating in the decision-making processes. The water environment will be protected from pollution and managed to protect the natural ecosystems.

The strategy to achieve the vision comprises the following components:

- Improved water resources management at the state and river basin levels, taking account of environmental needs;
- Improved management and use of surface and groundwater resources at the irrigation scheme level, with attention focused on management of the main system and management at the on-farm level;
- Improved management and control of groundwater resources.

The fundamental element of the strategy is institutional reform which seeks to rationalize and modernize the approach to management of water, at all levels. In many river basins, sub-basins and states the usable water resources have been fully developed. River basins are closing, or have closed, leaving few opportunities for creation of additional water supplies.

The proposed institutional reforms seek to achieve a number of objectives: (i) to change the legal and institutional framework so as to provide an enabling environment that facilitates better management; (ii) to change attitudes and mindsets from a focus on construction to a focus on management; (iii) to broaden the focus on water resources planning, management and development to a process which covers all uses and users of water, not just irrigation; (iv) to move towards performance-based management in which key deliverables are identified, measured and delivered for all water systems.

It is proposed that a National Water Commission be created to provide for over-arching monitoring and management of the water management reform program. This Commission will have the responsibility of monitoring each state's progress towards the required objectives and providing advice and guidance where required to keep the program on track.

Table 1: Summary of National Water Management Reform Program components, purpose and actions

| Component | Purpose | Action |
|--|---|--|
| Water resources management | Strengthen water resources management in each state | <ul style="list-style-type: none"> • Raise awareness and gain consensus on water resources management among politicians and senior civil servants • Form State Water Councils • Form an adequately resourced water resources management wing in the Irrigation Department (ID) as interim measure. • Form River Basin Councils in each state and prepare River or Sub-Basin Plans • Prepare new legislation (Water Resources Act) • Implement the reforms as set out in the Water Resources Act. |
| Main system irrigation management | Enhance scheme and main system performance | <ul style="list-style-type: none"> • Form management wing within the ID with specified remit to enhance performance of built irrigation schemes • Sign service agreements with WUAs • Prepare scheme water management plans • Apply modern technologies in water management and maintenance • Establish discharge measurement network and collect service fees based on volume delivered • Prepare asset management plans for each system • Establish value of lost production due to inadequate maintenance and poor service delivery • Establish procedures for performance assessment and benchmarking |
| On-farm irrigation management | Formation of active and effective WUAs managing on-farm operation and maintenance | <ul style="list-style-type: none"> • Raise awareness of IMT within ID and gain consensus and support on way forward • Revised PIM/IMT legislation • Assist WUAs in preparing their Charters • Establish WUA Regulatory Authority • Strengthen WALMIs and train staff in IMT, water management and maintenance • Establish and train WUA Support Units at Circle/District level in ID • Form and train WUA support team at Sub-Divisional level • Carry out awareness campaign with water users and re-engage with PIM/IMT • Establish chak-based representative system • Budgeting, fee setting and fee collection by WUAs • Establish procedures for progress and performance monitoring by WUAs • Implement improved water management procedures • Prepare and implement maintenance and asset management plans |

To achieve this strategy, a variety of initiatives were proposed in relation to water resources management, main system management and on-farm management. These are summarized in Table 1. By its nature, the reforms outlined in the study will require concerted action in the short, medium and long-term. In this regard, the individual roadmaps have been separated into work that can be commenced and completed within the 12th Five Year Plan and work that will take longer to complete. It is hoped that this study can form the basis for a national water management reform program to address the growing crisis in the water sector.

The research report and the roadmaps of the National Water Resources Framework Study can be found on the Internet:

- Research Report: <http://ceew.in/pdf/CEEW-WRG12Sep11.pdf>
- Roadmaps for Reforms: <http://ceew.in/pdf/CEEW-WRG10Oct11.pdf>

Jordan

The following section presents key findings of the WRG analysis conducted at the invitation of the Government of Jordan. The WRG team worked closely with the Government and in particular the Ministry of Water and Irrigation and the Ministry of Planning and International Cooperation. The WRG analysis draws on data from the different Ministries, development agencies and the private sector as well as from other publicly available research. The analysis was presented to senior government officials (including Ministers of Water and Irrigation, Agriculture and HRH Prince Feisal as Chairman of the Jordan Royal Water Commission) and senior representatives from private and civil society sectors at various forums, including the 2011 World Economic Forum Special Meeting on Economic Growth and Job Creation in the Arab World in Jordan and the 6th IWA Specialist Conference on Efficient Use and Management of Water at the Dead Sea in Jordan.

Jordan is among the most water-scarce countries in the world, with about 80% of its food security depending on virtual water imports (the water used in the production of food). The scarcity of water is projected to worsen due to climate change, involving more intense and numerous droughts. Water supply currently relies much on pumping groundwater to major demand sites, resulting in groundwater resources being severely overexploited. Pumping drives significant energy demand; water supply is responsible for about 25% of the country's total electricity demand. In addition, Jordan cannot rely on significant fossil fuel reserves and has practically no hydropower potential.

Jordan does have a strong record of taking action and innovating in the management of its scarce water resources. The country has a strong institutional structure for water resource management, which includes the Ministry of Water and Irrigation, the Water Authority of Jordan, the Jordan Valley Authority, and water companies such as Miyanuna, the Aqaba Water Company and the Yarmouk Water Company. To proactively establish a long-term vision for the sector, high-level national water strategies have been developed such as the Water for Life program in 2009. Jordan is also a leader in the use of treated urban waste water for irrigation in the Jordan Valley and has been leading in the development of new urban supply.

Government of Jordan and WRG collaboration

Given the acuteness of the challenges facing Jordan's water economy, there is a need for a step change in water resource management that builds on current initiatives and progress. At the World Economic Forum Annual Meeting 2010 in Davos-Klosters, the Minister of Planning and International Cooperation of the Hashemite Kingdom of Jordan invited WRG as a partner to help tackle water issues in Jordan. In the following months, the Government of Jordan and WRG agreed on a pioneering initiative to determine how Jordan could most effectively ensure adequate water for a high-value economy to support the aspirations of

"We are working with WRG ... to help us understand demands for water across the economy and with this type of knowledge ... we will review and revise our national 'Water For Life' strategy, and find it easier to plan for the solutions to meet the country's National Agenda aspirations."

HRH Prince Feisal of Jordan and Chairman of the Jordan Royal Water Commission

"The resulting WRG analysis is very important and useful to us."

HE Maysoon Al Zoubi, Secretary-General of the Ministry of Water and Irrigation, The Hashemite Kingdom of Jordan

Speeches at the World Economic Forum Special Meeting on Economic Growth and Job Creation in the Arab World in Jordan, October 2011



the country's National Agenda. The initiative draws on the expertise of the WRG network and its partners, with financial support from The Coca-Cola Company and USAID-Jordan. The first stage of the initiative focused on developing analyses to:

- Understand Jordan's future supply and demand for water;
- Identify and prioritize technical solutions on the demand and supply side that can address future water requirements;
- Identify economic choices that can impact future water demand;
- Quantify the impact on Jordan's National Agenda objectives;
- Implement a roadmap to accelerate the transformation.

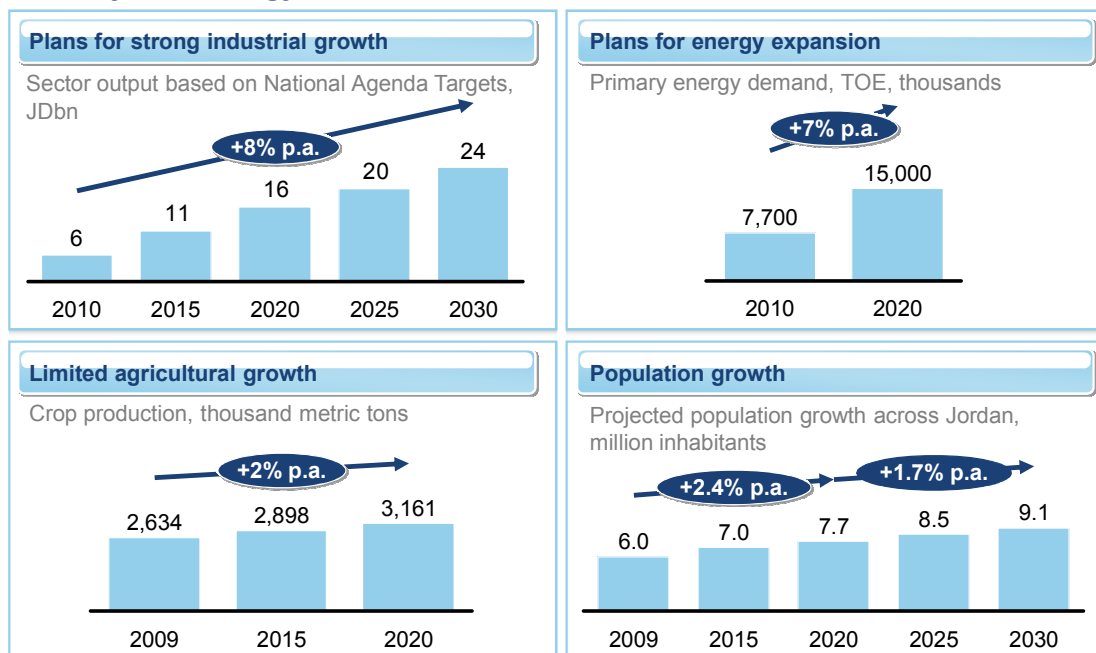
Above all, the initiative aims to elevate the water challenge on the agenda of all key stakeholders (government, private sector and civil society), ensuring that decisions on water resources fully support Jordan's economic objectives. As part of the initiative, a WRG team was embedded in the Ministry of Water and Irrigation to work alongside officials to benefit from the expertise and network of the government and others, including the Jordan Business Alliance on Water. The result is a complete set of data and analysis of Jordan's water economics with possible ways to address the scarcity issue while meeting economic and social growth aspirations.

Jordan's growth ambitions leads to almost double the water demand by 2030

Jordan has aggressive plans for economic and social development, especially across industrial and energy sectors. Targets have been set to double GDP between 2009 and 2017 and to reduce unemployment from 12.5% in 2004 to 6.8% by 2017. EXHIBIT 2 presents Jordan plans for industrial growth, energy expansion, agricultural growth and population growth.

EXHIBIT 2

Jordan has aggressive plans for economic development especially across industry and energy



SOURCE: Jordan Department of Statistics; Ministry of Agriculture interviews; National Agenda; IHS Global Insight; National Energy Strategy

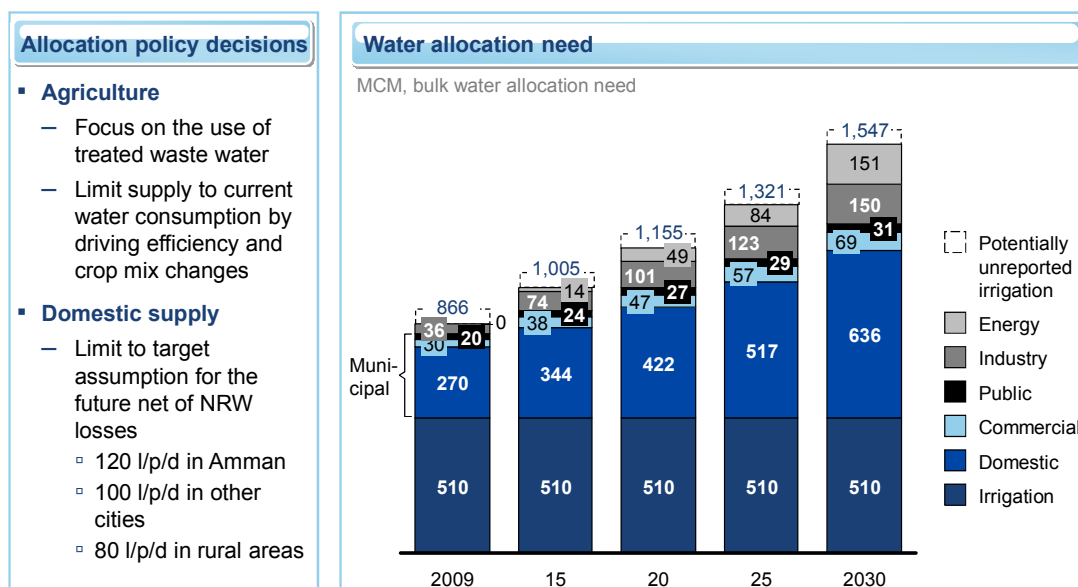
By 2030, this increase in economic activity, demography and wealth is expected to almost double the demand for water from 866 MCM today to ~1,550 MCM by 2030 (under a business-as-usual scenario). Water demand for each sector was estimated based on specific sector requirements, e.g. for municipal demand, from water allocations defined by the Minister of Water and Irrigation and from population growth

projections; for energy demand, from current build-out plans for water-intensive generation technologies. The additional water demand will be mostly driven by industry, energy generation, and an increase in population and consumption per capita. EXHIBIT 3 presents the current and future water allocation needs by sector. The projected demand by sector is as follows:

- **Agricultural** demand will be limited through existing allocation policy decisions that focus on the use of treated waste water, and limit water supply to current consumption levels (about 500 MCM) by driving efficiency and crop mix changes. This figure does not include unreported groundwater abstraction especially in the Highlands.
- The high population growth in cities will see demand for **municipal** water supply more than double between 2009 and 2030, driven by the projected growth in population. This projected growth in municipal demand factors in the Government's targets for providing at-tap supply (post non-revenue water losses) of 120 liters per capita per day (l/c/d) in Amman, 100 l/c/d in other urban centers and 80 l/c/d in rural areas.
- Planned **industrial** growth will require a sharp increase in water demand, from 36 MCM in 2009 to 150 MCM by 2030, driven largely by mining and planned economic zones. Other sectors such as tourism and petrochemicals will be further drivers of industrial demand.
- Water requirement for **energy** will increase from a negligible demand today to about 150 MCM by 2030, driven mainly by requirements for the up to four nuclear reactors planned. Plans for uranium and oil shale mining will require additional water. Changes to Jordan's energy mix plan such as a move to higher degree of renewables (solar cells and wind) could reduce the future water demand but will be expensive and have higher intermittency than the current nuclear build-out plan.

EXHIBIT 3

The growth plans represent a demand by 2030 of ~ 1,550 MCM that Jordan has decided to manage through allocations policies



SOURCE: MWI, PMU Allocation Plan, IDARA, WAJ, JVA, DOS; Ministry of Industry, Natural Resources Authority, JAEC, WRG analysis

Jordan can currently provide sustainable supply of about 900 MCM

Jordan's total water supply in 2009, as set out in the Ministry of Water and Irrigation's water budget, was 866 MCM. Of this, 274 MCM was sourced from surface water, 480 MCM from groundwater, and the remainder from unconventional sources including treated waste water (103 MCM) and desalination (10 MCM).

Of the supply from groundwater, 158 MCM was sourced from over-abstraction (withdrawals above the safe abstraction rate of basins), and 71 MCM from non-renewable sources. Over-abstraction from basins is not

sustainable: it depletes groundwater resources, leading to falling groundwater tables and it decreases water quality due to higher salinity.

An assessment of Jordan's water supply that accounts for sustainable sources only would therefore need to exclude 158 MCM from over-abstraction. This leads to the country's existing sustainable supply being quantified at 708 MCM.

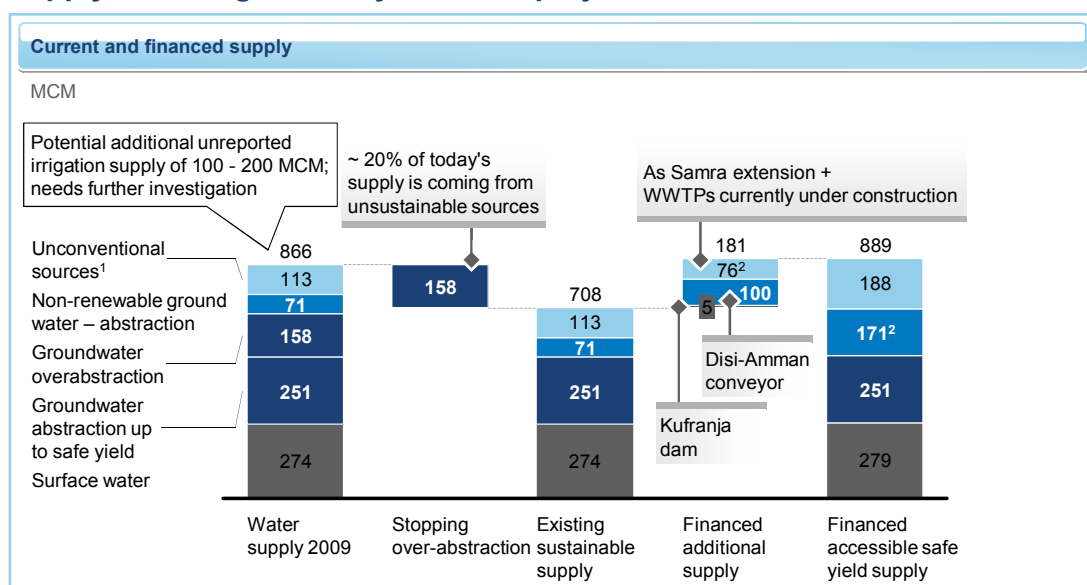
Jordan has currently committed and financed plans to expand water supply infrastructure in four areas:

- Disi-Amman conveyor (100 MCM);
- As Samra waste water treatment plant extension (45 MCM);
- Construction of new waste water treatment plants (31 MCM);
- Building Kufranja dam (5 MCM).

After completion of these projects, Jordan's total financed accessible water supply would total 889 MCM (see EXHIBIT 4).

EXHIBIT 4

Jordan currently has ~ 900 MCM of committed accessible safe supply including currently financed projects



1 Includes desalination, treated waste water and transfers between governorates

2 Includes 40 MCM above safe abstraction rate for Disi; requires decision regarding agricultural supply in Ma'an

SOURCE: MWI; WAJ; JVA; WRG analysis

Ensuring a water-secure economic future: Roadmap for an integrated solution

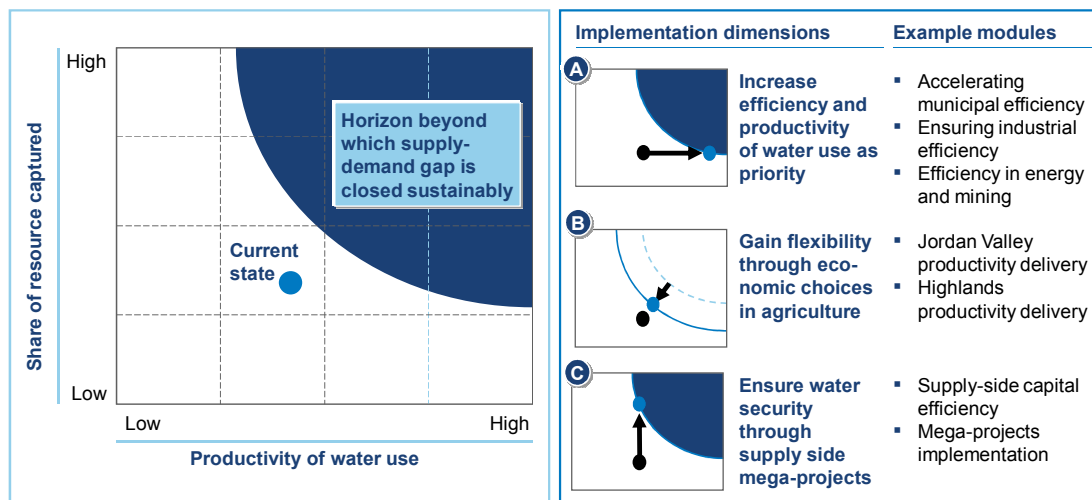
To ensure water access in the future, Jordan leans upon the Jordan Red Sea Project (JRSP), which will provide 930 MCM of desalinated water to Jordan to meet future water needs and refill the Dead Sea by 2055. However, at an investment of JD 8-10 billion (about USD 11-14 billion), it would be the most expensive water project anywhere in the world in the last five years and might be difficult to finance. The project would also substantially increase the future cost of water which is already high compared to international standards. To provide flexibility against the high future cost of supply, there is opportunity to improve Jordan's current water use efficiency and productivity, especially in agriculture and municipalities.

Jordan has already been using the National Water Master Plan in conjunction with the Water for Life Strategy and specific focus initiatives such as IDARA, the Demand Management Unit and the Highland Water Forum to drive an integrated program of water management. However, given the scale of the

challenge ahead, the analyses conducted as a result of the WRG-Jordan collaboration suggest that to address its water challenges and ensure a water-secure economic future, Jordan needs to craft a roadmap for an integrated solution, spanning three dimensions (EXHIBIT 5):

EXHIBIT 5

To ensure water security and flexibility, Jordan needs to implement an aggressive program across three dimensions

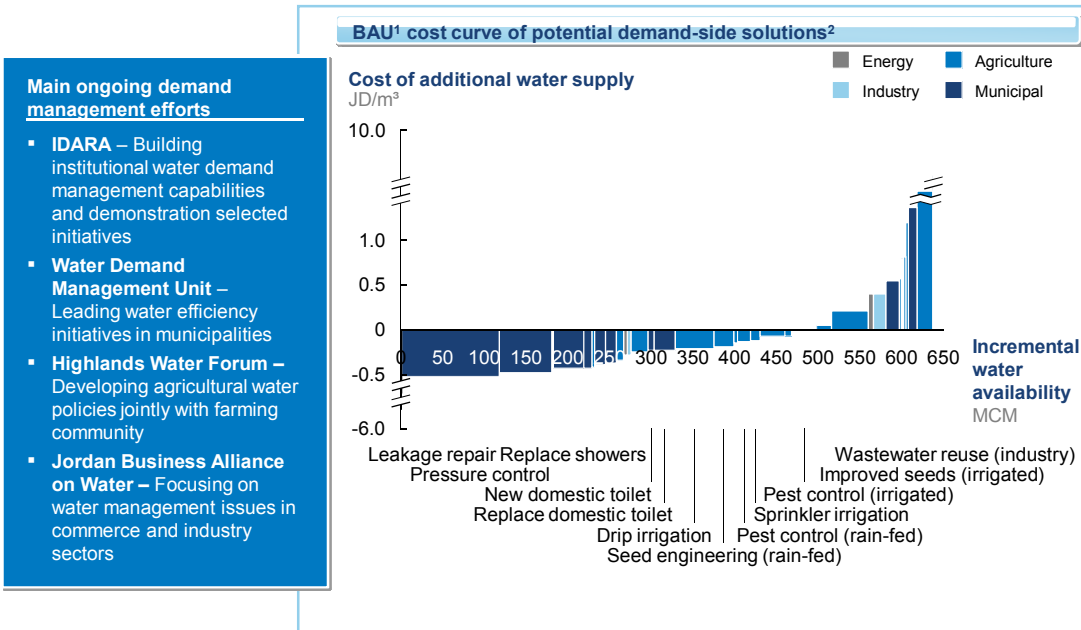


SOURCE: WRG

- A. **Increase the efficiency and productivity of water use as a priority.** The analyses identify relatively easy to implement efficiency measures across agriculture, industry, energy and municipal sectors that can save approximately 400 MCM of water. There are several existing demand management initiatives that can be accelerated. For instance, Jordan should accelerate IDARA on increased enforcement of water-efficiency regulations, the Water Demand Management Unit for water-efficiency, the Highlands Water Forum to develop agricultural water policies, and the Jordan Business Alliance on Water, focused on water management in commerce and industry. EXHIBIT 6 presents the 'cost curve' of potential demand-side solutions which could be implemented through existing initiatives. Increasing the efficiency and productivity of water use is a priority, as HE Maysoon Al Zoubi, Secretary General of the Ministry of Water and Irrigation explained at the Special Meeting on Economic Growth and Job Creation in the Arab World: "First and foremost, significant opportunity exists to meet our water demand needs by increasing and accelerating efficiency measures for all water users and sectors ... This must be a priority for us."
- B. **Gain flexibility through economic choices in agriculture.** Increasing the water productivity of agriculture is important in Jordan as agriculture consumes about 60% of total water use while its contribution to GDP and total employment is only about 3%. According to current plans, current crop mix and agricultural techniques, Jordan's annual water allocation needs for agriculture will remain at current levels of approximately 510 MCM. But in a high-value agriculture scenario, Jordan would see an alternative crop mix that keeps current supply, expands irrigated land and shifts water supply from water-intensive trees to high-value, low-water vegetables. This will raise demand to 550 MCM but will double the added value from irrigated agriculture and provide about 15,000 new full-time equivalent jobs in agriculture. However, economic choices in agriculture – such as moves to high-value, water efficient crops – could reduce the water allocation need for agriculture by up to 100 MCM while sustaining agricultural employment at approximately current levels and increasing added value from agriculture. The decision of which economic choice scenario in agriculture to pursue (presented in EXHIBIT 7) given the tradeoffs required must be made by policy-makers in alignment with the relevant stakeholders.

A Current demand side efficiency and productivity initiatives need to be accelerated to slow down demand growth

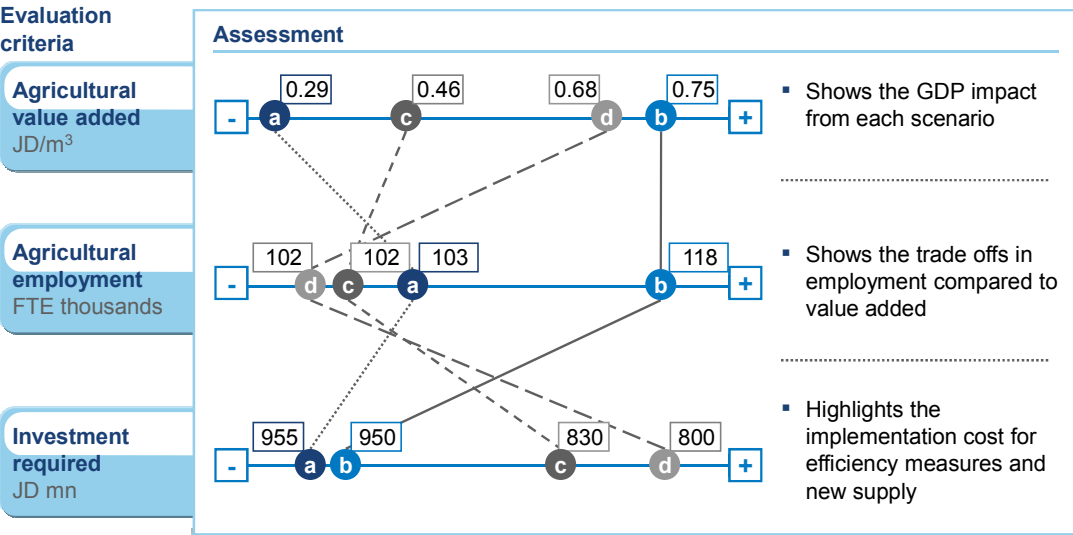
FOR DISCUSSION



1 Business as Usual
2 Solutions with volume potential <15 MCM are not labelled
SOURCE: MWI; USAID; WRG analysis

B Assessment of Jordan's agriculture scenarios based on value-added, employment and investment

a BAU **b** High value agriculture **c** Basic water reduction **d** Low water agriculture

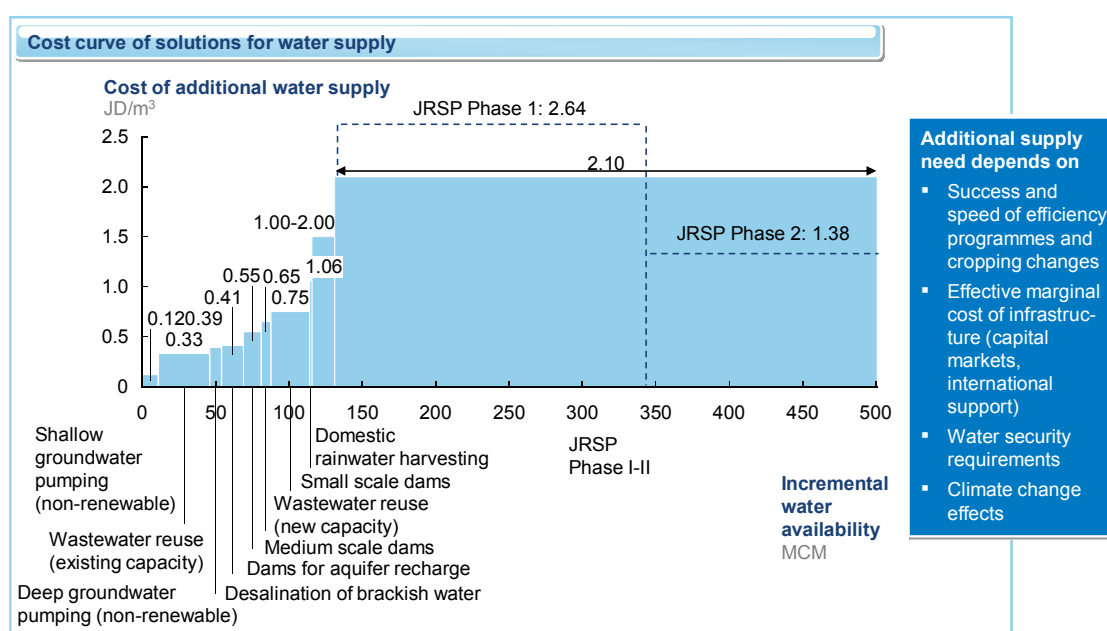


SOURCE: WRG analysis

- C. **Ensure water security through supply side efficient mega-projects.** Jordan has already exploited most of the cheap opportunities to create new water supply infrastructure. In particular, groundwater abstraction reached its limit years ago, leaving very limited possibility to build additional wells. The only remaining groundwater resources after introduction of Disi-Amman conveyor in 2013 will be small non-renewable resources of 19 MCM, about half of which would be sourced from expensive and technically challenging deep groundwater aquifers. However, the potential of about 130 MCM of additional supply exists from relatively cost-effective supply measures (see EXHIBIT 8). Within this, the greatest potential for additional water supply comes from waste water re-use (62 MCM). The JRSP is needed for long-term supply security. However, its high cost and considerable implementation risks makes it critical to optimize the size and timing of its phases against flexibility gained from “must-do” efficiency measures and economic choices in agriculture.

EXHIBIT 8

C Finally, Jordan will need to implement supply projects to secure economic development in future



SOURCE: MWI, WAJ, JVA, WRG analysis

Delivering on the transformation roadmap and ensuring water-enabled growth over the next 10 years requires a set of key enablers to be put in place. In particular, a Cross-Ministerial Delivery Unit to ensure optimal decision making around water and a Project Management Office should be established. These are immediate prerequisites to planning, delivering and ensuring impact of the complex transformation journey ahead. In addition, financing, capital efficiency and data management workstreams will be immediately needed to ensure financing for the transformation program and establish a single “source of truth” for decision-making across the country and conduct regular public-private-civil society dialogue.

Jordan is one of the most water-scarce countries in the world and delivering sufficient water to meet its ambitious growth aspirations is a very challenging task. The Jordan-WRG collaboration shows that it can be done. However, it will require Jordan's leaders across all key sectors to take a rigorous approach in identifying and assessing water solutions, whether those solutions modify demand, augment supply or shift agriculture to more productive water-use. A comprehensive transformation program encompassing the entire water economy across all sectors will need to be established. With its long-standing experience in water management under scarcity and existing pilot schemes for integrated water and energy solutions, Jordan can become a showcase for water management in the Arab world and beyond.

The way forward

The WRG analysis has been translated into a 12-point implementation plan to create a step change in how Jordan decides on and uses its water resources. The success of the plan will hinge on a cabinet-level mandate for a change in economic decision-making, a strong project management office that can maintain the momentum for reform, and a relentless acceleration of efficiency measures across the economy to have a stronger “doing more with less” theme.

The role of the private sector and the civil society has been critical in developing the analysis and in translating it into an actionable plan. First, to conduct the analysis, WRG reached out to development agencies on the ground such as USAID Jordan, GTZ and AfD, the main industrial sectors, and civil society organizations on top of the Jordanian Government, in order to gather data points to develop the analysis with the most comprehensive data set as possible. To this end, the role of the Jordan Business Alliance on Water was central to assist in connecting with the relevant partners. Second, NGOs, development agencies and the private sector were involved in stress-testing the approach and the plan to ensure that they are robust enough. Several workshops and bilateral calls and meetings were held to receive their input and help refine the analysis and the plan. Finally, The Coca-Cola Company and USAID-Jordan supported the whole project with financing.

The conclusions of the WRG analysis have been welcomed by the Ministry of Water and Irrigation of Jordan, the senior leadership of the Ministry of Planning and International Cooperation, the Ministry of Agriculture and USAID-Jordan. The Ministry of Water and Irrigation has expressed its desire to use the WRG analysis to revise Water for Life, Jordan’s national water strategy. The WRG work has gained momentum following a high-level session on water in October 2011 during the Special Meeting on Economic Growth and Job Creation in the Arab World organized by the World Economic Forum in Jordan. The session participants offered recommendations to support the revision of Water for Life, including consensus on the need for a “National Water Council”, a cross-ministerial, cross-sector group to plan and manage water resources in Jordan.

In a follow-on meeting, Secretary General Maysoon Al Zoubi requested the support of WRG to continue to engage in the national water strategy process and specifically to help identify examples of other National Water Councils and share best practices on their structure, mandate and model of working. WRG will work with the government of Jordan to establish the process and specific action plan to help revise the national water strategy and to support the development of the new National Water Council. The private sector has offered its expertise in developing strategy to support the country in the revision of Water for Life.

As the WRG Jordan partnership continues, all stakeholders are invited to collaborate and get involved with this next and crucial phase of implementing Jordan’s water agenda.

Mexico

The analysis presented in this section is the result of a full diagnostic from a team sponsored by WRG working directly with CONAGUA. It draws on data from and interviews with CONAGUA as well as on other data made available from the private sector and other local and international institutions to WRG. The analysis was presented during a session on water and adaptation co-hosted by CONAGUA and the WRG at the UN climate negotiations (COP16) in Cancun, December 2010. The analysis was then used as key input to forming Mexico’s new “2030 Water Agenda”².

In Mexico, WRG has been working with the national water commission, CONAGUA, to develop a fact base on a sustainable water pathway for Mexico that is robust in the face of climate change and additive to the adaptation agenda. This pathway includes a range of transformation levers: infrastructure investment, technical measures or process optimization, behavioral change and risk transfer for those extreme weather events for which the cost of

“By combining the analytical framework of the Water Resources Group with CONAGUA’s own expertise, we have been able to gain a deeper understanding of Mexico’s current and projected water situation.”

**José Luis Luege Tamargo –
Director-General, CONAGUA, letter
to World Economic Forum April
2011**



² Mexico’s 2030 Water Agenda can be found here:
http://www.conagua.gob.mx/english07/publications/2030_water_agenda.pdf

prevention would be prohibitive. The WRG analysis benefited from key data shared by The Coca-Cola Company to build the cost curve. The analysis and the actions that followed built on good practice contributions and other inputs from the private sector including PepsiCo and The Coca-Cola Company, international organizations and NGOs. This partnership between CONAGUA and WRG was financed by PepsiCo and the Swiss Agency for Development and Cooperation. The resulting analysis was an important input to help Mexico shape and design its 2030 Water Agenda, launched by President Felipe Calderon. The 38 initiatives outlined in the 2030 Water Strategy will be key to improving the country's water sector management.

Mexico's water situation

Mexico presents an imbalance between the supply and demand for water. In some catchments, only a small percentage of the total water available is used, whereas in others more than 100% is used. The demand for water nationwide is approximately 78.4 thousand hm³ (cubic hectometers). In order to meet that demand, a sustainable volume of 66.9 billion m³ is withdrawn from surface and groundwater sources. Additionally, this demand is satisfied with a non-sustainable volume of 11.5 thousand hm³, of which 6.5 thousand hm³ comes from overdrafted aquifers. It is worth mentioning that the greatest percentage of the demand is concentrated in the agricultural sector.

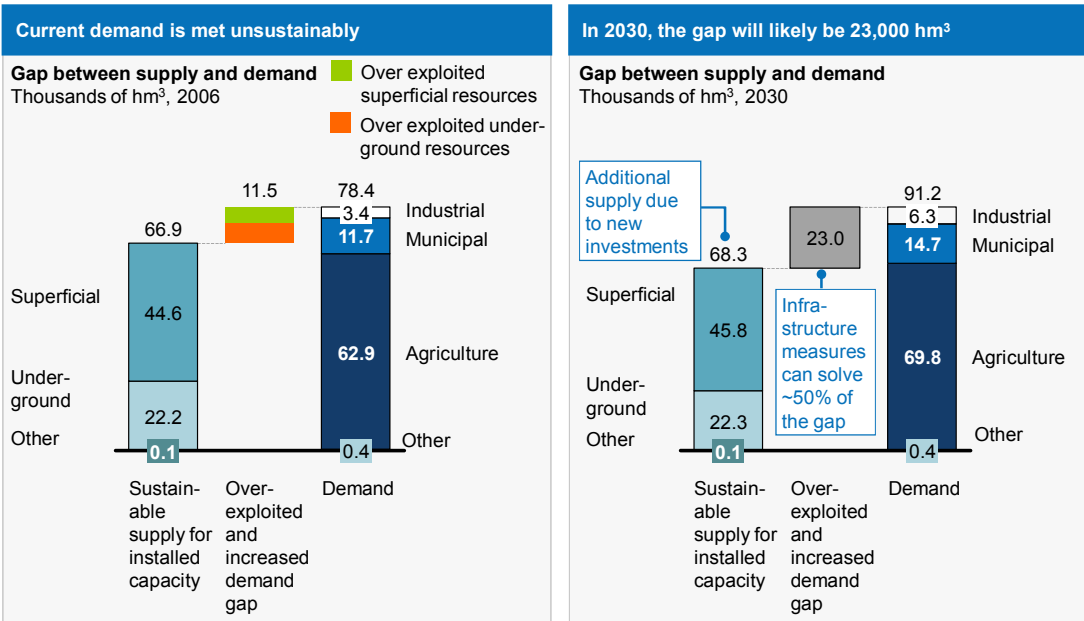
By 2030, the demand will rise to 91.2 thousand hm³, mainly due to the increase in productive activities and the population growth. If we consider that the infrastructure projects registered will be built, the offer will be increased by 1.3 thousand hm³, to reach a total of 68.2 thousand hm³, which means that the estimated gap between supply and demand in 2030 would be 23 thousand hm³, as shown in EXHIBIT 9.

The gap in 2030 includes both the volume of water that will be used to cover the growth in demand for agricultural, public-urban and industrial uses, as well as the non sustainable volume that will no longer be withdrawn due to the zero overdrafting of aquifers and the ecological flows in rivers.

The main challenges can be found in the Lerma, Grande, Fuerte, Mocorito, Presidio-San Pedro, Tula, Balsas and the Valley of Mexico catchments.

EXHIBIT 9

Mexico has limited water availability and high demand growth is likely to exacerbate the future water security challenge



SOURCE: Irrigation districts and irrigation units statistics; REPDA; Diario Oficial de la Federación; WRG analysis

The agriculture sector is the sector most at risk from water scarcity

The agriculture sector is the sector most at risk from water scarcity, for different reasons. First, agriculture consumes 80% of total water demand. Second, the value at risk in agriculture (meaning the agriculture GDP which might not be produced due to water scarcity) corresponds to 6% of the total agriculture GDP, which is higher than all other sectors. Finally, agriculture has the lowest marginal productivity of water (2\$ per m³ in agriculture against 523\$ per m³ in the industry). Given agriculture's high share of employment (13% of the total Mexican employed population), role in food security and links with the other sectors, this poses a significant challenge.

Mexico has a mix of irrigated and rain-fed agriculture and water scarcity impacts them in a different manner. The irrigated area covers only 26% of the total arable lands. However, it provides 64% of agricultural output and 59% of its total value. For irrigated crops, the reduction in rainfall results in less availability of water in the basin. This in turn results in a gap between the supply and demand of water and this gap in turn causes shortage of watered hectares. For rain-fed crops, the productivity or performance of the crops is highly affected by the level of precipitation. The relationship between yield and precipitation usually has an inflection point: yields are less than optimal for both water shortage and surplus.

The value at risk for irrigated agriculture is expected to reach USD 5.3 billion annually by 2030. This value is the sum of the value of current lost production due to water scarcity, the value of current output produced with water coming from overexploited resources and the production value at risk due to the water gap in 2030. This value is only of 0.5 USD billion for rain-fed agriculture as the supply-demand gap does not impact rain-fed crops (precipitation is not included in the estimation of accessible, reliable, environmentally sustainable supply). This estimated value at risk for rain-fed agriculture thus only takes into account the value of current lost production.

Impact of climate change on agriculture through the variation of water supply and rainfalls

Under a climate change scenario, the gap between supply and demand of water will shift from 23 to 36.5 thousand hm³, representing a 59% increase. These figures assume the scenario A2 defined by the Intergovernmental Panel on Climate Change (IPCC)³. A2 represents a high scenario in terms of climate change towards 2030 with an increase of 1°C in temperature and a decrease in 3.3% in precipitation.

The climate change scenario and its increase of 59% in water supply and demand gap will increase the value at risk in the irrigated agriculture sector by USD 2.7 billion compared to a scenario by 2030 without climate change. For rain-fed agriculture, the impact of climate change will be even more significant as the value at risk will increase by USD 5 billion. This is due to the decrease in precipitation. EXHIBIT 10 presents the estimation of the value at risk for irrigated and rain-fed agriculture.

Bridging the 23 thousands hm³ water supply-demand gap by 2030, which does not account for climate change, is a challenging task. Bridging the additional 13.5 thousands hm³ adds an extra layer of difficulty. In order to bridge this water gap by 2030 under a climate change scenario, multiple solutions were analyzed. The solution shown on EXHIBIT 11 considers the measures that are technically feasible and with the highest cost-benefit ratio, such as improving efficiencies in all uses of water and the construction of new water infrastructure.

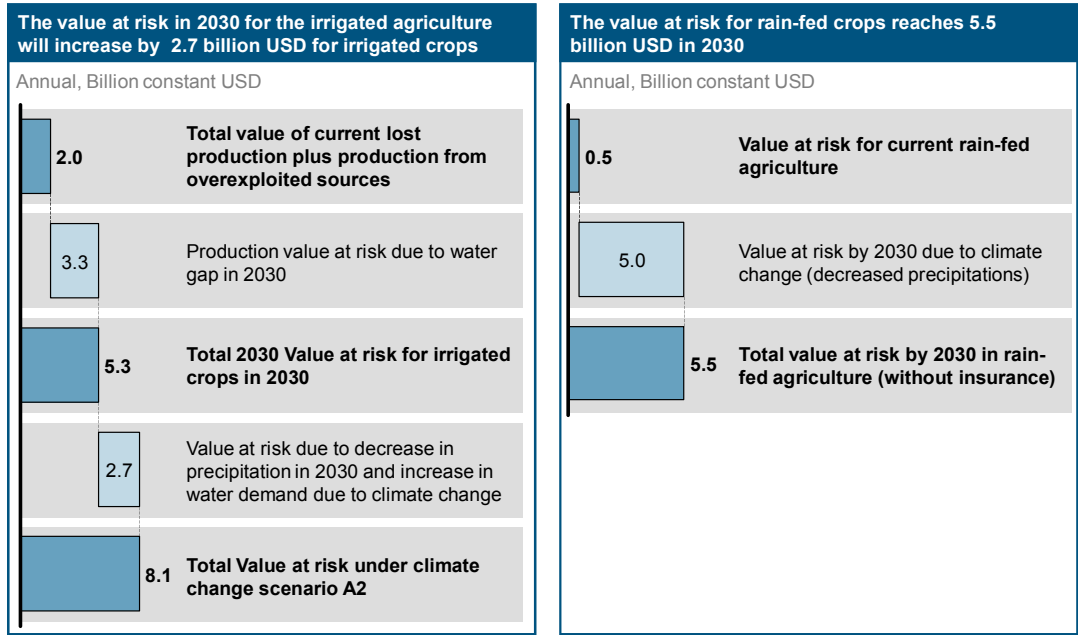
The vertical axis shows the marginal cost per cubic meter of the measures identified and the horizontal axis shows the potential volume of water that would be saved and/or supplied by each measure, to bridge the gap. The measures on the left-hand side of the figure have a negative marginal cost, which means that they would generate monetary benefits greater than the investments required for their implementation.

The measures included on the exhibit include aggressive and extended use of low-cost measures and high-cost infrastructure measures and 9% of the gap would still need to be covered. In catchments where the phenomenon of extended drought can be found, specific management plans should be implemented.

Implementing this whole set of measures would decrease the value at risk in irrigated agriculture from USD 8.1 billion to USD 0.9 billion. The agricultural sector has a significant role to play in implementing this solution. Indeed, 64% of the measures are related to agriculture and they would require only 31% of the total investment.

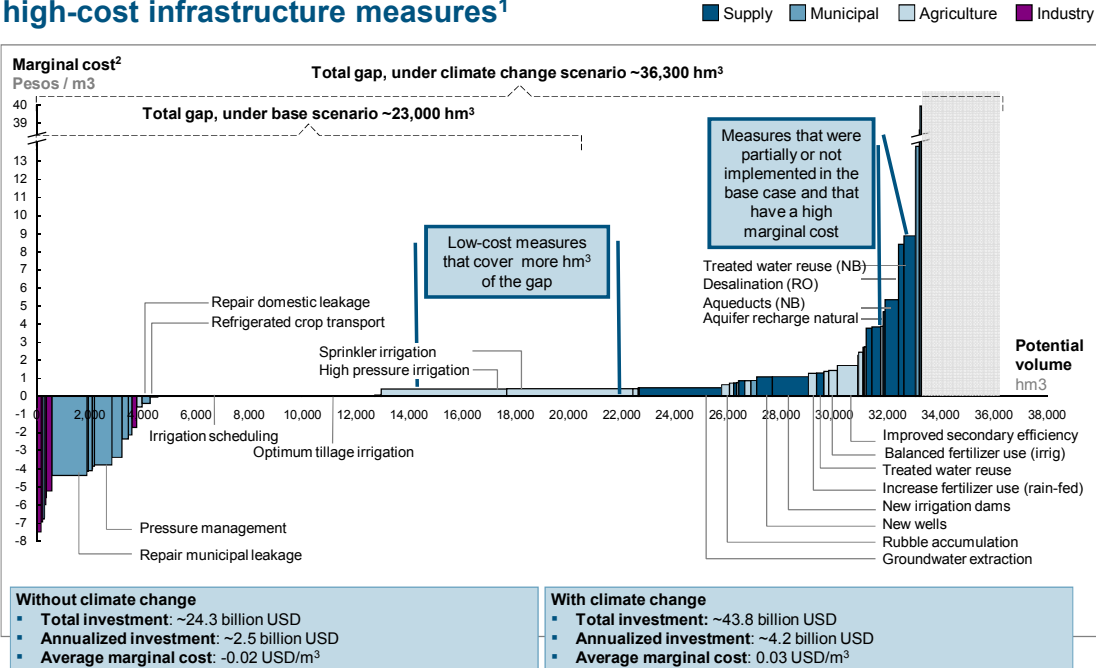
³ IPCC also defines other scenarios which are more conservative.

Under a climate change scenario, the value at risk for irrigated crops will reach 8.1 billion USD and 5.5 for rain-fed crops



SOURCE: WRG analysis; SIAP SAGARPA, IPCC, UNAM databases

Under a climate change scenario, 91% of the water gap by 2030 could be covered with aggressive and extended use of low-cost measures and high-cost infrastructure measures¹



¹ Cost curve considering gap under A2 scenario, with a 10% increase in demand by 2030
² Includes annualized investments (at a discounted rate of 12%)

SOURCE: WRG analysis

A new stage of work in Mexico

The conclusions of these analyses, which demonstrate that a climate-adapted pathway for agriculture is achievable, were presented at a workshop that WRG co-convened with CONAGUA at the COP16 United Nations climate change negotiations in Cancun, December 2010. Since the Cancun workshop, the WRG analysis was used as a key input to the development of Mexico's new 2030 Water Agenda, launched by President Felipe Calderon. This progressive water agenda outlines 38 initiatives to address key priorities in the water sector for Mexico. To help take forward some of these initiatives from the 2030 Water Agenda, CONAGUA requested a continuation of its WRG partnership.

A private session was organized and hosted at the World Economic Forum on Latin America 2011 where representatives from CONAGUA and WRG partners engaged participants from all sectors to debate and help scope WRG potential involvement on the creation of an enabling environment with sustainable finance. This discussion and brainstorming of ideas led to a MOU to formalize the next chapter of the CONAGUA-WRG collaboration.

CONAGUA first priority is the development of an economic water policy as basis for a new regulation that generates incentives for an efficient use or water saving. This policy would pave the way for many of the 38 initiatives of Mexico's 2030 Water Agenda – initiatives and strategic actions that could generate increasing and significant investments in the water sector. The reasoning and approach of the policy development will be supported by rigorous economic and public policy analysis and tool development which will underpin the objectives of Mexico's 2030 Water Agenda, and provide the cornerstones for developing a sustainable and socially feasible water policy in Mexico.

In line with these new objectives, WRG is currently supporting CONAGUA with funding and expertise to design a tool to quantify the cost and benefit of a set of financial mechanisms (e.g. water markets, water taxes, public funds or binding targets) that will improve the financial system of water, increase the efficiency in the use of water and reduce water consumption. The partnership will also support simulations with real data of CONAGUA and then analyze the impact of different public policies of the hydro sector. This will help to create useful information for the decision-making process.

The goal is to help identify an optimal mix of policies, including regulation and financial incentives. The results will be used within the larger context of policy development by CONAGUA. This work is consistent with and builds on the analysis made by WRG (cost curves, climate change resilient agriculture, etc.), and makes use of detailed projections of water consumption and production patterns and technological options to increase water efficiency. According to the results of the tool and the recommendations from water experts, CONAGUA will decide on the next steps. For this purpose, a series of workshop is being held to share the results of the quantitative tool and discuss how to take it forward.

On 4th November 2011, WRG co-hosted a first workshop together with CONAGUA to share the concept, methodology and preliminary results of the above-mentioned study in order to align with stakeholders in an early stage and receive their feedback on the approach. The reactions were positive and the study will be continued and expected to be finalized by April 2012. This workshop was also the occasion to inform about the future transition to a metering system where CONAGUA will be responsible for water measurement of bulk water usage (as opposed to claims by users).

In the next stage of work, WRG will continue to support CONAGUA on taking forward some of the 38 initiatives described in Mexico's 2030 Water Agenda via access to WRG's network of experts and good practices. In particular, WRG will support CONAGUA: a. assess the quantitative tools to develop financial mechanisms for a sustainable water economy in Mexico (in progress); b. develop a system or methodology for bulk water and wastewaters prices, tariffs and/or fees; c. develop a best-in-class national system or mechanism of certification of investments aimed at water saving and sustainable use of water; and d. develop a multistakeholder advisory platform for CONAGUA to provide inputs and also build societal consensus around the reform process, as well as design suitable pilot projects to fuel the water reform. IDB has expressed interest to partner with WRG as a champion to take a regional approach.

B. Developing New Country Programs

As work has progressed in the three proof-point countries, interest in WRG's unique public-private-civil society platform has grown and new water transformation programs were kicked-off in South Africa and Mongolia, and scoping discussions with the Province of Shanxi in China were held to plan for a potential WRG engagement. The outline of these new engagements with the initial analysis is synthesized in the sections below.

Mongolia

The analysis presented in this section is the result of a 2 week pre-diagnostic from a team fielded by WRG working at the invitation of the President of Mongolia and working directly with government experts and other stakeholders from public, private and civil society sectors. It draws on data from and interviews with the Government and from existing public data and research from local and international institutions. The analysis was presented at a workshop co-hosted by the Office of the President of Mongolia and WRG, convening more than 120 domestic and international participants from the public, private and civil society sectors, as well as from international organizations. The key outcomes of the workshop and commitment to continue the collaboration in Mongolia was also announced in an official press release from the Office of the President of Mongolia.

"Managing our future water needs is key to sustaining Mongolia's economic growth. We must ensure fast and effective implementation of our National Water Plan. We will benefit from the international networks and experience of the Water Resources Group to help us do so."

Tsakhia Elbegdorj – President of Mongolia on the announcement of the WRG – Government of Mongolia Alliance on Water, June 2011



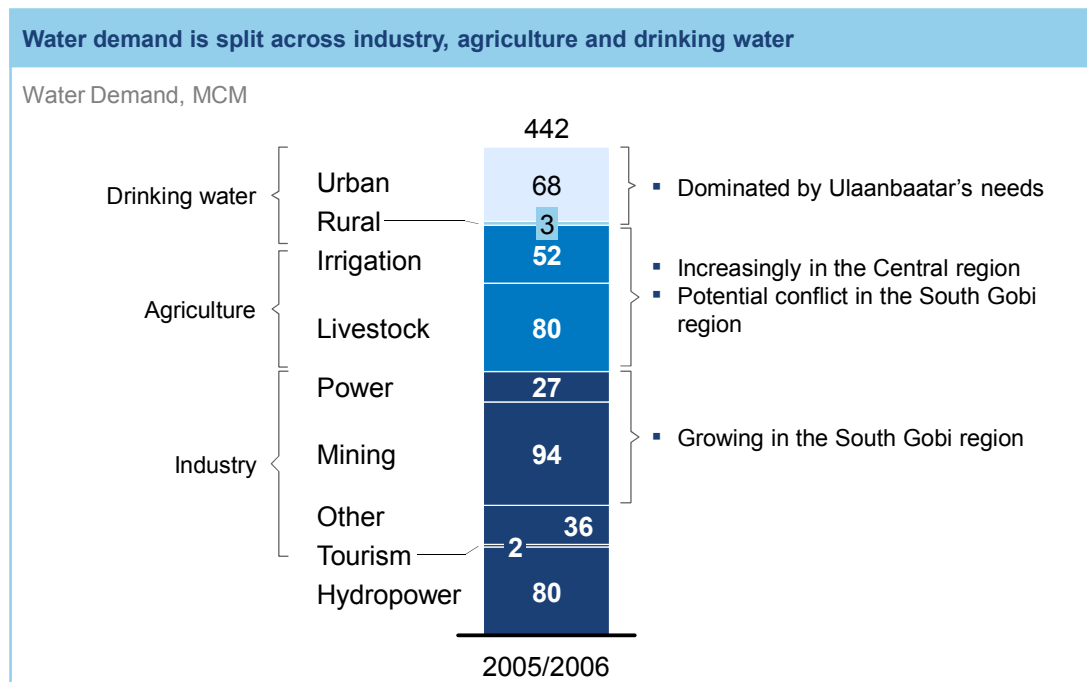
Mongolia is embarking on a program of rapid economic growth, driven in particular by the mining sector due to its mineral wealth. This growth will lead to a significant increase in demand for water resources, potentially becoming a brake on the economic activity. At Davos 2011, the President of Mongolia invited WRG to partner to explore a sustainable pathway for water security. WRG conducted a pre-diagnostic of water issues based on available data, which confirmed three major challenges: i) Ulaanbaatar water supply; ii) Mining in South Gobi area; and iii) Irrigation and livestock in the Central region. The pre-diagnostic started the transformation process by creating an initial fact base and identifying the key risks and solutions. It is the first phase of a longer term collaboration between WRG and the Government of Mongolia. The results of the pre-diagnostic are detailed below.

Mongolia's water security challenge

Mongolia is well endowed with water resources, in particular due to significant surface water such as the Lake Khuvsgul. However, the country is also prone to many localized water stress situations. For instance, there are wide variations in rainfall across regions. This generates challenges, such as a high dependence on groundwater in the Southern Gobi; a dependence on recharged groundwater for Ulaanbaatar supply with a stress during winter months; and difficulty in transporting resources across a vast country. Thus, while demand and supply match in aggregate, huge in-region/in-basin deficits could set constraints on Mongolia's economic program. EXHIBIT 12 presents the split in demand across industry, agriculture and cities.

Over the next 20 years, Mongolia targets to be one of the fastest-growing economies with significant surge in resource demand. The National Development Strategy sets ambitious aspirations for the country. Indeed, Mongolia expects to grow its real GDP by 333% between 2010 and 2030 and its GDP per capita by 532% (the demographic increase during that period is projected to be 20%). This will pose significant strain on the water resources in certain areas.

Whilst demand and supply match in aggregate, huge in-region/in-basin deficits could set constraints on Mongolia's economic program



SOURCE: "Strengthening Integrated Water Resources Management in Mongolia" project – Final document (2007)

The challenge could be even stronger in the future if climate change is factored in. Mongolia is indeed already seeing the impact of climate change and the situation could deteriorate further. One example is the long-term decrease in runoffs in the Khurkh River in the Onon river basin; there has also been a change in precipitation pattern, with an increase in portion of heavy rainfall by 18%; a last example is the significant decrease in depth of the ice cover on the Kharaa River in Central Mongolia over the last 70 years. The future under a climate change scenario is very uncertain and the possible impact on water resources could be a decrease in river water levels, higher seasonal variations and a decrease in groundwater levels due to decreased recharge.

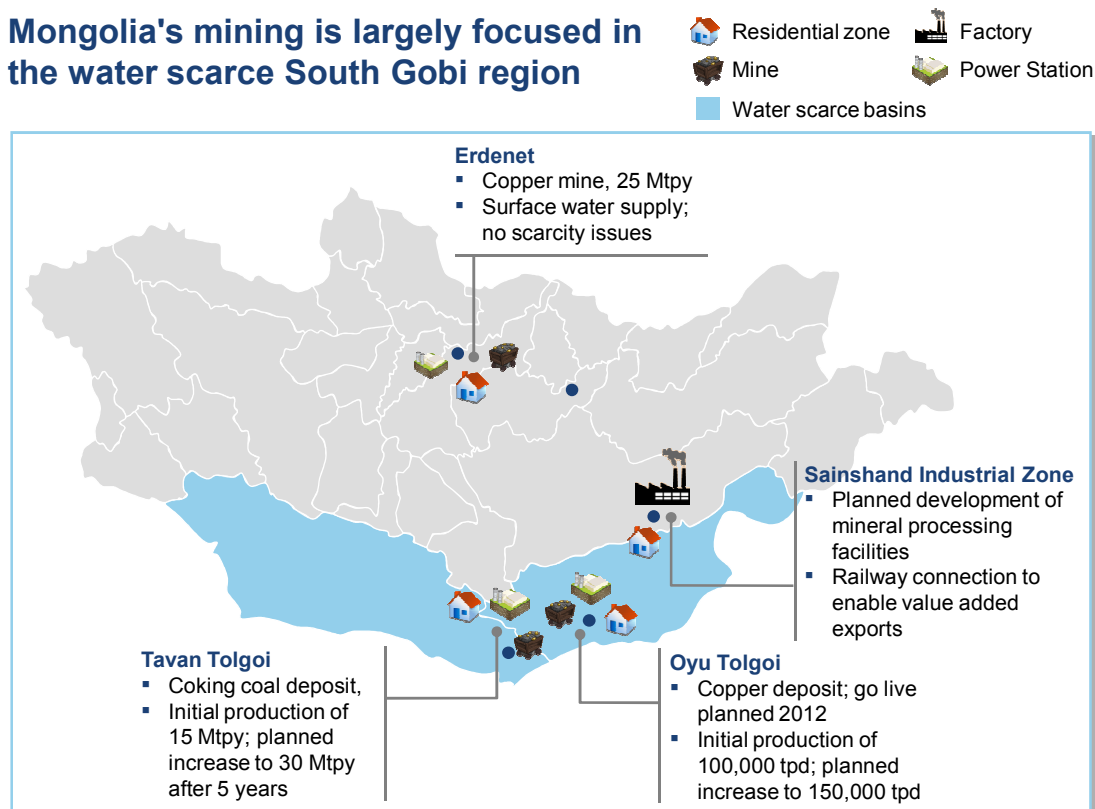
Three water economies are particularly important to fulfill Mongolia's growth aspirations in the context of a rapidly changing global climate:

- Economic growth through mining;
- Food security and social stability from agriculture and livestock;
- Water supply in Ulaanbaatar.

Economic growth through mining

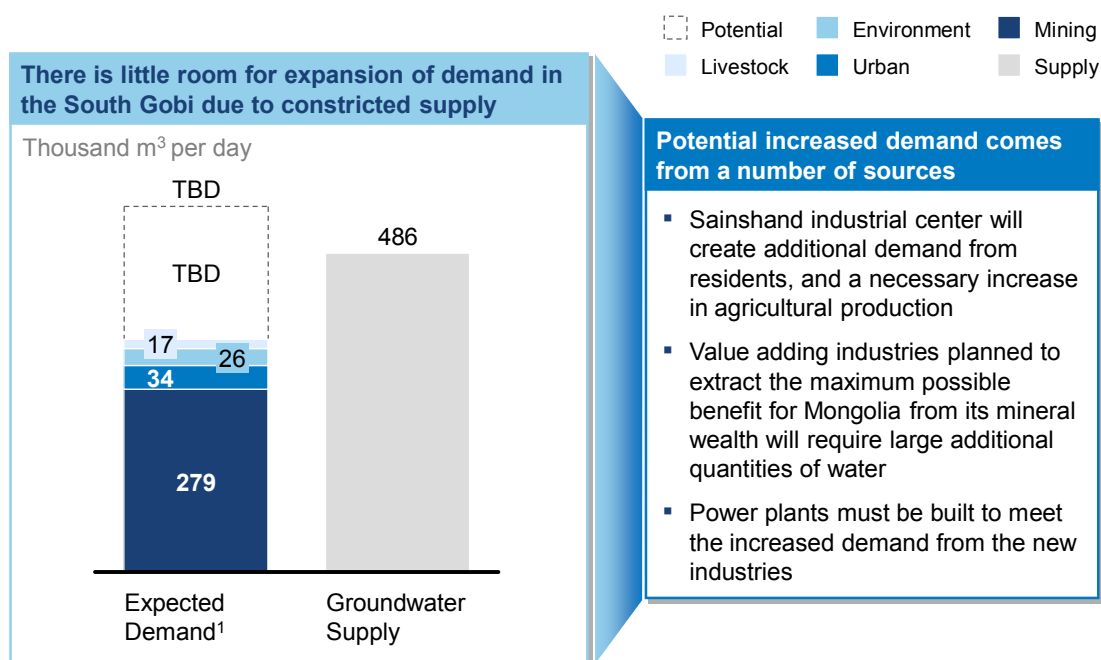
Mining will be a key driver of Mongolia's economic growth in the future. The country has significant mineral resources, in particular coal and copper deposit that are still to be exploited. For example, the Tavan Tolgoi area is the world's largest untapped coking coal deposit. However, the mining activities are concentrated in the South Gobi region, which is water scarce (see EXHIBIT 13). Current water demand uses up most of identified available groundwater supply in the South Gobi, which leaves limited room for an expansion of the mining activities (see EXHIBIT 14). In addition, the Sainshand Industrial Zone will also create water demand that will need to be met. Sainshand is expected to be a center for value adding industries to mineral resources with railway line to the mining sites. If the feasibility study which is underway is positive, the current abstraction capacity of 5,000 m³ per day will need significant increase.

Mongolia's mining is largely focused in the water scarce South Gobi region



SOURCE: Interviews with MMRE, Erdenes, Oyu Tolgoi, Energy Resources, Hunnu Coal, internet research

Current demand uses up most of identified available groundwater supply in the South Gobi leaving limited room for expansion



1 Expected demand for mining includes Oyo Tolgoi 1060 l/s; Tavan Tolgoi to 951 l/s; Shivee Ovoo 616 l/s; Tsagaan Suvarga 604 l/s

SOURCE: World Bank "Groundwater Assessment of Southern Mongolia"; WRG Analysis

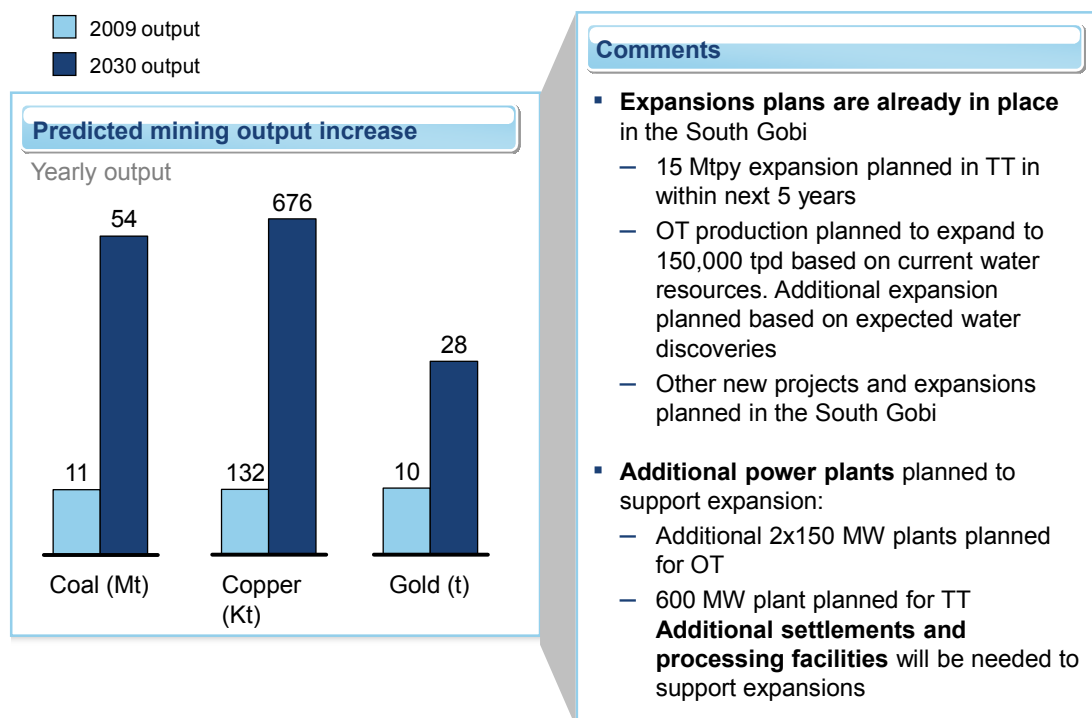
Mining in Mongolia faces a number of water challenges. For large operators located in South Gobi, there is for instance a need to know the future demand and to improve the estimates of the resources in the region. Also, there is a challenge in sharing the interconnected aquifers among miners. Another challenge is the management or the minimization of the impact of abstraction on herders. For artisanal mining in the North, there is a need to know how effluent quality standards could be imposed on miners. Also, could artisanal miners be shut down and their livelihoods protected? These challenges will need to be addressed in order to provide a secure access to water with the desired quality requirements in the future.

Given demand and strong economic returns, the mining sector must consider unconventional water sources. Chile, which has significant mining operations in water scarce regions, has examples of mines that managed to increase their water supply through desalination and especially recycling grey water from other areas. An analysis of the economics of these international mining cases could help Mongolia define alternative water sources. In addition, global experience shows substantial variation in the water intensity of mining operations across types of resource, but also across mining sites of the same resource. This shows that on top of increasing supply through alternative sources, there is opportunity to share best practices and level up water efficiency on the mining sites.

Despite the challenges that the mining industry will face regarding water, Mongolia plans to grow mining output across three minerals significantly in the next 20 years. The yearly output of coal is planned to increase from 11 million tons in 2009 to 54 million tons, Copper from 132 to 676 kilo tons and Gold from 10 to 28 tons. The expansion plans to increase the production capacity are already in place in the South Gobi, together with the additional power plants needed to support the expansion (see EXHIBIT 15).

EXHIBIT 15

Mongolia is predicted to grow mining output across three minerals significantly in the next twenty years



SOURCE: Raw Materials Group Stockholm; Australia's "Mongolian Mining Projects Report 2011; Expert Interviews

In order to address the water challenges, measures for water efficiency are already being implemented in some of the large mining projects. Certain processes are being changed (e.g. high efficiency tailings). Plans to recover and reuse water are being implemented (e.g. optimization of mine waste water reuse for low quality demand use or recycling of water from other sources, such as power plants). Finally, unnecessary withdrawals are being eliminated (e.g. by capping and insulating water infrastructure to prevent evaporation).

In addition, the Orhon-Gobi project can provide additional flexibility but associated costs need to be assessed. The Orhon Gobi project is a 62m high dam on the Orhon River containing a 30 MW capacity power station. The proposed 600 km pipeline would transport 2.5 m³/second to South Gobi, which would significantly improve the supply in the region. The preliminary investments are estimated at USD 550 million.

Mongolia needs to carefully plan and control the growth of its mining industry in order to match the future water demand with possible supplies. Choices regarding tariffs, enforcement of norms, water conservation, usage incentives and supply increase will need to be made.

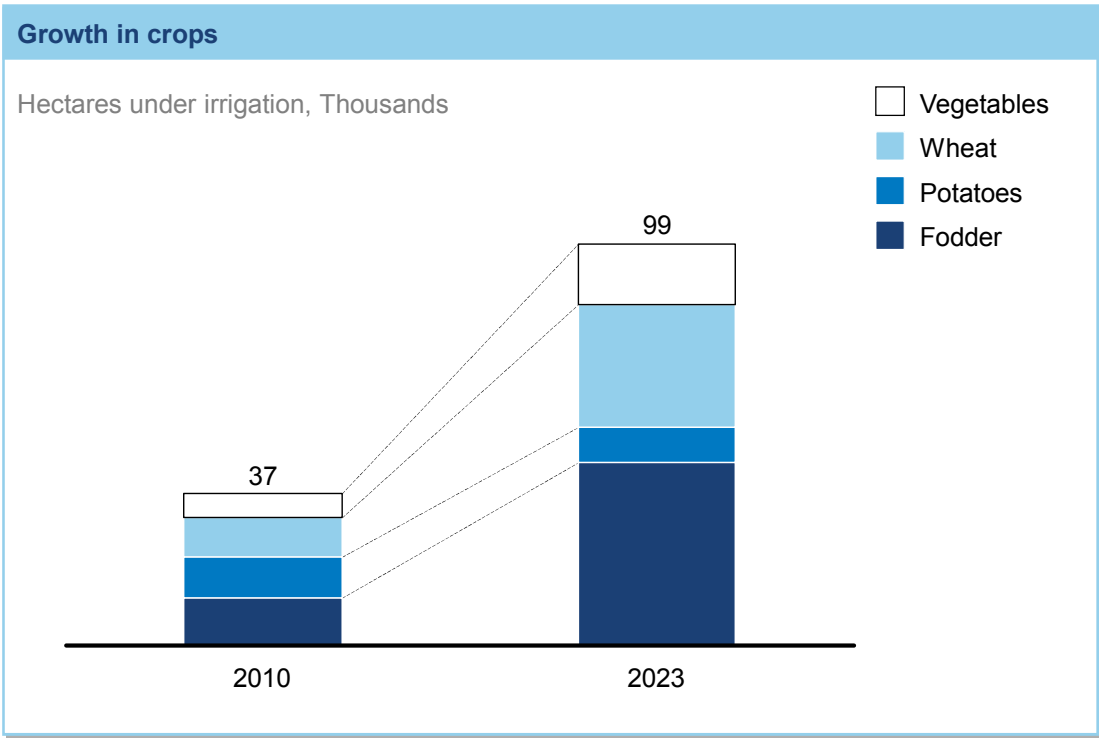
Agriculture and livestock are critical to ensure food security and provide social stability

In the 1970s and 1980s, large investments were made in agriculture which increased the land under irrigation in 1990 to 80,000 hectares and made of Mongolia a net exporter of crops. However, investment did not continue to flow in and by 2004, hectares under irrigation shrunk to 53,000, with no modern irrigation systems. The Mongolian agriculture is thus currently recovering from a recent lack of investment. Nevertheless, food autonomy is a viable objective, but hectares under irrigation need to be brought back to higher level.

EXHIBIT 16 presents the planned growth of irrigation for the major agricultural crops.

EXHIBIT 16

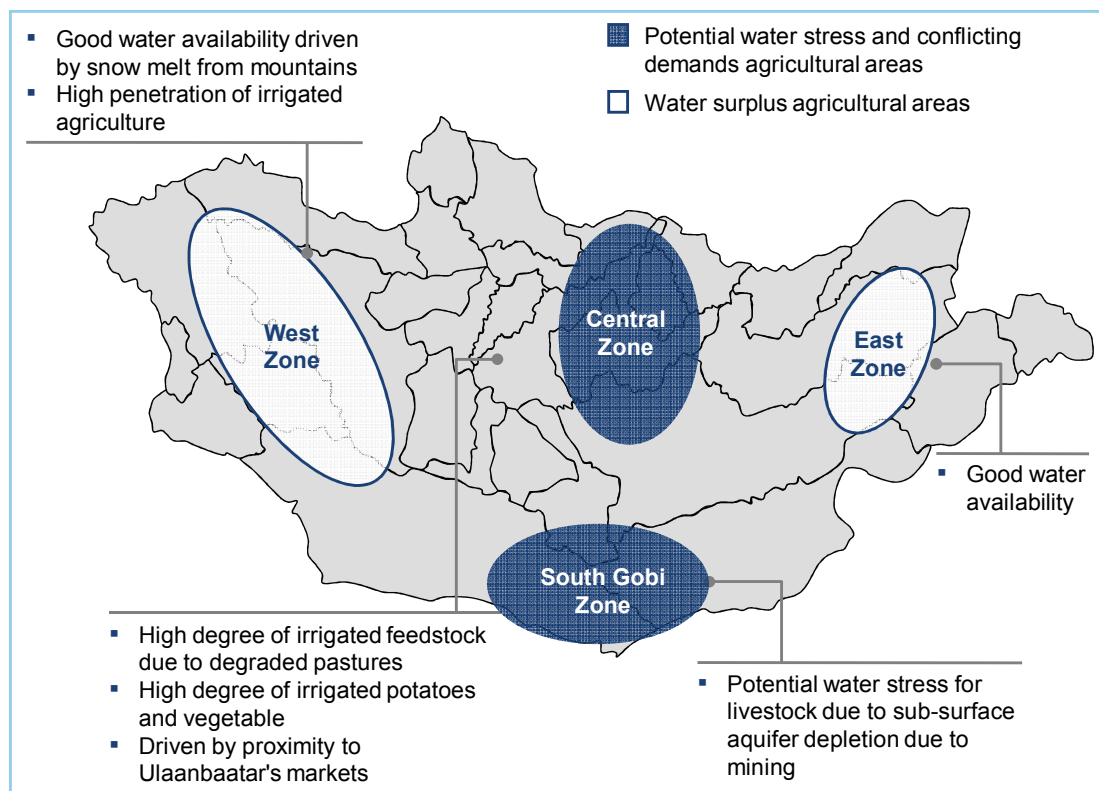
Agriculture will continue to be important with the maintenance of livestock levels and increase in crops to ensure food security



SOURCE: Ministry of Agriculture

Mongolia's agricultural activity is focused around four zones (EXHIBIT 17). The Central and South Gobi zones have potential water stresses and conflicting demands across users (in particular mining and livestock). The West and East zones have good water availability for agriculture.

Mongolia's agricultural activity is focused around four zones



SOURCE: Interviews with Ministry of Food, Agriculture and Light Industry

The key challenges faced by agriculture vary by region. For instance, in the Central Zone, irrigated food crop such as vegetables and fodder production are growing quickly in a water scarce region due to the growth of Ulaanbaatar. This will require improvement in the efficiency within this zone. In the South Gobi, there is potential aquifer depletion due to mining, which poses a problem for livestock. In the West zone, there are mainly rain-fed food crops and pasture. Solutions exist to address those challenges. To avoid degradation of the Central zone, production could be shifted to the water rich East and West through investments in the supply chain. In addition, well established best practices in agricultural efficiency and productivity should be used to reduce water needs in stressed regions. For instance, there is opportunity to increase the use of drip and sprinkler irrigation, irrigation scheduling or optimum tillage, as well as improve fertilizer balance, pest control and post-harvest losses. Mongolia could follow the lead of some countries that have managed to switch to high-value productive agriculture like Morocco through its “Le Maroc Vert” program.

Urbanization will hold the key to meeting the aspirations of a prosperous country

Ulaanbaatar has a vision to become a world class city by 2030. This involves the following dimensions:

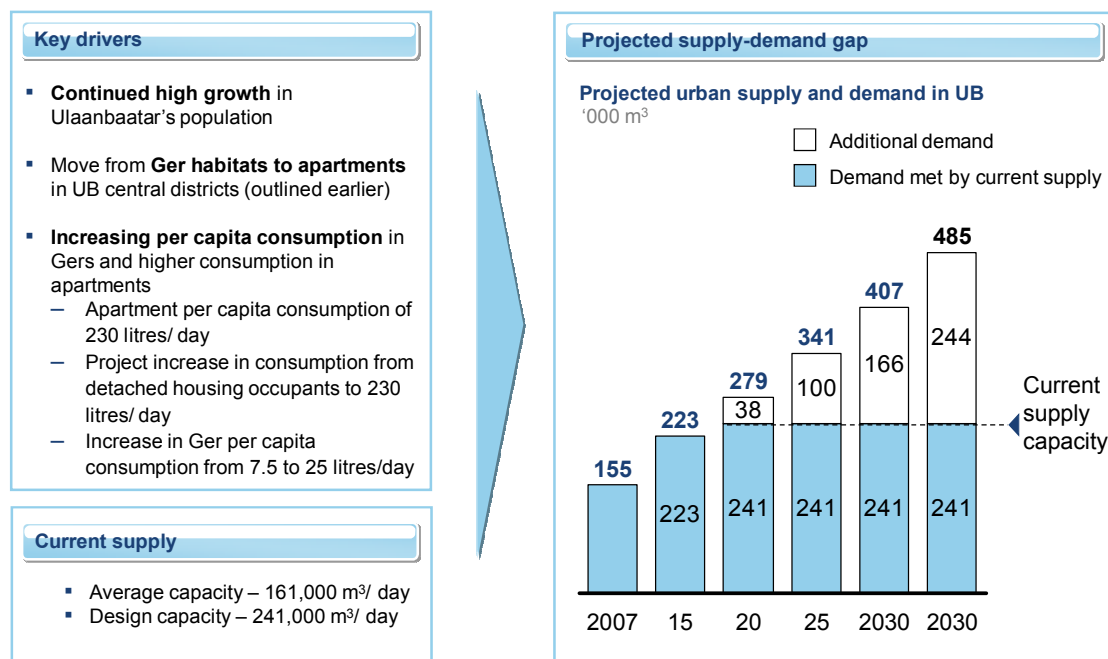
- World-class business city, providing with knowledge-based business opportunities;
- Livable city with appropriate land management, infrastructure, and housing conditions;
- Health city with safe environment, well-being and progressive legal framework;
- International tourist city with attractive natural and life-cultural assets in Asia;
- Well-governed city with efficient and responsive public administration for citizens and business sector.

In addition, the financing capability should be enhanced to encourage the private sector's participation in provision of public services and infrastructures through a PPP scheme. The legal framework should also be enhanced, as the tool for growth management and materialization of the Master Plan.

Ulaanbaatar has shown strong historic growth and this growth trend is expected to continue. The growth of Ulaanbaatar in conjunction with increasing urban consumption is projected to lead to a shortage of 244k m³/day by 2030 (see EXHIBIT 18).

EXHIBIT 18

Growth of Ulaanbaatar in conjunction with increasing urban consumption is projected to lead to a shortage of 244k m³/day by 2030



SOURCE: Planning Directions of UB Master Plan 2030, JICA (2008)

In addition, Ulaanbaatar's water economy faces three other challenges. Industrial pollution is high particularly due to discharge with high pollution levels (especially tanneries). There is ineffective waste water treatment with no recycling of waste water. Finally, there is seasonal variation in the Tuul river level causing drops in aquifer levels in spring.

On top of improving end use efficiency and reducing leaks (through for example new or retrofit toilets, showers and faucets, leakage repair and pressure control), there are three broad choices for how Ulaanbaatar's water challenge can be solved. First, a second major urban center could be developed to gradually reduce Ulaanbaatar's population down to manageable levels. However, building an entire new city of over half a million people would require important infrastructure investments. Second, the polluting industry, particularly the tanners, could be forced to move out of the city. This would require the creation of new supply chains for these and relating industries (e.g. livestock). Finally, water regulation and management could be upgraded. For example, water treatment facilities could be upgraded with much stricter regulations on polluting industries enforced. This would require significant investment in facilities.

Government of Mongolia – WRG collaboration: The way forward

After this initial diagnostic, a lot of questions remain. For instance in mining, nobody has an accurate and complete overview of the South Gobi aquifer resources; how can we develop that? Can we rely on individual mines' feasibility studies? Should we enforce higher standards of efficiency across the entire mining industry, to raise all mines up to the standards of the best ones? Do we have the ability to enforce that? In agriculture, can we commit to preserving the herders' working practices in all regions, or do we need to consider encouraging relocation? If so, where? How do we encourage the regional shift in agriculture? For the water challenge in Ulaanbaatar, is a second urban center possible? What are the challenges involved? What investment is needed to deliver each solution?

With the Office of the President of Mongolia, WRG co-hosted a workshop in June 2011, which brought together more than 120 domestic and international participants from the public and private sectors and the civil society as well as international institutions to explore the challenges and opportunities in mining, agriculture and water supply in Ulaanbaatar and have an initial discussion on the open questions. The initial diagnostic and the workshop leveled up the awareness of the water issues across the public and private sectors and the civil society. This has increased the will to act jointly and set the path for action.

In a follow-on meeting, the President of Mongolia and WRG committed to form a Mongolian Water Alliance of key government entities, international organizations, civil society representatives and private sector participants, especially from the mining sector. Drawing from other WRG country experiences, such a public-private-civil society structure proves to be effective in driving a water sector transformation. The WRG partnership has the full support of the President and senior government officials from key relevant Ministries. WRG and the Mongolian Government are in the process to discuss and agree who should be included in the Mongolian Water Alliance and to reach out to the relevant people. The Mongolian Water Alliance will be formalized at an inaugural kick-off meeting in the coming months and the formal action plan will be launched.

WRG will continue to support Mongolia to build a strong fact base and generate integrated options for the water sector. In particular, detailed analyses are planned on the mining sector, the cost and options for the development of Ulaanbaatar city and the investment needs and economic benefits from developing extended agricultural supply chains. WRG will also ensure the alignment among multiple initiatives on the water sector including those supported by the World Bank and ADB in Mongolia. The MOU outlining the WRG partnership with the Government will be aligned with all key stakeholders to ensure ownership. This work will be significant for Mongolia, which economy is projected to increase by four to five over the next 20 years due to its mineral wealth. Ensuring available and sustainable water resources required to meet these growth aspirations will be crucial.

A press release highlighting the partnership with the Water Resources Group to support the transformation of Mongolia's water sector can be found on the following link:

<http://www.weforum.org/news/mongolian-president-declares-intent-form-new-alliance-water-security>

South Africa

This following section draws on WRG analysis conducted and featured in the WRG report "Charting Our Water Future" and presented at the WRG session during the 2011 World Economic Forum on Africa in Cape Town, South Africa. The South Africa - WRG partnership, called the Strategic Water Partners Network, was publicly presented and documented in a publication titled, "Strategic Water Partners Network South Africa – Closing the water gap by 2030" at the UN climate negotiations (COP17) in Durban in December 2011⁴.

In South Africa, water demand is expected to rise over the next 20 years while its supply is likely to decline. Persistently poor usage habits, physical and commercial water losses and ecological degradation, such as the loss of wetlands, have been among the



WRG – Government of Mongolia Workshop in Mongolia, Ulaanbaatar, June 2011

"South Africa recognizes the need for better and smarter ways to manage our water resources and in particular the need to collaborate with all stakeholders... I am delighted to announce the Declaration of Partnership between my Department of Water Affairs and the 2030 Water Resources Group."

Edna Molewa – Minister of Water and Environmental Affairs of South Africa at the World Economic Forum Summit on Africa, Cape Town, May 2011



⁴ The publication can be found here:

http://www3.weforum.org/docs/IP/ENI/SWPN_ENI_ClosingWaterGap2030_Brochure_2012.pdf

chief causes for the impending crisis.

Population growth in South Africa is playing a significant role in increasing water demand while economic growth has led to increased water requirements for agricultural and industrial uses. The two factors, considered together, have led to a growing middle class which has a larger water consumption rate overall. Water scarcity means increasingly higher water costs, and allocative forces to prioritize urban and industrial use. South Africa will have to resolve tough trade-offs between agriculture, key industrial activities such as mining and power generation, and large and growing urban centers.

According to analysis conducted by the Water Resources Group, based on South Africa's growth projections and current efficiency levels, it is anticipated that a water supply-demand deficit of 2.7 billion m³ in the year 2030, representing about 17% of the country's overall demand (EXHIBIT 19).

The increase is largely attributable to a growing middle class with larger water consumption and to industrial growth. Within urban growth, household requirements are projected to increase from 2.1 billion m³ per year in 2005 to 3.6 billion m³ per year in 2030. Industrial requirements, which include mining, manufacturing, and power, are expected to increase from 1.5 billion m³ per year to 3.3 billion m³ per year. Though not increasing, agricultural irrigation still constitutes the largest single driver of demand at 7.9 billion m³ per year. South Africa will have to resolve tough trade-offs between agriculture, industrial activities such as mining and power generation, and large and growing urban centers. The 2030 WRG analysis is built on a 1.1% compounded annual growth rate (CAGR), representing the base case of economic and population growth estimates.

Moreover, factoring in the potential impacts of climate change in South Africa under a plausible scenario, the situation is worsened. The yield of existing supply sources drops by 10% and with a modest decline in rainfall of 3% from historical levels, the water supply-demand gap increases to 3.8 billion m³ per year in 2030, compared to 2.7 billion m³ per year in the base scenario. This illustrates the significant vulnerability of South Africa's water availability to climate change and the need for adaptation measures.

Progress in innovative partnerships and collaboration models

Recognizing the potential growth constrictions as a result of an anticipated water supply-demand gap, the South Africa Department of Water Affairs (DWA) has undertaken long-term planning and strategic water resource assessments at the water management area level, as well as supply and demand studies for major river systems, metropolitan areas, growth centers and smaller towns and villages. While the work continues, a number of priority areas have already been identified as immediate actions that must be taken to stave off imminent shortages. According to the DWA, one key priority action is the concerted implementation of water conservation and demand management measures. Additionally, the re-use of water offers an immediate practical supply for cities and fast-growing towns, and desalination of seawater offers security to coastal centers and opportunities for groundwater development.

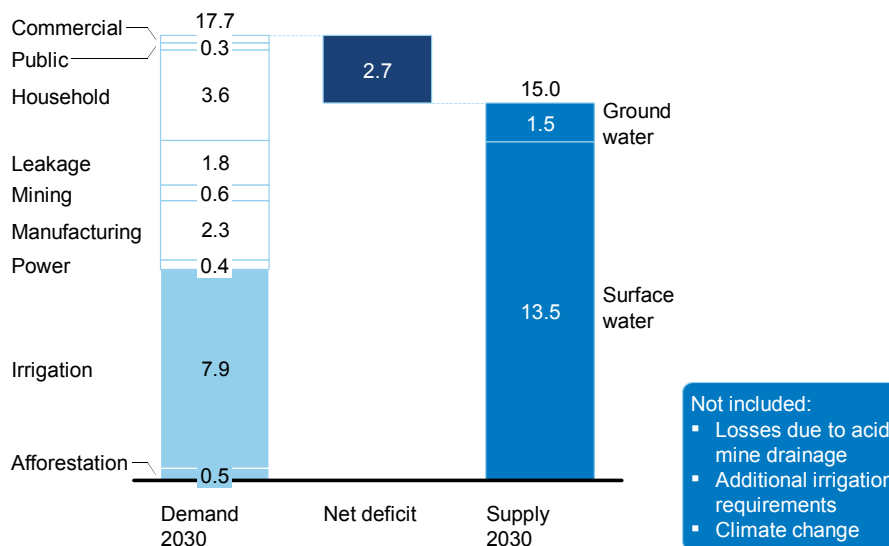
This focus on water use efficiency and using alternative water sources is consistent with WRG analysis concluding that water conservation measures, supply diversification and water quality improvement can help South Africa close its 17% water gap in 2030 (see EXHIBIT 20). Addressing water conservation / demand management measures targeted at the industrial and municipal sectors has the potential to realize 54 MCM water per year (see EXHIBIT 21).

South Africa is responding to the challenge through an innovative partnership with WRG. In May 2011, South Africa's Minister of Water and Environmental Affairs Edna Molewa, together with Peter Brabeck-Letmathe, Chairman of Nestlé and Chairman of the Water Resources Group, announced a Declaration of Partnership at the World Economic Forum on Africa Cape Town. The partnership was developed to draw together the expertise, knowledge and experience of private sector, development agencies, civil society and expert organizations to support the South Africa government respond to its water challenge and build a more resilient economy for growth and development.

EXHIBIT 19

In South Africa, under current efficiency levels, there will be a supply-demand gap of ~17% of demand in 2030

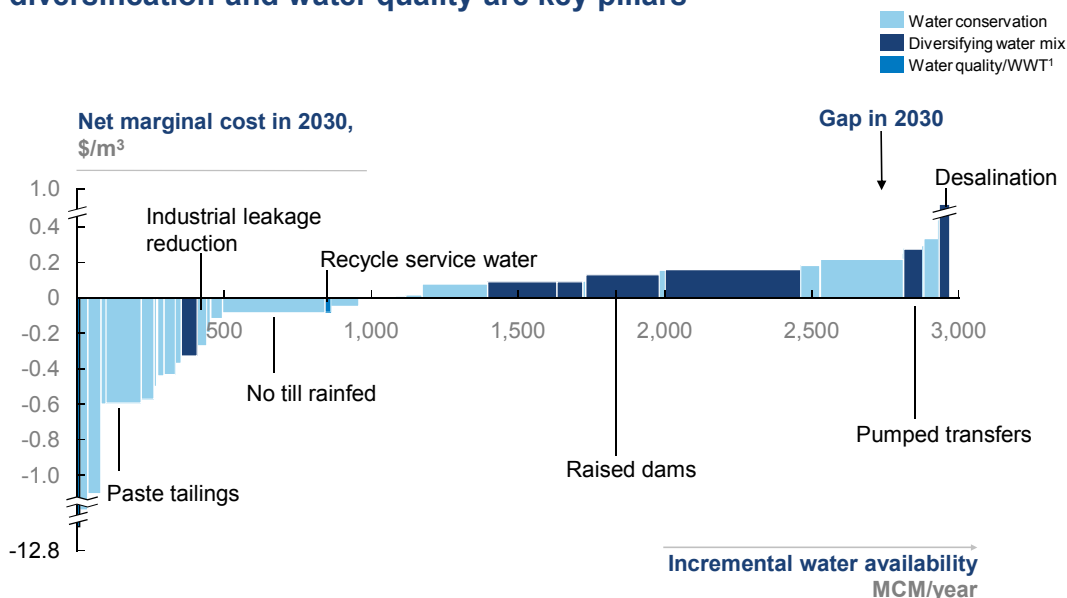
2030 (estimate), billion cubic meters



SOURCE: South Africa National Water Resource Strategy, September 2004; WRG analysis, included in "Closing the Water Gap by 2030"

EXHIBIT 20

The South Africa gap could be closed: water conservation, supply diversification and water quality are key pillars



1 Additional WWT initiatives (e.g., collection of municipal waste water and central treatment for reuse) not quantified

SOURCE: South Africa National Water Resource Strategy, September 2004; WRG analysis, included in "Closing the Water Gap by 2030"

Drawing from analysis completed by South Africa's own DWA and WRG, and WWF/Pegasys (a South Africa based consulting company), and following discussions with the DWA's senior leadership and other South African stakeholders, two activities were identified as having the most opportunity for public-private collaboration and intervention:

- **Priority A: Water conservation/demand management (see EXHIBIT 21)**
 - Increasing water use efficiency (in agriculture, industry and households)
 - Leakage reduction from distribution networks (municipal and others, including irrigation)
- **Priority B: Diversifying the water mix (see EXHIBIT 22)**
 - Reuse of effluent
 - Desalination (sea water and acid mine drainage)
 - Use of groundwater (development and sustainable management of groundwater resources, in particular for rural areas)

With this focus on demand management and water mix diversification, a specific subcomponent of the DWA-WRG Partnership will look at wastewater treatment facilities. A small public/private task team will explore the potential for industry-municipality collaborations to upgrade and rehabilitate inadequate and deteriorating infrastructure (noting however, that wastewater treatment remains the responsibility of municipalities). This exploration will be placed within the wider economic analysis of the contributions such collaborations can provide to closing the water demand-supply gap by 2030.

A crucial component of the DWA-WRG partnership is government ownership of the process and the domestic development of public-private support structures. To this end, a public-private-expert leadership group, called the South Africa Water Partners Network (SWPN) was formally established in November 2011 at its inaugural meeting hosted at the DWA. This group is chaired by the Director-General of the DWA and co-chaired by the South African Breweries (SABMiller), offering a balanced public-private leadership to oversee the activities and progress of the work. The pioneering partners of the SWPN include WRG, the World Economic Forum, SABMiller, The Coca-Cola Company, Anglo American, Nestlé, DBSA, ABSA, SANLAM, General Electric, Eskom, Water Research Commission, National Planning Commission and the NEPAD Business Foundation. SABMiller also provided a financial contribution to support the activities of the partnership. The leadership group represents a unique and progressive platform and mechanism to foster enhanced collaboration and joint solutions to solve the water challenge in multistakeholder way.

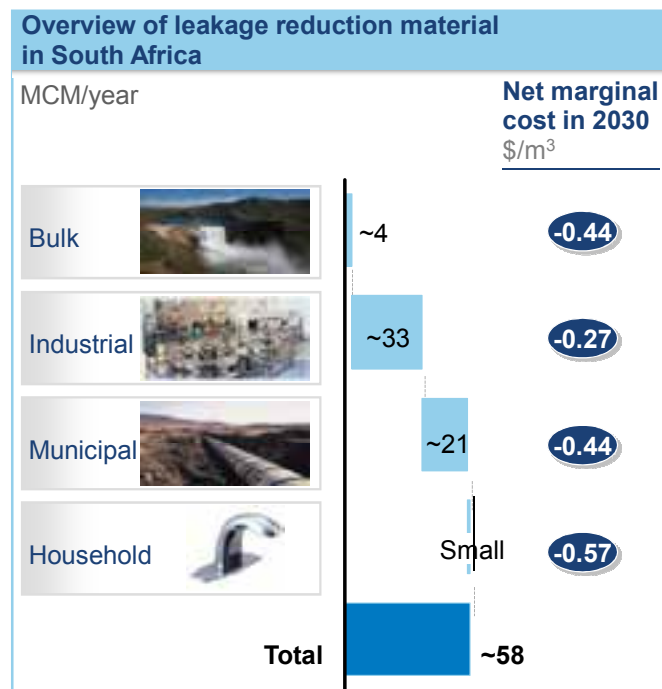
Pathways forward, the role of public-private partnerships

In its first phase of activity, the SWPN has decided to further focus its scope of activities in order to ensure delivery of tangible results, action and replication. Three working groups were established at the inaugural SWPN meeting aligned to the priorities. They are:

1. Water use efficiency / Leakage reduction
2. Working through the supply chain (in particular the agricultural supply chain)
3. Effluent partnerships (waste water treatment and reuse)

These working groups and the SWPN's overall strategy are also aligned with the National Planning Commission's growth path for South Africa, which also identifies the need for national water programs on water conservation and efficiency and on effluent partnerships.

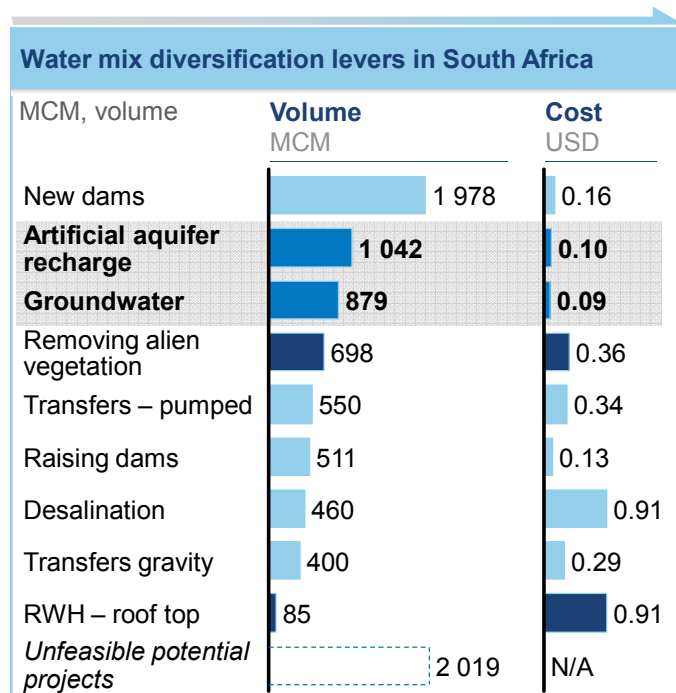
Priority A: Water conservation / demand management e.g., leakage reduction



Significant opportunities exist in industrial and municipal water conservation / demand management

SOURCE: WRG analysis; presented at the World Economic Summit on Africa 2011

Priority B: Diversification of water mix e.g., groundwater reuse and recharge



Surface water
Groundwater
Other supply

Significant opportunities to save additional water exist by diversifying the water mix

SOURCE: WRG analysis; presented at the World Economic Summit on Africa 2011

For each working group, a private sector champion has been identified to lead the work and support organizations have volunteered to help take the work forward. It was agreed in the inaugural SWPN meeting that these working groups are to focus their work in the first stage to:

- Identify leading examples and share experiences of partnership projects within each working group topic
- Identify specific key challenges that were encountered in the development and implementation of such partnerships and should be addressed if wide scale replication is to be achieved
- Recommend specific interventions and incentives whereby if adopted, would support the widespread adoption and replication; and if possible
- Identify potential projects whether for their own organization, jointly with others, or a new sector, to explore the design and implementation

Working group findings will be taken and used as input to a South Africa Water Summit, to be held in the first quarter of 2012 where stakeholders will draw together the findings to help South Africa design a strategy to take forward the key recommendations, including design of pilot projects, towards a transformation of its water sector and continue to position water as a catalyst for growth and development. The SWPN network has already identified a number of leading examples of partnerships for each working group topic that can be replicated, adopted and implemented extensively, in order to close the water gap by 2030. Discussion is already taking place between organizations how to work on joint projects in locations where they share a common water basin. The civil society has been consulted in the whole process to ensure a broad-based involvement.

As a next step, WRG will continue to support the three working groups as they develop and refine their recommendations. It may also assist in leveraging its network to bring the relevant expertise to the South Africa Strategic Water Partners Summit. Finally, WRG will continue to work with the Government of South Africa to develop an action plan and help to move the recommendations to implementation.

A press release about the partnership can be found here:

<http://www.weforum.org/news/water-partnership-south-africa-launched-world-economic-forum-africa>

China – The Province of Shanxi

This section draws on existing analysis conducted and featured in the WRG report “Charting Our Water Future” and draws on significant numbers of interviews with Chinese and international experts from the public sector, private sector, universities and non-governmental organizations as well as on existing academic articles, conference proceedings, policy papers, and private sector publications on the water sector in China and in Shanxi. The analysis was presented as a briefing paper to inform the water session at the World Economic Forum’s 2011 Annual Meeting of the New Champions in Dalian, China.

By 2030, the supply-demand gap in China will reach about 200 billion m³, or about 25% of total projected demand (assuming a base case scenario where demand is projected with key drivers without constraint and where the adoption of water-saving technology is frozen). Eight out of ten basins will face water scarcity issues, up to a 39% gap in the Hai Basin (EXHIBIT 23 presents a detailed view on the supply-demand gap at the basin level).

This situation could have catastrophic consequences for the future unless water use and supply can quickly be brought back into balance. The inability to match supply and demand will increase competition for water access between agriculture, industrial and domestic use, and will require allocation policies leading to difficult choices favoring social stability, the environment or economic growth.

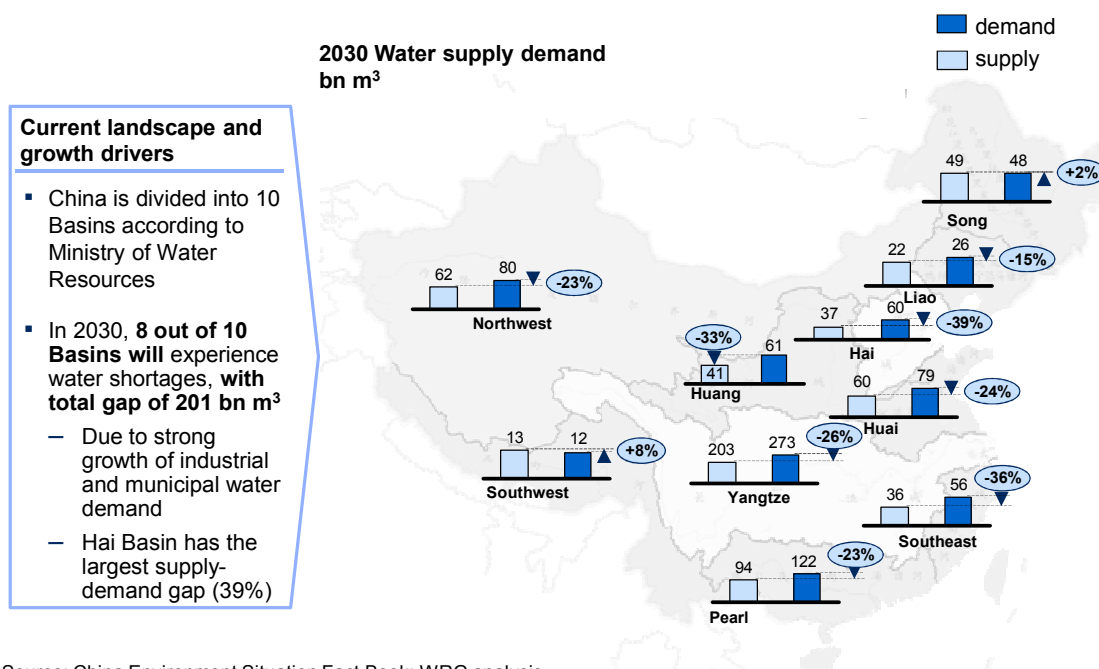
In addition to the growth of the industrial and municipal sectors, a number of factors impacting the water supply are contributing to the demand-supply deficit, including:

- Limited cost-effective infrastructure potential to increase supply
- Water quality and pollution challenges due to increasing waste water discharge and low level of water treatment, which constrains its use or re-use

- Environmental factors such as frequent water-related natural disasters (floods in southern basins and drought in northern basins) or uneven geographic water distribution making some areas particularly water-stressed.

EXHIBIT 23

8 out of 10 Basins will face water scarcity problem by 2030



Box 5: China water supply and demand analysis

Demand analysis

- Current demand totals more than 600 bn m³
- It is driven mainly by agriculture, which represents more than 60% of the use
- Going forward, growth will be driven by industrial and municipal demand, reaching ~820 bn m³ (total demand) in 2030
- Agricultural demand will only grow by 0.6% annually between 2005 and 2030 but will still account for 50% of the total demand

Supply analysis

- Currently, supply satisfies demand only through abstraction of non-renewable water resources (e.g. in Hai Basin)
- The supply is expected to reach 619 bn m³ by 2030 at an annual growth rate of only 0.37% from 2005 to 2030
- Growth is driven by planned new infrastructure and water transfers such as the South to North Water Transfer Project
- Although ambitious and costly, these infrastructure projects will only have limited impact on the supply growth

Source: WRG analysis

The water-food-energy nexus

The challenge of managing water resources can be framed within the complexity of managing the water-food-energy nexus in an area of high potential growth and development. Consider three Chinese water basins – the Huang, Huai and Hai – which together account for 39% of the country's arable land, with 35% of the Chinese population and 32% of GDP, but only 7.7% of the water resources. While there is potential to increase the agricultural output under current water use, it would need to be balanced if the ambitions were to develop significant coal reserves that are also located in the area.

Meeting the growing demand is possible; a wide set of agricultural, industrial and domestic levers exist to bridge the demand-supply gap. Augmenting the supply through infrastructure projects alone will not only be costly, but will not be sufficient to close the gap. Solutions will need to be cross-sectoral since no one set of levers (e.g. agricultural levers) can release enough water to close this gap. Therefore, an integrated solution will be required, which will include the right mix of levers by making trade-offs in terms of cost, effectiveness, ease of implementation, social and environmental impact, and political aspirations.

Building on an introductory discussion at a private water session at the World Economic Forum Annual Meeting of New Champions in September 2010 in Tianjin, WRG has been interacting with various Chinese and international stakeholders to identify key water-related challenges and elaborate how it might support water reform activities in China, particularly as expressed through China's 12th 5-year plan released in March 2011.

As the discussions have evolved, the potential for WRG engagement at the provincial level has emerged. Government officials in Shanxi Province have expressed an initial interest to engage with WRG to benefit from the experience and good practice of the group's global public-private-expert network to support key water issues in the province. Through interactions with stakeholders across all sectors, opportunities for WRG support to Shanxi Province is outlined in the following section.

Shanxi Province water stresses

Shanxi is one of China's richest provinces in coal reserves and is considered a national energy base. Continued development of coal will allow for economic development and help secure China's thirst for energy. However, this will require significant water resources in a water-scarce province where agriculture already uses the majority of available water. The province straddles two out of the top three most water-stressed basins in China: the Hai and Huang. In addition to limited rainfall, increasing demand from development of the energy and agricultural sectors, and the cyclic droughts which contribute to water scarcity and resource depletion, Shanxi's groundwater has been over abstracted and pollution is restricting the use of the remaining water. The water shortage has been identified as the most serious constraint for economic development in Shanxi Province and has become a critical strategic issue.

Through discussions with international and local Chinese experts, the following challenges have been identified as well as opportunities, which have the potential to support Shanxi Province in meeting its future water needs:

1. **The water use in agriculture is large and could be more efficient.** With a total use of 3.95 billion m³ in 2006, accounting for more than 60% of total use, agriculture is by far the largest water consumer in Shanxi. Thus, water efficiency in agriculture is one of the province's most critical water-related issues. Grain output of irrigated land in Shanxi is usually one to four times higher than that of non-irrigated land. However, the irrigated area accounts for only 33% of total cultivated area (~60% of the output). In addition, water sources for irrigation purposes have declined and the irrigated area has been reduced, meaning that Shanxi Province needs to produce more with less water. If water use efficiency can be increased, there would be more water for irrigation and agricultural production.

The improvement of efficiency in agriculture has been hindered by lack of investments. At present, the current irrigation infrastructure is insufficient. Many projects constructed in the 1960s and 1970s have deteriorated, leading to a high leakage rate. Investments in irrigation projects have been insufficient to ensure the adequate management of water allocated to agriculture. This has limited research and promotion of advanced irrigation technologies and facilities. In addition, the lack of water conservation policies, especially with regard to water rights distribution and transfer has not incentivized farmers to invest in water conservation.

However, in the past five years, Shanxi has been working on improving irrigation efficiency, for instance by promoting integrated circuit card systems. In irrigation areas, farmers' water usage is thus monitored accurately, which encourages savings. Shanxi Province has also improved its water right allocation system.

2. **Pollution is constraining the use of groundwater and surface water.** Rapid urbanization and industrialization is increasing waste water discharge in rivers. In addition, runoff from agricultural land is a major contributor to surface and groundwater pollution. In 2006, 88% of the river cross-sections monitored had been polluted and 62% polluted heavily. The limited infrastructure to treat and reuse wastewater compounds the situation. Undisciplined and excessive coal mining also damages water aquifers and induces seepage and pollution. The losses of groundwater due to coal mining amount to 1.5 billion m³ annually. Shanxi needs to manage the trade-off between securing its water resources and contributing to the national energy supply.
3. **The water pricing scheme does not reflect real water cost.** The water price in most districts was calculated in the 1990s and is usually set far below the current cost of operations and expansions. In addition, it usually does not account for the water resource value and the waste water discharge and processing cost. Because irrigation districts and their employees often depend completely on water fees, the maintenance and management of water infrastructure has deteriorated.

Research suggests updating the tariff system and increasing the water price will generate negative impacts. For instance, in agriculture, higher irrigation costs will lower the crop production (especially grain crops), which would reduce China's overall food production and threaten its self-sufficiency agriculture policy. Also, increased irrigation costs will lower rural incomes, especially in poor households, affecting negatively on the average income and the distribution of incomes. Thus, in parallel to revising the tariff system, a complementary set of policies need to be devised to offset the negative effects of price increase (e.g. subsidies to offset loss in income or promotion of new technologies that improve the crop output per drop of water).

4. **The current infrastructure in Shanxi constrains the water supply.** The annual stored water amount in Shanxi in 2006 was less than one-tenth of the runoff in the entire province. This is mainly due to the limited amount of reservoirs built in the country and the limited speed of construction of new infrastructure. Exploitation of the Yellow River in Shanxi is much lower than what the allocation scheme approved by the State Council allows. Thus, Shanxi Province is currently building major supply infrastructures to improve the exploitation of the Yellow River. The current Yangtze to Yellow river water channeling project will also bring 1.1 billion m³ of water per annum to Shanxi.
5. **Due to the limited sustainable supply, pollution and inefficiencies, groundwater has been severely over abstracted.** To meet demand for economic development, annual groundwater abstraction in Shanxi Province went from 1.1 billion m³ in 1971 to 4 billion m³ in 2006, representing 60% of total water use. Groundwater levels have declined by 2-3 meters per year on average, leading to the end of most shallow groundwater layers. As a result, groundwater has been pumped deeper, which has generated geological and environmental problems. For instance, some cities have faced land subsidence of more than 1 meter. In the past five years, Shanxi has adopted several measures to protect groundwater resources, including quota allocation for groundwater extraction, ground water monitoring and management (groundwater level is now part of the local government performance review), prioritization of surface water instead of groundwater exploitation, and promotion of a water-saving society.

By tackling these issues in an integrated and coordinated solution with collaboration from public, private and civil society sectors, Shanxi Province has the potential to meet ambitious development targets and possesses a unique opportunity to demonstrate its leadership in successfully managing the water-food-energy nexus.

The collaboration between WRG and the Province of Shanxi

Since the launch of introductory discussions on WRG at the World Economic Forum Annual Meeting of the New Champions in September 2010 in Tianjin, WRG has been interacting with various Chinese and international stakeholders to identify how it might support the efforts on water reform activities in China, particularly as expressed through the 12th Five Year Plan released in March 2011. The potential for comprehensive WRG engagement at the provincial level has emerged as a key opportunity. The Government of Shanxi has expressed interest in a long standing partnership with WRG. Scoping discussions

for the partnership are currently in progress. This collaboration has been discussed at the Annual Meeting of the New Champions in Dalian in September 2011 with officials of the provincial Government. The Government of Shanxi and WRG are currently discussing the scope of the potential engagement.

Developing the Order Book for Future Engagements

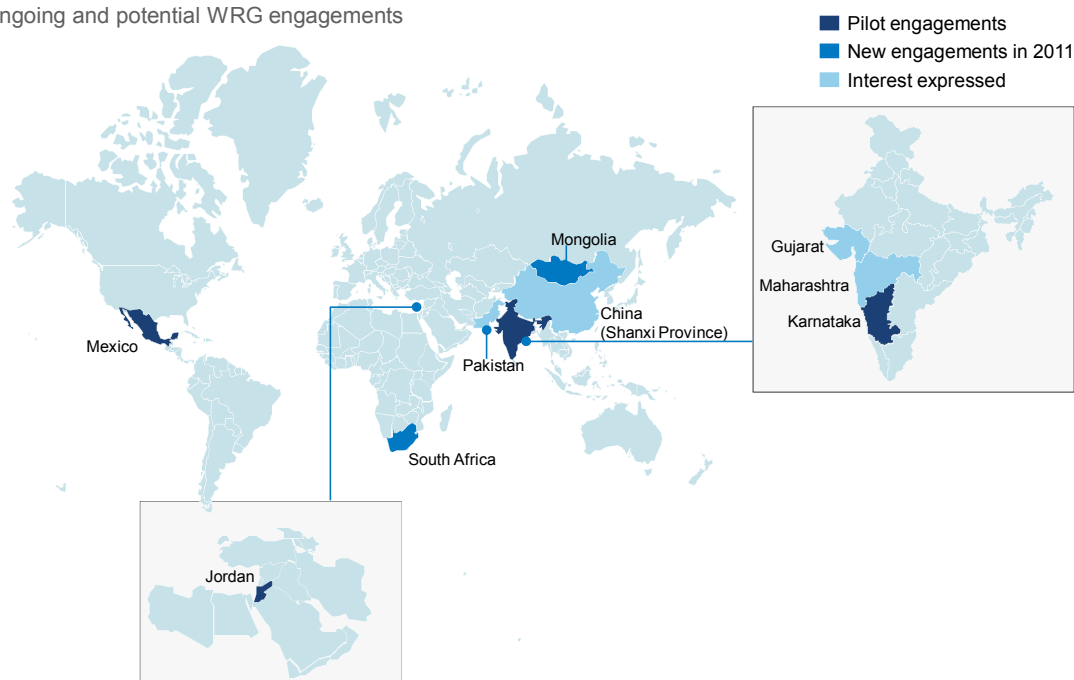
WRG has been actively expanding its network of experts and stakeholders from the public and private sectors as well as from the civil society. It has also widely communicated its activities through the organization of events. As a result, WRG has received expression of interest from other countries to develop a potential collaboration. The relationships with governments that expressed interest are nurtured and will be developed when WRG's capacity will be expanded, in particular within the frame of the new global entity. EXHIBIT 24 maps the pilot engagements, the new engagements in 2011 and the interests expressed.

Following an expression of interest from a government to begin its work, WRG will seek the advice of water professionals and other stakeholders working in-country on where and how the WRG proposition might best add value, and to ascertain which new actors WRG can most usefully help engage in the water space (such as private companies, NGOs, farmer organizations, MDBs and bilateral donors).

EXHIBIT 24

WRG has been enthusiastically received by governments around the world, and there is a strong pipeline of demand for its services

Ongoing and potential WRG engagements



SOURCE: WRG

C. Building a Global Knowledge Platform through a Catalogue of Good Practices

In order to help governments access information on water transformation, WRG has developed a pilot open source public-private catalogue of good practices on water transformation. In its final form, the catalogue will include for each lever of the cost curve international and local best-practice examples, concrete solutions and installations and their providers (also commercial), expertise, advice, new ideas and innovations in water management across all key sectors and technologies, organized around the economic analysis that WRG would provide. The catalogue will thus build on the economic analysis and cost curve levers that were presented in the report "Charting our Water Future" published by WRG in 2009. This knowledge base has

been requested by governments and fits into the overall WRG value proposition of increasing the access of governments and businesses to local and international good practices.

The Stockholm International Water Institute (SIWI) has been collaborating with WRG in creating a pilot model of this catalogue. In this pilot phase, WRG has been reaching out to three partner governments - Jordan, Karnataka and South Africa, to identify their priority areas of action in the water transformation space. Then, SIWI has been pulling together local and international good practice projects, advisors, suppliers, partnering arrangements, including technical and policy solutions to support governments as they implement water sector reforms in these identified government priorities. The pilot version of the catalogue including the identified good practices has been triangulated with the three partner governments.

WRG together with SIWI will continue to develop this catalogue in terms of completeness and interactivity with an online version forecasted. WRG will seek to engage Forum Water Initiative members in the subsequent design phases of the catalogue, ensuring that it reaches the broadest audience of users. WRG is also seeking media and knowledge partners to support the transition of the catalogue from a pilot to a full public-private, global, comprehensive knowledge base by bringing additional expertise in data and knowledge management and further improve the dissemination of the catalogue.

D. Building WRG Reputation and Raising Awareness about Water Security

Between 2007 and 2010, the World Economic Forum raised awareness about the economics and politics of water resource security throughout the world. Since 2010 and the alignment of the Forum and WRG, the awareness raising mandate has continued. This has also allowed WRG to build its reputation as an innovative partner and content expert in the water landscape among high-level decision makers. WRG has gained visibility by leveraging the Forum platform of experts, partners and events to build its network and organize more than 10 high-level water sessions and to produce and disseminate knowledge through reports and briefing notes on country or region-specific water issues. The investment in the organization of these sessions and the production of relating knowledge helped to position WRG as a major player in the water sector landscape with the power to catalyze concrete country water transformation programs. The recognition of WRG's expertise and broad network has led other organizations to ask WRG to organize water sessions as part of their programs, for instance during the Global Green Growth Forum or at the Bonn Conference on Managing the Water, Energy and Food Security Nexus. This communication through events has also profiled WRG as a reliable partner for businesses and governments to engage with. For instance, Mexico, South Africa, Mongolia and the Province of Shanxi requested a collaboration with WRG or a reinforcement of their collaboration during such events.

WRG participated to the following list of events through the full organization of sessions on water security:

- **World Economic Forum Annual Meeting 2011**, 26 – 30 January 2011, Davos-Klosters, Switzerland. During the session “Collaborative Pathways for a Water-Secure Future”, business leaders from multiple sectors together with government, international organization and development agency representatives and water sector experts reviewed WRG progress to date and discussed the next stage of work. WRG gathered significant support to advance to its next stage of work, assisting government policy-making through multistakeholder meetings to address the trade-offs and implementation of strategies. New countries expressed their interest to engage with WRG (South Africa and Mongolia). Over 100 people took part in the session, illustrating not only a growing awareness of the issue of water security as a critical component to economic and social development, but also increasing interest in taking collaborative action. The summary of the session can be found on the following link:

http://www3.weforum.org/docs/AM11/WEF_AM11_SessionSummary_CollaborativePathwaysWater.pdf



*Elbegdorj Tsakhia,
President of Mongolia
at the Annual Meeting
2011 in Davos*

- **World Economic Forum on Latin America 2011**, 27 – 29 April 2011, Rio de Janeiro, Brazil. Despite Latin America's relative water wealth compared to other parts of the world, the rapid economic and urban growth of the last two decades has put stress on the water resources of many countries in the region. Governments are seeking to meet their growth agendas through innovative solutions to balance and meet these competing demands to sustain economic growth and social development. During the water session organized by WRG, participants discussed how the efforts of the governments should best be focused and the Director-General of CONAGUA José Luis Luege Tamargo requested a deepening of the partnership with WRG to engage in the implementation of Mexico's 2030 Water Agenda. This collaboration and its potential replication in other countries in the region had the support from business representatives and international organizations such as the International Finance Corporation and Inter-American Development Bank. A summary of the session can be found on the following link:

http://www3.weforum.org/docs/WEF_SustainabilitySummit_Report_2011.pdf

- **World Economic Forum on Africa 2011**, 4 – 6 May 2011, Cape Town, South Africa. The session “Collaborative Pathways for a Water Resilient Economy” featured several important aspects of the water security issue including the role of water as an enabler to growth, the need for more and better collaboration between government, industry and civil society and the need to identify and share good water-efficiency practices and develop strategies to scale up solutions. During the meeting, Edna Molewa, Minister of Water and Environmental Affairs, South Africa, announced a partnership with WRG to improve public-private collaboration in an effort to build a water resilient economy for South Africa and the region. A summary of the session can be found on the following link:

http://www3.weforum.org/docs/AF11/WEF_AF11_Water_Summary.pdf



Minister Molewa at the World Economic Forum on Africa 2011

- **World Water Week**, Stockholm International Water Institute, 21 – 27 August, Stockholm, Sweden. This annual event is an important milestone in the water sector agenda. The objective of the public session “Collaborative Pathways for a Water Secure Future” was to share the approach of WRG and showcase some of its country partnerships in order to get feedback from an audience of experts. The session was also an opportunity to open up to a more academic audience and give opportunities to engage with WRG. Various stakeholders presented perspectives on WRG's model, shared progress and lessons learned through key activities.
 - **Annual Meeting of the New Champion**, World Economic Forum, 14 – 16 September 2011, Dalian, People's Republic of China. The WRG session discussed the water security challenges that China is facing using the Province of Shanxi as an example. A briefing note highlighting the major water issues in China and Shanxi was handed in to the participants as a background reference. During the session, and as a result of WRG's preparatory work with its partners, Dong Xide, Vice-Director, Department of Agriculture, Shanxi Province expressed his interest to collaborate with WRG. A summary of the session can be found on the following link:
- http://www3.weforum.org/docs/AMNC11/WEF_AMNC11_Water_Summary.pdf
- **Summit on the Global Agenda**, World Economic Forum, 9 – 11 October 2011, Abu Dhabi, United Arab Emirates. A session gathered the World Economic Forum Global Agenda Council on water security (see Annex 1 for members). It consists in a leading group of experts on global water security. The group discussed its advisory role to WRG and the best way to continue to be a thought partner for the new entity.
 - **Global Green Growth Forum**, Danish Government, South Korean Government, Global Green Growth Institute, 11 – 12 October 2011, Copenhagen, Denmark. Given the network of expertise developed by WRG and its innovative model and experience of public-private-civil society partnerships, the Global Green Growth Forum organizers invited WRG to organize a high-level session. The session “Securing Green Growth by Unraveling the Water-Food-Energy Nexus” featured senior representatives from businesses and governments involved in WRG who discussed the role of water as an enabler to growth and the role of multistakeholder platforms to catalyze water transformation at the country- or regional-levels.

- **Special Meeting on Economic Growth and Job Creation in the Arab World**, World Economic Forum, 21 – 23 October 2011, Dead Sea, Jordan. The objective of the water session was to present the Jordanian country work and achievements to date and to mobilize more private sector support and engagement for the process. A select group of government officials, private sector companies, civil society, development institutions and issue experts listened to the activities in Jordan and discussed the relevance and potential opportunities in other countries to ensure economic and social stability in the Middle East and North Africa region. The background briefing note presenting the overview of Jordan water economics and potential solutions served as a basis for discussions. His Royal Highness Prince Feisal Bin Al Hussein of Jordan, Chairman of the Royal Water Commission, welcomed the WRG partnership with Jordan and expressed the need to sustain this partnership in the future. Jordan's national water strategy, "Water for Life" is to be revised based on the analysis developed by WRG and other inputs. The session participants offered recommendations to support the revision, including consensus for the need for a "National Water Council", a cross-ministerial, cross-sector group to plan and manage water resources in Jordan. WRG was invited to support the creation of this council. A summary of the session can be found on the following link: http://www3.weforum.org/docs/ME11/WEF_ME11_ENI_CollaborativePathwaysWaterSecureFuture_SessionSummary.pdf

- **India Economic Summit**, World Economic Forum, 12 – 14 November 2011, Mumbai, India. The high-level session called "Implementing India's Water Vision 2030" brought together The National Planning Commission, Ministries of State Governments of Karnataka and Maharashtra among others with Indian and multi-national business leaders, academics and civil society. Participants discussed and reflected on emerging analysis from WRG and best practices on integrated water management and the design of potential pilots to start implementing a water strategy that can support India's economic growth ambitions. The group also discussed how public, private, expert and civil society groups can engage to co-develop these pilot projects at the right scale to maximize impact and lessons learned. The Government of Karnataka welcomed the involvement of WRG in the analysis and the design of the pilots and showed strong interest to continue the collaboration. A summary of the session can be found on the following link:



Basavaraj S. Bommai, Minister of Water Resources, Government of Karnataka during the session "Implementing India's Water Vision 2030" at the India Economic Summit 2011

- http://www3.weforum.org/docs/IN11/WEF_IN11_EI_SustainableGrowth_ReportSummary.pdf
- **The Water, Energy and Food Security Nexus**, Government of Germany, 16 – 18 November 2011, Bonn, Germany. Thanks to its close involvement in WRG, the organizers asked the World Economic Forum to co-organize two sessions during this high-level conference. One high-level session on the discussion and preparation of recommendations for the Heads of State at the Rio+20 Summit, and one session on the management of the nexus for green growth. This was an opportunity to position WRG as an important player in the water landscape.
- **17th Conference of the Parties (COP17)**, United Nations Framework Convention on Climate Change, 28 November - 9 December 2011, Durban, South Africa. Within the context of the Durban Growth Series co-hosted by the Government of South Africa and the World Economic Forum, WRG was featured in the private session entitled "Water and Adaptation: National plans to meet future water needs for economic growth". The session explored examples of country-level partnerships where public-private-expert coalitions are supporting governments develop and take forward national water sector transformation strategies to plan and use water resources more efficiently, adapting to the impacts of climate change and meeting the needs to sustain economic growth and social development. Examples discussed included the country partnerships of WRG in Mexico, Jordan, and South Africa. The commitment to engage with WRG was reinforced by the Government of South

Africa, which extended an invitation to interested stakeholders to engage in its three working groups towards a South Africa water summit in early 2012.

The list of participants to the WRG sessions at World Economic Forum events can be found in Annex 2. In the future, WRG will continue to leverage the Forum capabilities and network to organize high-level sessions convening major decision-makers and opinion leaders in the world from the civil society, the public and the private sectors to build its strong brand, develop its network, raise awareness about the water security challenge and engage new partners.



PART II

THE WAY FORWARD – A GLOBAL ENTITY TO SCALE UP OPERATIONS



3. The Future of WRG: A Global Entity to Scale up its Operations

At the World Economic Forum Annual Meeting in Davos 2011, the progress was deemed strong and the decision was taken to transition the current WRG program into a scalable operation, while retaining its status as a neutral platform. IFC, on behalf of the World Bank Group, agreed to host the new WRG entity and, to this end, has worked with the Forum and other partners to establish the entity with an initial 24 month horizon (January 2012- December 2013). This next phase of WRG will formalize, replicate and deepen the work underway, while creating sustainable public-private-civil society platforms both at the global and country levels to promote the change in political economy that such reform processes require. The following sections describe the delivery model, governance structure, funding model and success criteria of the new entity.

A. WRG Operations and Delivery Model

Over the 24 month period January 2012 to December 2013, WRG aspires to work, by invitation from governments, in at least 8 countries (including the on-going programs). Each country program is expected to last about 24 months. Due to the decentralized and country-led approach to its work (and based on feedback during the design phase), in-country program funding will be co-financed between WRG and in-country sources (government, development agencies, MDBs and the private sector). Additional financing will be required to develop longer term projects in detail, triggered as a result of the WRG work. This will be funded by traditional financing agencies as needed.

WRG is seeking to raise \$12 million from public and private sources over the next two years to be used as seed money for jump-starting country engagements, and to fund global products and secretariat expenses. Following the positive outcome of an independent review in the summer of 2013, WRG will scale up operations 2014 onward to cover more developing countries.

WRG will comprise a central Secretariat supported by a multi-donor financing facility. A Steering Board and Governing Council will provide the Secretariat stewardship and oversight of its strategy and operations. The composition of the governance bodies will be representative of WRG's principal constituents.

Two phases of work are therefore foreseen:

- Phase 1 (January 2012 to December 2013), completion of current assignments in Jordan, Mexico and state of Karnataka, India, and initiation of country programs in at least 5 additional countries, including Mongolia, South Africa and the Shanxi Province in China, and two additional countries/states, including some least developed countries;
- Following a review of impact, value-add, value-for-money and demand, a Phase 2 will be triggered (January 2014 onward), initiating work in up to 10 additional countries or states by 2016

WRG's activities involve both in-country and global operations, as described below.

Global

Global activities will involve the development of the “open source” global public-private knowledge platform. This will consist of knowledge products and dissemination (e.g., Annual WRG reports, good-practice guides, and development of expert practitioner networks) and global stakeholder convening activities (e.g., Annual WRG conferences, other symposia). A global platform supported by WRG will provide government officials with access to the continuously updated, “open-source” catalogue of international and local good practice examples, expertise, advice and innovations in water management improvement across all key sectors and technologies, organized around the economic analysis that WRG would provide.

As well as overseeing analysis, WRG will also engage its multilateral and bilateral partners to help develop capacity-building programs that enhance the technical skills among government officials involved in WRG activities so to help understand, co-design and take ownership of the analytic tools and subsequent implementation effort. WRG will also seek to work with its partners (and other international organizations who may wish to provide specific resources) to develop and implement global programs of public-private-civil society experience sharing across and between all government officials participating in WRG, such that government to government networks for reform are built and strengthened (for example regular training courses and experience sharing events for government officials in Washington, Europe, or regional locations). Such knowledge sharing programs may also include other actors in the developing countries, such as water experts and academics.

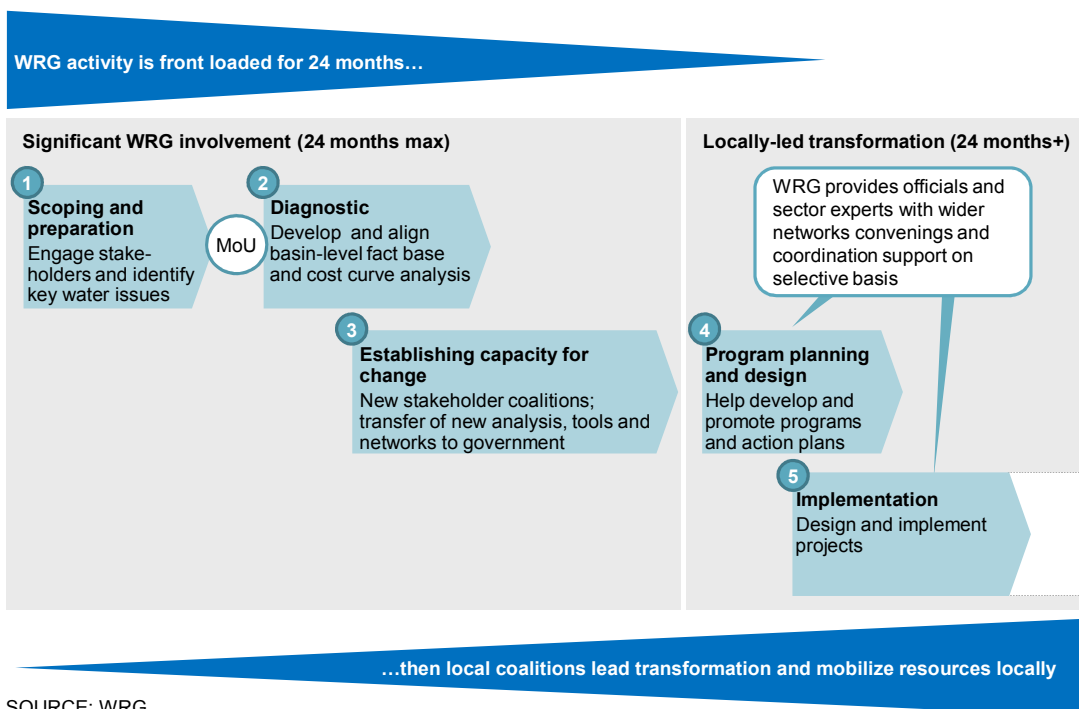
In-Country

In-country activities will focus on changing the political economy conditions so as to help catalyze a country water sector transformation program, in consonance with other players involved in the sector. The approach to country programs is informed by the experience of the on-going pilot country programs, and will be further refined as additional proof points of the WRG concept are established in coming months. The WRG approach in individual countries will be tailored to country conditions, such as history of water sector interventions, configuration of stakeholders and tradition of stakeholder consultations, institutional capacity in government and views about private sector role in water sector. WRG will work closely with existing players in the water space in each country, including MDBs, bilateral donors, NGOs, private sector and other stakeholder organizations.

WRG activities will be phased and typically of a 24 month duration, based on the experience from the three pilot country programs. The 24 month engagement will typically be comprised of three stages with a clear “exit” strategy agreed with the client government; (1) scoping and preparation, including an evaluation of existing fact-bases and programs and active engagement with those institutions and organizations that developed them to identify the clear “value-add” that WRG can provide; (2) diagnostic, economic analyses of water challenges and possible solutions; and (3) convening a wide set of actors in the water space to discuss this analysis, as well as the training of government officials in WRG analytical development and the strengthening or creation of national public-private-civil society Water Alliances to support the government's reform plans. Further stages of detailed program design and implementation could follow from the 24 month partnership, having been catalyzed by the WRG intervention, and these would typically be led and financed by the government and other in-country partners. However, a government may request the WRG network to help coordinate the ongoing work and/or work across Ministries and the private sector to ensure continued multistakeholder momentum in the reform process. WRG's budget for each country engagement will keep provision for responding to such requests on a selective and time-bound manner beyond Stage 3.

EXHIBIT 25 presents the three key in-country phases of WRG and the potential follow on work that it would catalyze.

WRG catalyses an in-country change process and empowers local coalitions to then lead the water transformation



As EXHIBIT 25 shows WRG's role in water sector transformation will be weighted towards the earlier phases of establishing in-country networks, capacity and newly packaged analysis. With government in the lead, the goal is to then translate the new appetite for an action plan into a broad range of initiatives and projects that will address the water security challenges and economic development goals highlighted in the analysis.

Following a high-level request from a government, WRG will carry out a preliminary review of existing fact-bases and programs, and will work closely with water sector stakeholders and advisors in the country (Stage 1) for roughly 2-3 months. This work will confirm government commitment, identify high-level issues and map existing and prospective players and activities in the sector to establish the value add that WRG can provide. If the potential for WRG value add is confirmed, WRG will enter into an MOU with the government.

Stage 2, the diagnostic stage, will typically last 4-6 months and lead to the creation of a rigorous water economics fact-base and diagnostic analysis of the information to assess the magnitude of the issue and propose a set of potential solutions. The work will fully leverage existing fact-bases and other sector information, with the intent of packaging the water resource information available into economic material that politicians and business leaders can easily digest. Local, and existing multilateral, public, private and NGO stakeholders will be consulted during this exercise.

Stage 3 will involve work with water sector officials in country to draw in new constituencies of actors (business leaders, NGOs, other government officials, water experts, etc) and will typically last 6-15 months, depending on initial networks and convening capacity levels in the country. It will overlap with stage 2 to some extent and comprise convening to discuss the work and the provision of support to government officials in the development and interpretation of the WRG diagnostics. It will also involve the strengthening (or formation) of multi-stakeholder, country coalitions to help the government have wider/deeper water platforms to discuss the proposed set of solutions and - through drawing on best practices - translate them into recommendations for an operational program with well-resourced and appropriately sequenced projects. Wherever possible, these coalitions will leverage existing stakeholder platforms. Local stakeholder engagement platforms will be carefully designed to ensure broad-based representation, including the private sector, NGOs and other important MDB and bilateral actors, and within the private sector a broad range of players, including small enterprise representatives and farmers. A high degree of transparency will be built

into the operational modalities of the stakeholder engagement platforms. The aim is to help draw a new, wider, public-private-expert-civil society constituency into the water debate.

Stages 1 through 3 will likely be completed within a 24 month period. At the end of Stage 3, the political-economic appetite for a high-level water sector action plan will be enhanced, and a strategy or plan will have been formulated by government (a new plan, or a plan that perhaps was in development by water professionals and has been enhanced by WRG analysis and wider public-private-civil society support).

Stage 4 will involve the translation of this high-level action plan into detailed programs with estimates of funding requirements; the implementation of the programs will happen in Stage 5. WRG will formally exit before the beginning of Stage 4 but may, in some cases, help the government identify potential sources of support for programs included in the Action Plan. The government will mobilize various players, including development agencies and private investors, to support the detailed design and implementation of the transformation program that has been created and will put in place the institutional architecture for implementation. The in-country coalitions that WRG has established can help government to coordinate, finance and undertake these activities. By this stage existing actors (e.g., governments, MDBs) and new stakeholders (e.g., private sector) will rightly take full ownership of action plan programs and initiatives. WRG will typically have no role in Stage 5. Only under very exceptional circumstances, if a government requests, WRG may in its role as a neutral platform, provide specific implementation process or coordination assistance from its expert networks to support the implementing government agency or ministry. While the bulk of the resourcing for this support would be sought from local partners to ensure national buy-in to the process, WRG will make provision to support some activities through its core funding.

The on-going WRG country engagements in Jordan, Mexico and India are currently in stage 3, with in-country capacity in the process of being established and the programs shifting into design of action plans.

B. WRG Governance and Organization

WRG will operate as a neutral entity. Its activities will be carried out by a global Secretariat supported by a multi-donor, two-year financing facility (for its first phase) and housed in the World Bank Group (IFC). The World Bank Group (represented by the IFC), working in close collaboration with its partners, will be the host of WRG until such time that WRG achieves adequate operational scale and reputation to be established as an independent global entity. IFC's global mission and mandate of facilitating the engagement of both the private and public sectors, and civil society in issues of development and growth, make it a natural trustee for an entity such as WRG. IFC also has the fiduciary tools and reputation to attract both public and private sources of financing and has demonstrated strong leadership in shepherding the 2009 Charting our Water Future report, and, with the World Economic Forum, the subsequent work of WRG.

The WRG Secretariat will be supervised by a Steering Board and guided by a Governing Council comprised of key stakeholders. The involvement of a broad set of stakeholders in the stewardship and operational oversight of WRG will promote collaboration, transparency and multistakeholder partnership in its activities.

Governing Council (GC)

The Council will be comprised of senior public and private sector, and civil society leaders, who have broad-based water sector knowledge, and proven influence on water agenda, and/or have financially contributed to WRG. Members of the GC will be drawn from senior executives from major WRG financial supporters (e.g., donors, foundations, corporate, NGOs), participating and/or partnering MDBs, representatives from selected client governments and relevant civil society organizations (such as the Chair of the Global Water Partnership, etc), and well-known sector experts.

The GC will receive regular information and updates from the Steering Board and WRG Secretariat and will be available to be convened in the event of major decisions.

Steering Board (SB)

The SB will be comprised members drawn from the World Bank Group/IFC, donors/other IFIs, the private sector, civil society, and the World Economic Forum. The Executive Director of WRG will sit on the SB. SB

members will be appointed every two years by the Governing Council. The SB will be tasked with using its networks and commitment to WRG objectives to help the WRG Executive Director and his/her team to deliver 8-10 successful country programs by the end of 2013.

An interim SB consisting of representatives of the original partners in WRG is currently operating (names in Annex 3).

WRG Secretariat

The WRG Secretariat will be headed by an Executive Director, Anders Berntell, who has been hired through a competitive international process, and will have ultimate responsibility externally and internally for WRG. The Secretariat will comprise core staff to initiate, scope, and manage programs as well as marshal global and local expertise, and funding. The Secretariat will follow a relatively lean central staffing model, with some positions possibly filled through secondment from partner organizations.

The organization structure, roles and responsibilities of various players within the organization/oversight structure, and decision-making protocols will be formalized through a set of documents including a Charter, an Operational Manual, MoU between Governing Council members and Donor Agreements.

It is important for core sponsors to note that while WRG will be hosted by IFC for the first 24 months, it will continue to operate as a collaborative, broad-based and neutral platform which brings together public, private and civil society expertise to create needed transformation in the water sector. As an independent entity, WRG will be tied to no particular bilateral, MDB, civil society or private sector organization in its work and will offer no political, partisan or national nuance to its advice. The WRG secretariat will also utilize the government, business and expert networks and convening platforms maintained by its partners, in particular those of the World Economic Forum. Consequently, all key public, private, research and civil society partners in the water space will be able to both engage in each WRG-government collaboration as they deem relevant and respond to the long term opportunities that emerge from each collaboration which might suit their particular regional and/or technical specializations.

C. Funding

The seed funding for each 24-month country engagement will be provided by WRG centrally. The remainder will be leveraged from in-country sources, for example from government, the national business community and/or those agencies or multinational companies with operations in-country. In its role as a catalyst, WRG will help officials to leverage the resourcing required from these in-country sources. After the 24 months, additional funds will be required to support the implementation of detailed design of policies, programs, projects etc. that the WRG engagement will have triggered. This funding will come from existing in-country sources, or from donors with a particular desire to support that country's work program, and may include some support for WRG expertise to help coordinate ongoing activities, if required. In practice, these costs may vary significantly country to country, based on the specific elements of the national program.

To enable the new phase of WRG to become operational, the core secretariat expenses required for 24 months will be approximately \$12 million, including seed money for the initial stages of a country engagement.

The funding structure of WRG consists of three main groups: the "Core Champions", the "Country Partners" and the "Country Champions".

WRG Core Champions are a small anchor group of development agencies and private sector actors that support the central secretariat. This group consists of at least six organizations, each providing \$1 million a year for two years. At least one-third of Core Champions should be from the private sector. A WRG Core Champion qualifies for a role in WRG governance: it receives a seat on the Governing Council and the Steering Board. The World Bank Group via the IFC, has already committed to provide \$2 million over the two coming years and is therefore a Core Champion. WRG Core Champions will also be encouraged to consider their commitment for a further 3 year period (2014-2016), subject to fund availability and the achievement of agreed results per the review.

Country Partners are bilateral development agencies, multilateral agencies, foundations and other international organizations working in-country that support - through their regional program funding - the portfolio of WRG country partnerships. These agencies may already be used to working together in key countries on water issues, through coordinating their various country programs. In these cases, the WRG country proposition seeks to enable them to work more closely with new sets of government and business actors within the country to take forward and develop the water reform agenda. Co-financing from the government itself in the WRG country program will also be sought. More details on the various partnership agreements for the three new country partnerships are available from WRG representatives. Financing requirements for the public sector will vary in each country. USAID in Jordan provides a good example of an agency helping to support a WRG country program. The Government of Karnataka provides a good example of a government itself helping to co-finance a WRG country program.

Private sector **Country Champions** are also encouraged to support each WRG country program. They work closely with the government partner on behalf of WRG private sector representatives and help co-finance the establishment (or enhancement) of multistakeholder water alliances in country to draw in new actors to the national water debate. The WRG Country Champion is a business (national or multinational) with recognized leadership credentials both in the country and in wider water stewardship who expresses interest to support WRG activity in country, and with which the government and development agencies are willing to work in partnership in order to catalyze change in water resources reform. PepsiCo in Mexico, The Coca-Cola Company in Jordan, SABMiller in South Africa and NewCom Group in Mongolia provide some good examples of WRG Country Champions to date. More than one WRG Country Champion can be identified – an ideal blend would be one multinational company and one domestic company per country program.

Table 2 summarizes the role and requirements of the funding partners.

Table 2: Funding options and role

| Funding partner | Role and requirements of funding partners |
|--|--|
| WRG Core Champions | <ul style="list-style-type: none"> • Small anchor group of development agencies and private sector actors that support the central secretariat; • Minimum threshold for WRG Core Champion: \$1 million per annum, disbursed through a two year commitment; • WRG Core Champions will have a seat on the Governing Council and Steering Board. |
| Country Partners (public sector, foundations and international organizations) | <ul style="list-style-type: none"> • Organizations from the public sector (government and development agency/agencies working in that country) that support a WRG national exercise; • Financing requirements will vary in each country • Those supporting in-country activities will form part of the national public-private-civil society partnership for WRG. |
| Country Champions (private sector) | <ul style="list-style-type: none"> • Private sector organizations that co-finance the establishment of an in-country WRG program; • Those supporting in-country activities will form part of the national public-private-civil society partnership for WRG. |

All sponsors will receive an Annual Report on WRG activities (submitted to Governing Council and publicly available) and quarterly reports on in-country programs.

Other sponsors will be welcomed to support WRG activities such as the global catalogue of good practices and other capacity building and communications activities (knowledge sharing events etc). Requests for support for these activities will be coordinated by the Executive Director and evaluated by the Steering Board on a case-by-case basis.

D. Measuring the Progress and Impact of WRG for Its Transition

Transition from Phase 1 to Phase 2

In the summer of 2013, an independent review commissioned by the Governing Council will assess the impact, demand, value-add and value-for-money of WRG. If the review and Governing Council are favorable, WRG will seek to extend and scale up its activities into at least 7 additional countries for a further 36 months (creating an overall portfolio of at least 15 countries in total), modifying its operational model based on process lessons learned as relevant. Measures of success for Phase 1 are likely to focus more on successful execution of certain core components of the WRG value proposition (e.g., catalytic function, depth of commitment of participating governments, private sector participation, perception of changed political economy for water reform) and will focus less on assessments of water resource impact per se, as a two-year time frame may not be sufficient to gauge these effects.

Suggested measures of success are:

- Long term, consistent traction with, and involvement of, key decision makers and stakeholders at the country level;
- Engagement of “new” influential actors from government, business and civil society in the national water agenda;
- Establishment of an institutional construct in government that is able to lead and carry out the transformation;
- Evidence that diagnostics and strategic work have been successfully translated into strategies and action plans, which are then carried out/implemented;
- A well-functioning dialogue platform and/or local country coalition that convenes frequently enough, represents a breadth of relevant stakeholders, and is core to the process of action plan implementation;
- Active private sector engagement beyond funding and convening, both in terms of pilots and in terms of business-driven investments;
- Satisfaction from government water officials and existing water sector experts, institutions and initiatives in country that WRG has provided a tangible “value-add”;
- Evidence that WRG did help to shift the political economy for water reform in its country activities.

Expected Impact

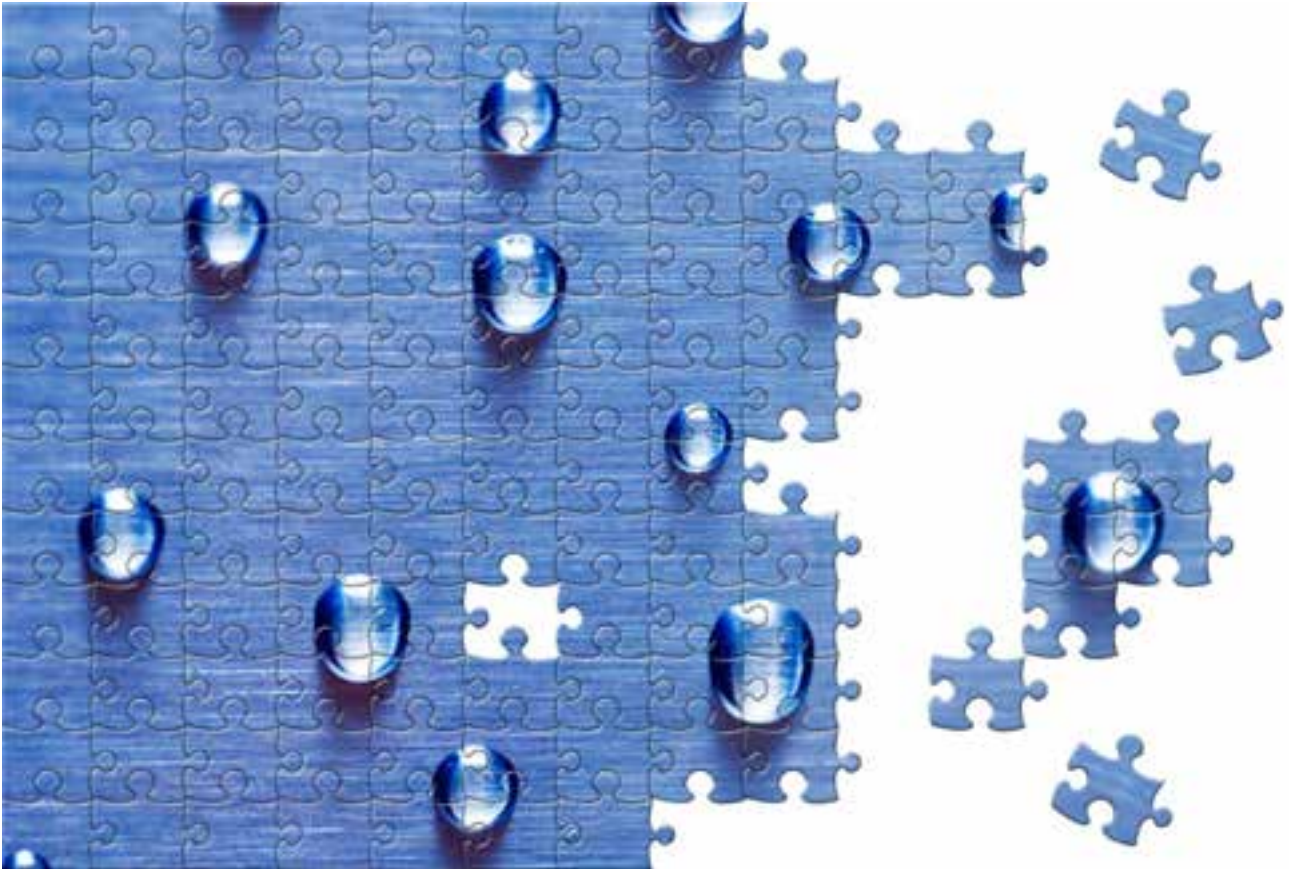
Success for WRG will be measured by clear signs of an improved political economy for national/ state level action on water, which can be translated into measurable movement in water reform activity and linked to the potential for real improvements across the water sector in engaged countries. For every country engagement, a set of objectives with measurable indicators will be agreed and benchmark data collected. Examples of objectives are as follows:

- Significant advances in regulatory and legislative architecture for water (e.g., allocation rules, establishment of water rights, etc.);
- High-level planning institution (e.g., planning commission, strategic unit) integrates water with economic planning and decision making;
- Information systems established that can support management of water by decision makers;
- Delivery architecture operational, including decision maker (e.g., minister) accountable for transformation, politically viable action plan established, program office in place, individual programs running, links with other institutions established.

It may be difficult to attribute such developments specifically to WRG, but feedback from key actors in the country can provide evidence of the role WRG played in changing the political economy conditions for reform in order to help the water sector move these key issues forward.

Real signs of sector and economic improvement can be captured through indicators such as:

- Additional private and public sector investment mobilized;
- Demand sector (e.g., power, agriculture) water management projects under implementation in significant number;
- Improvement in service level provision and financial viability of the sector;
- Increase in water productivity across the economy compared with benchmarks.
















4. Partnering with WRG

A. Current Partners

WRG enjoys a wide network of stakeholders that are supporting its operations globally and in countries. In particular, WRG can rely on several groups of partners to develop its proposition in the countries:

- A core group of sponsors, which have provided the required resources for in country work;
- A wide network of private, public and civil society organizations, which have contributed to the development of the WRG expertise globally and in countries;

Governments with which WRG has engaged to support their water transformation process. EXHIBIT 26 presents the partners that have worked with WRG in 2011. WRG acknowledges their valuable support and kindly thanks them for their contributions.

| | |
|---------------------------------------|--|
| Core sponsors |      Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra   |
| 2011 Country-level Engagements |  Department of Agriculture, Province of Shanxi, China  National Water Commission of Mexico (CONAGUA)  State Government of Karnataka and National Planning Commission, India  Office of the President, Mongolia  Minister of Water and Irrigation and Minister of Planning and International Cooperation, Jordan  Minister of Water and Environmental Affairs, South Africa |
| Strategic Water Partners ¹ | <ul style="list-style-type: none"> • Amec Plc • Cargill Inc. • CH2M HILL • Cisco Systems Inc. • Diageo Inc. • Ecolab Inc. and Nalco Company • Heineken International • Hindustan Construction Company Ltd • International Federation of Agricultural Producers • McKinsey & Company • Mosaic Co. • Nestlé SA • Novozymes A/S • PepsiCo Inc. • Rio Tinto Group • SABMiller plc • Standard Chartered Bank • Syngenta AG • The Coca-Cola Company • The Dow Chemical Company • Unilever • Veolia Environnement • World Wide Fund For Nature |
| Development and multilateral agencies | <ul style="list-style-type: none"> • ADB • GIZ • Global Green Growth Institute • IDB • International Finance Corporation • SDC • USAID • World Economic Forum |

¹ Strategic Water Partners are Forum partners that support WRG develop its approach and its local and international operations by providing knowledge, expertise and advice related to the water sector

B. How to Get Involved

WRG seeks to grow its network of partners to expand its capacity to serve countries and continue to scale up its operations. Opportunities exist to engage with WRG global and country operations. There are four different types of contributions, which provide interested organizations with unique opportunities to get involved.

1. **Financial contribution to the WRG global entity.** A WRG Core Champion that provides a minimum \$1 million for each of the 2 years of the next phase of WRG gains a seat on the Governing Council of the new global entity alongside donor agencies and other international organizations. This is a unique opportunity to help build a new international public-private-civil society platform to catalyze transformation of global and national water sectors, and to address economic development issues in the developing world.
2. **Financial contribution for in-country activities.** Private sector organizations can engage as Country Champion; government, development agencies and international organizations working in a country can engage as Country Partner. The financial contribution will vary in each country. This will also give the organization a leadership role in the WRG national program.
3. **Knowledge and expertise contribution.** WRG is seeking to expand its network of content partners. First, for the development of its open source, global, public-private knowledge base, WRG is seeking governments, NGOs and private organizations to share good practices in water management and stewardship and participate in the creation of this innovative initiative. WRG is also seeking media

and knowledge partners to support the transition of the catalogue from a pilot to a full public-private, global, comprehensive knowledge base by bringing additional expertise in data and knowledge management and further improve the dissemination of the catalogue. Finally, each country transformation program requires local and international expertise on water management. Experts are thus welcome to engage with WRG to participate in the public-private-expert-civil society discussions that are organized.

4. **Call for new partnership with WRG.** As WRG is scaling up its operations, it is important to maintain a pipeline of interested governments and develop relationships with new governments. Thus, WRG is keen to engage with new governments that request support to undertake water sector transformation. WRG will prioritize the least developed countries, which have less capacity to undertake a full water transformation program. An engagement with WRG will be scoped together with the government officials with the input from WRG partners so as to be tailored to each country or region's specific needs.

To engage with WRG or ask for complementary information, please contact:

Usha Rao-Monari
Global Head, Water
International Finance Corporation
Tel: +1 202 473 2427

Dominic Waughray
Senior Director, Head of Environmental Initiatives
World Economic Forum
Tel: +41 22 869 1200



ANNEXES

Annex 1: Members of the World Economic Forum Global Agenda Council on Water Security

To further its mission and strategic vision, the World Economic Forum created the Global Agenda Councils, which are multistakeholder groups of experts, for the purpose of advancing knowledge and collaboratively exploring important issues shaping the global, regional and industry agendas.

The Global Agenda Councils of the World Economic Forum have four core objectives:

- **Serve all stakeholder groups** of global society by addressing issues, questions and policies of growing importance on an ongoing basis by working together through carefully structured interactions (online and at events)
- **Enable top experts to interact** directly with leaders from governments, businesses, the media, universities and foundations for the purpose of addressing pressing issues
- **Support the Forum's mission** of shaping global, regional and industry agendas by monitoring key developments and contributing new insights in specific fields of expertise
- **Identify issues and provide ideas** for deliberation at World Economic Forum activities throughout the year

Members of the Global Agenda Council on Water Security, 2011-2012

| Name | Position | Organization |
|------------------------------|---|---|
| Jeff Seabright (Chair) | Vice-President, Environment and Water Resources | The Coca-Cola Company |
| Rabi Mohtar (Vice-Chair) | Executive Director, Qatar Environment and Energy Research Institute | Qatar Foundation |
| Usha Rao-Monari (Vice-Chair) | Global Head, Water, Global Infrastructure and Natural Resources Department | International Finance Corporation (IFC) |
| Robert W Bailey | President, Water Business Group | CH2M HILL |
| Daniel W Bena | Senior Director, Sustainable Development | PepsiCo |
| Sanjay Bhatnagar | Chief Executive Officer | WaterHealth International |
| Margaret Catley-Carlson | Patron | Global Water Partnership (GWP) |
| J. Carl Ganter | Managing Director | Circle of Blue |
| Samantha Gross | Director | IHS CERA |
| Angel Gurría | Secretary-General | Organisation for Economic Co-operation and Development (OECD) |
| Upmanu Lall | Alan & Carol Silberstein Professor, Department of Earth and Environmental Engineering | Columbia University |
| Herbert Oberhänsli | Vice-President, Economics and International Relations | Nestlé |
| Stuart Orr | Manager, Freshwater | WWF - World Wide Fund for Nature |
| Andrew Wales | Head, Sustainable Development | SABMiller |
| Alexander Zehnder | President | Triple Z |

Members of the Global Agenda Council on Water Security, 2010-2011

| Name | Position | Organization |
|--------------------------------------|--|---|
| Arjun Thapan (Chair) | Director-General, South-East Asia Department | Asian Development Bank |
| Margaret Catley-Carlson (Vice Chair) | Member | UN Secretary-General's Advisory Council on Water |
| Tony Allan | Professor and Head, KCL Water Research Group | King's College |
| Daniel W Bena | Director, Sustainable Development | PepsiCo International |
| Don Blackmore | Chair | eWater CRC |
| Peter Brabeck-Letmathe | Chairman of the Board | Nestlé SA |
| John Briscoe | Gordon McKay Professor of Environmental Engineering | Harvard University |
| Xia Jun | Director and Leading Professor, Key Laboratory of Water Cycle and Related Land Surface Processes | Chinese Academy of Sciences |
| Angel Gurría | Secretary-General | Organisation for Economic Co-operation and Development (OECD) |
| Upmanu Lall | Professor, Department of Earth and Environmental Engineering | Columbia University |
| Francis Matthew | Editor-at-large | Gulf News |
| Rabi Mohtar | Professor, Environmental and Natural Resources Engineering Director | Purdue University |
| Herbert Oberhänsli | Head, Economics and International Relations | Nestlé SA |
| Stuart Orr | Manager, Fresh Water Footprint | World Wide Fund for Nature International |
| Suresh Prabhakar Prabhu | Member of Parliament | Parliament of India |
| Usha Rao-Monari | Senior Manager, Infrastructure Department | International Finance Corporation |
| Jeff Seabright | Vice-President, Environment and Water Resources | The Coca-Cola Company |
| Reginald Tekateka | Specialist Adviser, International Relations | Department of Water Affairs, South Africa |
| Andrew Wales | Global Head, Sustainable Development | SABMiller plc |

Members of the Global Agenda Council on Water Security, 2009-2010

| Name | Position | Organization |
|---------------------------------|---|---|
| Margaret Catley-Carlson (Chair) | Patron | Global Water Partnership (GWP) |
| Arjun Thapan (Vice-Chair) | Special Senior Adviser to the ADB President for Infrastructure and Water | Asian Development Bank |
| Tony Allan | Professor and Head, KCL Water Research Group | King's College London |
| Don Blackmore | Chair | eWater |
| Peter Brabeck-Letmathe | Chairman of the Board | Nestlé |
| John Briscoe | Professor, Harvard School of Public Health and School of Engineering and Applied Sciences | Harvard School of Public Health |
| Gao Shiji | Senior Research Fellow and Deputy Director-General, Department of Development Strategy and Regional Economy | Development Research Center of the State Council (DRC) |
| Peter Gleick | President | Pacific Institute |
| Angel Gurría | Secretary-General | Organisation for Economic Co-operation and Development (OECD) |
| Upmanu Lall | Alan & Carol Silberstein Professor, Department of Earth and Environmental Engineering | Columbia University |
| Joseph Madiath | Executive Director | Gram Vikas |
| Francis Matthew | Editor-at-Large | Gulf News |
| Rabi Mohtar | Director, Global Engineering Program, College of Engineering | Purdue University |
| Herbert Oberhänsli | Vice-President, Economics and International Relations | Nestlé |
| Stuart Orr | Manager, Freshwater | WWF - World Wide Fund for Nature |
| Amitabha Sadangi | Executive Director | IDEI - International Development Enterprises (India) |
| Claudia Sadoff | Lead Economist, South Asia Water Resources Group | World Bank |
| Jeff Seabright | Vice-President, Environment and Water Resources | The Coca-Cola Company |
| Pasquale Steduto | Chief, Water Development and Management Unit | Food and Agriculture Organization of the United Nations (FAO) |
| Patricia Wouters | Director, UNESCO Centre for Water Law, Policy and Science | University of Dundee |

Annex 2: List of Participants in WRG Sessions at World Economic Forum Events in 2011

World Economic Forum Annual Meeting

Davos-Klosters, Switzerland, 26-30 January 2011

Special Guests

- **Montek Singh Ahluwalia**, Deputy Chairman, Planning Commission, India
- **H.R.H. Prince Turki Al Faisal Al Saud**, Prince of Saudi Royal Family
- **Kofi Annan**, Secretary-General, United Nations (1997-2006); Member of the Foundation Board of the World Economic Forum
- **Basavaraj S. Bommai**, Minister of Water Resources, Government of Karnataka, India
- **Cao Duc Phat**, Minister of Agriculture and Rural Development of Vietnam
- **Helen E. Clark**, Administrator, United Nations Development Programme (UNDP), New York
- **Martin Dahinden**, Director-General, Swiss Agency for Development and Cooperation (SDC), Switzerland
- **Espen Barth Eide**, Deputy Minister of Foreign Affairs of Norway
- **Imad Fakhoury**, Minister of State for Mega Projects of the Hashemite Kingdom of Jordan
- **Angel Gurría**, Secretary-General, Organisation for Economic Co-operation and Development (OECD), Paris
- **Han Seung-Soo**, Chairman, Global Green Growth Institute (GGGI), Republic of Korea
- **Connie Hedegaard**, Commissioner, Climate Action, European Commission, Brussels
- **Edna Molewa**, Minister of Water and Environmental Affairs of South Africa
- **Luis A. Moreno**, President, Inter-American Development Bank, Washington DC; Member of the Foundation Board of the World Economic Forum
- **Achim Steiner**, Executive Director, United Nations Environment Programme (UNEP), Nairobi
- **Lars H. Thunell**, Executive Vice-President and Chief Executive Officer, International Finance Corporation (IFC), Washington DC
- **Elbegdorj Tsakhia**, President of Mongolia

Co-Chaired by

- **Peter Brabeck-Letmathe**, Chairman of the Board, Nestlé, Switzerland; Member of the Foundation Board of the World Economic Forum
- **Indra Nooyi**, Chairman and Chief Executive Officer, PepsiCo, USA; Member of the Foundation Board of the World Economic Forum

Moderated by

- **Michael Mack**, Chief Executive Officer, Syngenta International, Switzerland

Discussion Leaders

- **Alan Clark**, Managing Director, SABMiller Europe, Switzerland
- **Ajit Gulabchand**, Chairman and Managing Director, Hindustan Construction Company, India
- **Jim Leape**, Director-General, WWF International, World Wide Fund for Nature, Switzerland
- **Lee A. McIntire**, Chairman and Chief Executive Officer, CH2M HILL Companies, USA
- **Arjun Thapan**, Special Senior Adviser to the ADB President for Infrastructure and Water, Asian Development Bank, Manila
- **Clyde C. Tuggle**, Senior Vice-President, Global Public Affairs and Communications, The Coca-Cola Company, USA

Participants

- **BP Agrawal**, Executive Director, Sustainable Innovations, USA
- **Elizabeth Avery**, Vice-President, Global Public Policy and Government Affairs, PepsiCo, USA
- **Douglas M. Baker Jr**, Chairman, President and Chief Executive Officer, Ecolab, USA
- **Trevor Balzer**, Director-General, Department of Water Affairs, South Africa Government, South Africa
- **Robert Berendes**, Head, Business Development, Syngenta International, Switzerland
- **Marcos Bonturi**, Deputy Chief of Staff of the OECD Secretary-General, OECD Programme for International Student Assessment (PISA), France
- **Micheline Bossaert**, Director, International Department, GDF SUEZ, France
- **Samir Brikho**, Chief Executive Officer, Amec, United Kingdom
- **Fred M. Brune**, President, Group Chief Executive, International, CH2M HILL, USA
- **James Cameron**, Founder and Vice-Chairman, Climate Change Capital, United Kingdom
- **Philip Campbell**, Editor-in-Chief, Nature Magazine, United Kingdom
- **Sanjeev Chadha**, President, Middle East Africa Region, PepsiCo, United Arab Emirates
- **François-Philippe Champagne**, Strategic Development Director and Member of Group Management Committee, AMEC, United Kingdom

- **Ganhuyag Chuluun Hutagt**, Vice-Minister of Finance of Mongolia
- **Jean-Marc Delpont de Vaux**, President, Consumer Products Division, Olayan Financing Company, Saudi Arabia
- **Frits van Dijk**, Executive Vice-President and Zone Director, Asia, Oceania, Africa and Middle East, Nestlé, Switzerland
- **Jacques Diouf**, Director-General, Food and Agriculture Organization of the United Nations (FAO), Rome
- **John P. Drzik**, President and Chief Executive Officer, Oliver Wyman Group (MMCo), USA
- **J. Erik Fyrwald**, Chairman and Chief Executive Officer, Nalco Company, USA
- **Zandanshatar Gombojav**, Minister of Foreign Affairs and Trade of Mongolia
- **Pavel Grachev**, President and Chief Executive Officer, Uralkali, Russian Federation
- **Mina Guli**, Executive Director and Chief Investment Officer, Peony Capital, People's Republic of China
- **Heinz Haller**, Executive Vice-President and Chief Commercial Officer, The Dow Chemical Company, USA
- **Stephanie Pullings Hart**, Vice-President, Operations, Jenny Craig, USA
- **Simon Henry**, Chief Financial Officer, Royal Dutch Shell, Netherlands
- **René Hooft Graafland**, Member of the Executive Board and Chief Financial Officer, Heineken, Netherlands
- **John L. Hopkins**, Group Executive, Fluor Corporation, USA
- **Sir Mohammad Jaafar**, Chairman and Managing Director, Kuwaiti Danish Dairy Company, Kuwait
- **Christoph Jakob**, Senior Adviser, Swiss Agency for Development and Cooperation (SDC), Switzerland
- **Jung Tae-Yong**, Deputy Executive Director, Global Green Growth Institute (GGGI), Republic of Korea
- **Diane Kempinski**, Columnist, Nature Magazine, Australia
- **Naina Lal Kidwai**, Group General Manager, Country Head, India, HSBC Asia Pacific, India
- **Haruhiko Kuroda**, President, Asian Development Bank, Manila
- **Rachel Kyte**, Vice-President, International Finance Corporation (IFC), Washington DC
- **Afzaal Malik**, Vice-President, International Government Relations, The Coca-Cola Company, USA
- **Rebecca Marmot**, Global External Affairs Director, Unilever, United Kingdom
- **Julia Marton-Lefèvre**, Director-General, International Union for Conservation of Nature (IUCN), Switzerland
- **Jerry Matthews Matjila**, Ambassador and Permanent Representative of South Africa to the United Nations, Geneva
- **Shunichi Matsui**, Senior Vice-President, Mitsubishi Corporation, Japan
- **Daniel R. Mintz**, Founding Managing Director, Olympus Capital Holdings Asia, USA
- **François Münger**, Senior Water Adviser, Social Development Division, Swiss Agency for Development and Cooperation (SDC), Switzerland
- **Pamela Murphy**, Trustee and Director, Island Press, USA
- **Herbert Oberhaensli**, Vice-President, Economics and International Relations, Nestlé, Switzerland
- **Jeremy Oppenheim**, Director, McKinsey & Company, United Kingdom
- **Konrad Otto-Zimmermann**, Secretary-General, ICLEI - Local Governments for Sustainability, Germany
- **Amir Peleg**, Founder and Chief Executive Officer, TaKaDu, Israel
- **Jim Prokopanko**, President and Chief Executive Officer, Mosaic, USA
- **Anthony F. Pryor**, Chairman, Halcrow Group, United Kingdom
- **Usha Rao-Monari**, Global Head, Water, Global Infrastructure and Natural Resources Department, International Finance Corporation (IFC), Washington DC
- **Chengal Reddy**, Co-Chairman, Indian Farmers & Industry Alliance (IFIA), India
- **Steen Riisgaard**, President and Chief Executive Officer, Novozymes, Denmark
- **Geralyn S. Ritter**, Vice-President, Global Public Policy and Corporate Responsibility, Merck & Co., USA
- **D. Satyamurthy**, Principal Secretary, Water Resources, Government of Karnataka, India
- **Charles C. Savitt**, President and Chief Executive Officer, Island Press, USA
- **Lisa Schroeter**, Acting Head, Government Affairs, Middle East and Africa, The Dow Chemical Company
- **Tavleen Singh**, Columnist, Indian Express, India
- **Ofra Strauss**, Chairperson, Strauss Group, Israel
- **Martin R. Stuchtey**, Director, McKinsey & Company, Germany
- **Tesfai Tecle**, Special Advisor to the Chairman, Alliance for a Green Revolution in Africa (AGRA), Kenya
- **Mark R. Tercek**, President and Chief Executive Officer, Nature Conservancy, USA
- **John G. Thuestad**, Executive Vice-President, Group President of Global Products, Alcoa, USA
- **Andrew Wales**, Head, Sustainable Development, SABMiller, United Kingdom
- **Paul S. Walsh**, Chief Executive, Diageo, United Kingdom
- **Keith Weed**, Chief Marketing and Communications Officer, Unilever, United Kingdom
- **Simon Zadek**, Senior Fellow, Center for Business and Government, Harvard Kennedy School, Harvard University, USA

World Economic Forum on Latin America

Rio de Janeiro, Brazil, 27-29 April 2011

Collaborative Pathways for a Water Secure Future

Special Guests

- **Alexandre Meira da Rosa**, Manager, Infrastructure and Environment Sector, Inter-American Development Bank, USA

Discussion Leader

- **Robert W. Bailey**, President, Water Business Group, CH2M HILL, USA
- **Elias Freig**, Manager, Carbon Finances & Economics of Climate Change, Comisión Nacional del Agua (CONAGUA), Mexico
- **Usha Rao-Monari**, Global Head, Water, Global Infrastructure and Natural Resources Department, International Finance Corporation (IFC), Washington DC

Co-Chairs

- **Luis Montoya**, President, Latin America Beverages, PepsiCo, Peru
- **Thierry Tanoh**, Vice-President, Sub-Saharan Africa, Latin America and the Caribbean, and Western Europe, International Finance Corporation (IFC), Johannesburg

Moderated by

- **Dominic Waughray**, Senior Director, Head of Environmental Initiatives, World Economic Forum

Participants

- **Eleanor Allen**, Director of Strategic Development for Latin America, CH2M Hill, Brazil
- **James Bacchus**, Chair, Global Practice Group, Greenberg Traurig, USA
- **Ediana Balleroni**, Communications Director SAF & SABU, PepsiCo do Brasil, Brazil
- **Micheline Bossaert**, Director, International Department, GDF SUEZ, France
- **Gabriela Burian**, Director of Sustainability, Monsanto do Brasil, Brazil
- **Lucio Cadaval Bedê**, Manager, Atlantic Forest Program, Brazil
- **Juan Carlos Castilla-Rubio**, Managing Director, Global Resources Innovation Group, Cisco Inc., Brazil
- **Cristiane Elisa Foja**, Director, Government Affairs, Latin America, The Dow Chemical Company, Brazil
- **Marcus Frank**, Director of the Brazilian Climate Change Department, McKinsey & Company, Brazil
- **Estrellita Fuentes**, Manager, International Affairs, Comisión Nacional del Agua (CONAGUA), Mexico
- **Paul Dudley Hart**, Senior Vice-President, Global Partnerships and Alliances, MercyCorps, USA
- **Michel M. Liès**, Chairman, Global Partnerships, Swiss Re, Switzerland
- **John H. Matthews**, Director, Freshwater Climate Change, Conservation International, USA
- **Griselda Medina Laguna**, Deputy Manager of Management and Assessment of Projects with International Credit, Comisión Nacional del Agua (CONAGUA), Mexico
- **Ramon Mendiola**, Chief Executive Officer, Florida Ice and Farm Company, Costa Rica
- **Paul Oakley**, Public Affairs Director, Latin America, The Dow Chemical Company, Brazil
- **Luiz Rossi**, General Manager, Institutional Relations & Communication, ArcelorMittal Brasil, Brazil
- **Susan L. Segal**, President and Chief Executive Officer, Council of the Americas/Americas Society, USA
- **Fritz Smith**, Vice-President, Environment, IHS, USA
- **Sergio Sousa**, Managing Director and Chief Financial Officer, Latin America, Nalco Company, Brazil
- **Luis Cesar Verdi**, Managing Director, SAP do Brasil, Brazil
- **Virgílio Maurício Viana**, General Director, Fundação Amazonas Sustentável, Brazil
- **Nikhil da Victoria Lobo**, Head, Public Sector Americas, Swiss Re Financial Services Corporation, USA
- **Kenneth Zhang Yixiao**, Chief Executive Officer, Guangdong Haohe Construction, People's Republic of China

World Economic Forum on Africa

Cape Town, South Africa, 4-6 May 2011

Collaborative Pathways for a Water Resilient Economy

Special Guests

- **Peter Brabeck-Letmathe**, Chairman of the Board, Nestlé, Switzerland; Member of the Foundation Board of the World Economic Forum; Co-Chairs of the World Economic Forum on Africa
- **Edna Molewa**, Minister of Water and Environmental Affairs of South Africa

Moderated by

- **Sanjeev Chadha**, President, Middle East Africa Region, PepsiCo, United Arab Emirates

Participants

- **Lynette Chen**, Chief Executive Officer, NEPAD Business Foundation, South Africa
- **Kristen Dailey**, Chief Operating Officer and Vice-President, AgInvest, Initiative for Global Development, USA
- **Jacques Delmoitiez**, President, Europe, BASF, Germany
- **Francisco Ganzer**, Managing Director, Middle East and North Africa, Bunge, Switzerland
- **Shannon S. Herzfeld**, Vice-President, Government Relations, Archer Daniels Midland (ADM), USA
- **Chris Isaac**, Director, Business Development, AgDevCo, United Kingdom
- **Sir Mohammad Jaafar**, Chairman and Managing Director, Kuwaiti Danish Dairy Company, Kuwait
- **Snowy Joyce Khoza**, Chairman, TCTA, South Africa
- **Solly Mabuda**, Chief Director, Department of Water Affairs and Forestry (DWAF), South Africa
- **Anne McCormick**, Corporate Relations Director, Diageo Africa, Diageo, United Kingdom
- **Alex K. Munyao**, Business Development Manager, Sealed Air, Kenya
- **Thabani Myeza**, Project Manager, Water Initiative, NEPAD Business Foundation, South Africa
- **Thomas Nagy**, Executive Vice-President, Novozymes, Denmark
- **Jane Nelson**, Senior Fellow and Director, Corporate Social Responsibility Initiative, Harvard Kennedy School, Harvard University, USA
- **Sullivan O'Carroll**, Managing Director and Chairman, Nestlé (South Africa), South Africa
- **Herbert Oberhaensli**, Vice-President, Economics and International Relations, Nestlé, Switzerland
- **Keith Palmer**, Chairman, InfraCo, United Kingdom
- **Ravi Pillay**, Director, Corporate Communication and Public Affairs, Nestlé (South Africa), South Africa
- **Lisa Schroeter**, Acting Head, Government Affairs, Middle East and Africa, The Dow Chemical Company
- **Ian Solomon**, Executive Director, United States, World Bank Group, Washington DC
- **Stanley Subramoney**, Deputy Chief Executive Officer, PwC, South Africa
- **Thierry Tanoh**, Vice-President, Sub-Saharan Africa, Latin America and the Caribbean, and Western Europe, International Finance Corporation (IFC), Johannesburg
- **Gary Towne**, Chairman of the Management Board, Alfred C. Toepfer International, Germany
- **Andrew Wales**, Head, Sustainable Development, SABMiller, United Kingdom
- **Keith Warren**, General Manager, Yum! Restaurants International, South Africa
- **Michael Zarin**, Director, Government Relations, Vestas Wind Systems, Denmark

Annual Meeting of the New Champions

Dalian, People's Republic of China, 14-16 September 2011

Collaborative Pathways to a Water Resilient Economy

Special Guests

- **Dong Xide**, Vice-Director, Department of Agriculture Shanxi Province, People's Republic of China
- **Li Yuanyuan**, Vice-President, General Institute of Water Resources and Hydro-Power Planning and Design, Ministry of Water Resources of the People's Republic of China

Moderated by

- **Simon Zadek**, Senior Visiting Fellow, Global Green Growth Institute (GGGI), Switzerland

Participants

- **Michael D. Antonovich**, Mayor, Los Angeles County, USA
- **Daniel Bryant**, Senior Vice-President, Global Public Policy and Government Affairs, PepsiCo, USA
- **James Cameron**, Founder and Vice-Chairman, Climate Change Capital, United Kingdom
- **Gary Collar**, Senior Vice-President, General Manager of Europe, Africa, Middle East, Australia and New Zealand, AGCO Corporation, Switzerland
- **Roland Decorvet**, Chairman and Chief Executive Officer, Nestlé (China), People's Republic of China
- **Claudio Facchin**, Chairman and President, ABB (China), People's Republic of China
- **Fan Shenggen**, Director-General, International Food Policy Research Institute (IFPRI), USA
- **J. Carl Ganter**, Managing Director, Circle of Blue, USA
- **Guo Youzhi**, Secretary-General, China Desalination Association (CDA), People's Republic of China
- **Sam Hsu**, Senior Vice-President and General Manager, Ecolab, People's Republic of China
- **Sir Mohammad Jaafar**, Chairman and Managing Director, Kuwaiti Danish Dairy Company, Kuwait
- **Jean-Pierre Lehmann**, Professor of International Political Economy, Institute for Management Development International (IMD), Switzerland
- **Gavin Liu Xingang**, Division Manager, Power Systems, ABB (China), People's Republic of China
- **Man Chaoyang**, Government Relations Manager, Nestlé (China), People's Republic of China
- **Ramon Mendiola**, Chief Executive Officer, Florida Ice and Farm Company, Costa Rica
- **Kala Mulqueeny**, Senior Counsel, Asian Development Bank, Philippines
- **Shigeo Ohyagi**, President and Chief Executive Officer, Representative Director of the Board, Teijin, Japan
- **Amir Peleg**, Founder and Chief Executive Officer, TaKaDu, Israel
- **April Rinne**, Director, Water Credit, Water.org, USA
- **Jack Sim**, Founder and Director, World Toilet Organization, Singapore
- **Peter Sykes**, President, Greater China, Dow Chemical Company, People's Republic of China
- **Cathy Tai Xiangmei**, Vice-President, Corporate Affairs, PepsiCo International, People's Republic of China
- **Dominic Waughray**, Senior Director, Head of Environmental Initiatives, World Economic Forum
- **Gian-Marc Widmer**, Managing Director, Ecolutions New Energy Investment, People's Republic of China
- **Raymond Zhang**, Government Affairs Senior Manager, PepsiCo Greater China Region, People's Republic of China

World Economic Forum Special Meeting on Economic Growth and Job Creation in the Arab World

Dead Sea, Jordan, 21-23 October 2011

Collaboration Pathways for a Water Secure Future

Special Address by

- **H.R.H. Prince Feisal Bin Al Hussein**, Prince at The Royal Hashemite Court of Jordan

Special Guests

- **Kevin Rushing**, Foreign Service Officer, Mission Director, USAID - US Government Agency for International Development, Jordan
- **Maysoon Al Zoubi**, Secretary-General, Ministry of Water and Irrigation, Jordan

Discussion Leaders

- **Rabi Mohtar**, Executive Director, Qatar Environment and Energy Research Institute, Qatar Foundation, Qatar
- **Thomas Rhodes**, Director, Water Resources & Environment, USAID - US Government Agency for International Development, Jordan
- **Guy Honore**, Programme Coordinator, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Jordan
- **Imad Fakhoury**, Minister of State for Mega Projects of the Hashemite Kingdom of Jordan (2009-2011)

Moderated by

- **Sanjeev Chadha**, President, Middle East Africa Region, PepsiCo, United Arab Emirates

Participants

- **Rami Abdel Rahman**, Managing Editor, Stockholm International Water Institute (SIWI), Sweden
- **Elizabeth Avery**, Vice-President, Global Public Policy and Government Affairs, PepsiCo, USA
- **Kalyan Banerjee**, President, Rotary International, USA
- **Aiman Bani-Hani**, Project Management specialist, USAID - US Government Agency for International Development, Jordan
- **Maurizio Calenti**, Group Vice-President, Kraft Foods International, and President, Kraft Foods, Central and Eastern Europe, Middle East and Africa, Austria
- **Lamia Dabbas**, Project Coordinator, Jordan Business Alliance on Water, Jordan
- **Ronald Denom**, President, SNC-Lavalin International, Canada
- **Guillaume Duverdi**, Managing Director, Heineken Egypt, Egypt
- **Alonzo Fulgham**, Vice-President, International Relief and Development (IRD), USA
- **Sherif El Ghamrawy**, Chairman, Basata, Egypt
- **Danuta El Ghuff**, Attache, Programme Manager, Water and Health, European Union, Amman
- **Aly Hammad**, Chief Resident Engineer, Dar Al Handasah Consultants (Shair & Partners), Jordan
- **Sir Mohammad Jaafar**, Chairman and Managing Director, Kuwaiti Danish Dairy Company, Kuwait
- **Yves Manghardt**, Chairman and Chief Executive Officer, Nestlé Middle East, United Arab Emirates
- **Munqeth Mehyar**, Chairperson and Director, Jordan, Friends of the Earth - Middle East, Jordan
- **Priyanka Mittal**, Director, KRBL, India
- **Serge Perrin**, Senior Project Officer, Agence Française de Développement (AFD), Jordan
- **Ahmed Sakr**, Chairman, Al Sakr for Food Industries, Egypt
- **Lisa Schroeter**, Acting Head, Government Affairs, Middle East and Africa, The Dow Chemical Company
- **Sameh Seif Ghali**, Founder and Executive Director, Together Association for Development and Environment, Egypt
- **Kenji Takada**, Representative, Japan International Cooperation Agency (JICA), Jordan
- **Setta Tutundjian**, Project Management Specialist, Policy Reform and Institutional Strengthening, USAID - US Government Agency for International Development, Jordan
- **Johan de Villiers**, Division Manager Power Systems, ABB Transmission and Distribution, United Arab Emirates
- **Kamal Zoubi**, Chief Executive Officer, Millennium Challenge Account (MCA - Jordan), Jordan

India Economic Summit

Mumbai, India, 12-14 November 2011

Implementing India's Water Vision 2030

Special Guests

- **Basavaraj S. Bommai**, Minister of Water Resources, Government of Karnataka, India
- **William Dar**, Director-General, International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), India
- **Suresh Prabhakar Prabhu**, Chairperson, Council on Energy, Environment and Water (CEEW), India

Speaker

- **Naveen Chahal**, Country Manager, Mosaic India, India
- **Anil B. Jain**, Managing Director and Chief Executive Officer, Jain Irrigation Systems, India
- **Malini Mehra**, Founder and Chief Executive Officer, Centre for Social Markets (CSM), India
- **Usha Rao-Monari**, Global Head, Water, Global Infrastructure and Natural Resources Department, International Finance Corporation (IFC), Washington DC

Closing Remarks by

- **Ajit Gulabchand**, Chairman and Managing Director, Hindustan Construction Company, India

Moderated by

- **Manu Anand**, Chairman and Chief Executive Officer, PepsiCo India Holdings, India

Participants

- **Prakash Apte**, Chairman, Syngenta India, India
- **Jon Baker**, President, Sealed Air Asia, Sealed Air Corporation, USA
- **Prashant Bangur**, Executive President, Shree Cement, India
- **Ann Bernstein**, Executive Director, Centre for Development and Enterprise (CDE), South Africa
- **Kuldeep Singh Brar**, Farmer
- **Manoj K. M. Chaturvedi**, Deputy General Manager, CSR, UN Water Mandate, Hindustan Construction Company, India
- **Sean de Cleene**, Vice-President, Global Business Initiatives, Yara International, Belgium
- **Ronald Denom**, President, SNC-Lavalin International, Canada
- **Kevin Eikerman**, Managing Director, Archer Daniels Midland Co. (ADM), India
- **Chandir Gidwani**, Director, Centrum Capital Limited, India
- **Sudhir Kumar Goel**, Principal Secretary of Agriculture, Government of Maharashtra, India
- **Biksham Gujja**, Chairmen and founder, Agsri, India
- **John Hewko**, General Secretary and Chief Executive Officer, Rotary International, USA
- **Sir Mohammad Jaafar**, Chairman and Managing Director, Kuwaiti Danish Dairy Company, Kuwait
- **Rahul Jain**, Partner and Managing Director, Boston Consulting Group, India
- **Deepak Jolly**, Vice-President, Public Affairs and Communications, The Coca-Cola Company, India
- **Sanjiv Kanwar**, Country Manager, Yara India, India
- **Atul Khosla**, Partner and Head of India, Oliver Wyman (MMCo), India
- **Sanjay C. Kirloskar**, Vice-Chairman and Director, Kirloskar Oil Engines, India
- **Terje Knutsen**, Head of Business Unit, Asia, Yara Asia, Singapore
- **Dilip Kulkarni**, President, Sustainable Agriculture, Jain Irrigation Systems, India
- **Ritu Kumar**, Senior Adviser, ESG, Actis, United Kingdom
- **Subodh Kumar**, Municipal Commissioner, Brihanmumbai Municipal Corporation, India
- **Lee Bowei**, Chairman of the Board, Lee Chang Yung Chemical Industry, Taiwan, China
- **Pawan Maini**, Managing Director, CH2M Hill India, India
- **Manoj Menda**, Managing Director, RMZ Corp, India
- **Sudesh Menon**, Managing Director, Waterlife India Private Ltd, India
- **Ivo Menzinger**, Managing Director, Global Partnerships, Head Asia & Emerging Markets Strategy, Swiss Re, Switzerland
- **Devpriya Misra**, Vice-President, Global Partnerships, Swiss Re, Switzerland
- **Vineet Mittal**, Co-Founder and Managing Director, Welspun Energy, India
- **Priyanka Mittal**, Director, KRBL, India
- **Bastiaan Mohrmann**, Head, Water, International Finance Corporation (IFC), India
- **Ramakrishnan Mukundan**, Managing Director, Tata Chemicals, India
- **Anmol Nayyar**, Managing Director, IndEU Capital, India
- **K. Palanisami**, Director IWMI-Tata Program, International Water Management Institute (IWMI), Sri Lanka
- **Daksesh Parikh**, Executive Editor, Business India, India
- **John Pestell**, Managing Director Ecom Cotton India
- **Kavita Prakash-Mani**, Head, Food Security, Syngenta International, Switzerland

- **Bhavna Prasad**, Head of Business, WWF - World Wide Fund for Nature - India, India
- **John Quarendon**, Regional Managing Director, Asia, CH2MHILL International, Singapore
- **S. N. Raju**, Chief Economical Advisor to the Prime Minister and Minister of Water Resources, Government of Karnataka, India
- **Sriram Ramakrishnan**, Resident Editor, Mumbai, Economic Times, India
- **Mahesh Ramakrishnan**, Head - Agribusiness, Arvind International, India
- **Chengal Reddy**, Co-Chairman, Indian Farmers & Industry Alliance (IFIA), India
- **Corrine Ricard**, Vice-President, International Sales and Distribution, Mosaic, USA
- **Cheraé Robinson**, Director, Strategic Partnerships and Development, International Maize and Wheat Improvement Center (CIMMYT), Mexico
- **Amitabha Sadangi**, Executive Director, International Development Enterprises, India
- **Rajan Sankar**, Senior Manager, Regional Office, South-Asia-Delhi, GAIN (Global Alliance for Improved Nutrition), India
- **Niyati Sareen**, General Manager, Corporate Social Responsibility, Hindustan Construction Company, India
- **Vipul S. Shah**, President, Chief Executive Officer and Chairman, Dow India, The Dow Chemical Company, India
- **Meenakshi Sharma**, Head, Corporate Communication, SABMiller India, India
- **Sudhir Shenoy**, Vice-President, Legal, Compliance and Secretary, Tata AIG Life Insurance, India
- **Jaidev R. Shroff**, Chief Executive Officer, United Phosphorus, India
- **Gyanendra Shukla**, Director Corporate Affairs, Lead for the India Region, Monsanto Holdings, India
- **Tushar Singh**, Director, Sara International, India
- **M. K. Singhi**, Executive Director, Shree Cement, India
- **Manvi Sinha**, Managing Editor, New Delhi Television (NDTV), India
- **Jagdish K. Valecha**, Managing Director, Valecha Engineering, India
- **Miguel Veiga Pestana**, Vice-President, Global External Affairs, Unilever, United Kingdom
- **Suhas Wani**, Project Coordinator, Integrated Watershed Management (Asia) and Principal Scientist (Watersheds), International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), India
- **Sandra Wu Wen-Hsiu**, President and Chief Executive Officer, Kokusai Kogyo Holdings, Japan
- **Kenneth Zhang Yixiao**, Chief Executive Officer, Guangdong Haohe Construction, People's Republic of China

Annex 3: Members of WRG's Interim Steering Board

- Laurent Auguste, Chief Executive Officer and President, represented by Edwin Piñero, Vice-President and Chief sustainability Officer, Veolia Water North America
- Dan Bena, Director of Sustainable Development, PepsiCo International
- François Muenger, Head of the Section Water Initiatives, represented by Christoph Jakob, Senior Advisor, Swiss Agency for Development and Cooperation
- Greg Koch, Director of Global Water Stewardship, Environment & Water Resources Department, The Coca-Cola Company
- Herbert Oberhänsli, Head, Economics and international Relations, Nestlé
- Usha Rao-Monari, Global Head of Water, Global Infrastructure and Natural Resources Department, International Finance Corporation
- Dominic Waughray, Senior Director, Head of Environmental Initiatives, World Economic Forum

"The Water Resources Group addresses one of the most important and urgent issues today. The biggest part of freshwater withdrawn is being used for agriculture. If we continue overusing this valuable and scarce resource the way we do today, a major food crisis will become inevitable."

Peter Brabeck-Letmathe

Chairman of the Water Resources Group
Chairman of Nestlé SA
Foundation Board Member of the World Economic Forum

"By 2030, global demand for water could be 40 percent higher than it is today — and even more in developing countries. Water is an indispensable resource for economic growth and human development. By acting quickly and collaboratively, we can make sure it doesn't become scarce. I am confident that the Water Resources Group, by encouraging innovative partnerships and new business models, will help achieve that goal."

Lars Thunell

Executive Vice President and CEO of the International Finance Corporation

"Water security is one of the biggest issues facing the world in the twenty-first century. It presents a profound challenge to our social wellbeing and our economic growth. To address it, we need new models of collaboration between public, private and civil society communities. I welcome the efforts of the Water Resources Group, which is an excellent example of joint leadership from the Forum's Strategic and Industry Partner communities with government and civil society to address the global water challenge. I am delighted the World Economic Forum has been able to play a role in supporting this important initiative and pleased to continue our support in its endeavour to scale up."

Klaus Schwab

Founder and Executive Chairman of the World Economic Forum

