The Post 2015 Water Thematic Consultation

Report

THE WORLD WE WANT

Foreword

At the United Nations Millennium Summit, in September 2000, world leaders adopted the Millennium Declaration, including a vision for development and the eradication of poverty. That vision was taken forward and became known as the Millennium Development Goals (MDGs). Under the goal of ensuring environmental sustainability, a target was established to halve by 2015 the proportion of the population without sustainable access to safe drinking water and basic sanitation. Universal access to water, sanitation and hygiene (WASH) is a development imperative. Beyond WASH, however, a holistic approach to all aspects of the water cycle will contribute to the achievement of multiple development goals related to education, health, food and energy, and towards reducing inequality, boosting employment and empowering women.

The World We Want 2015 Water Thematic Consultation, facilitated under the umbrella of UN-Water, co-led by the United Nations Department of Economic and Social Affairs (UN DESA) and the United Nations Children's Fund (UNICEF), and co-hosted by Jordan, Liberia, Mozambique, the Netherlands and Switzerland has helped define the role of water in the post-2015 development agenda. Over a period of six months, thousands of stakeholders were engaged through social media platforms and consulted at a series of high-level global meetings, all in a way that has been inclusive, transparent and deliberative. Eleven global thematic consultations organized by the United Nations and partners are laying the groundwork for a new development agenda beginning in 2015. We were supportive of water being chosen as one of the 11 themes, and we were encouraged by the sheer volume of responses to the thematic consultation. We were equally heartened by the diversity of contributors who engaged in the process week after week. The individual voices made important contributions and collectively spoke with authoritative wisdom.

This report is a result of sifting through and distilling the hundreds of stakeholder contributions made in response to dozens of practical questions raised during the consultation. The questions were organized around the interdependencies regarding access to drinking water, sanitation and hygiene. They are linked to a wider water development agenda that embraces water resources and wastewater management, and water quality improvements. Significant gains have been made. The objective on water provision was met five years before the deadline. But progress on sanitation has been slower. Participants in the consultations concluded that vital work remains to be done in order to finish the business that began with the MDGs. They felt that the focus on narrow goals has not encouraged collaborative approaches to reducing poverty. Emerging from the consultations were recommendations for a new development framework that calls for reducing inequalities around water through rights-based approaches to service provision and governance. These approaches should go beyond water, sanitation and hygiene. They should integrate the management of water resources and wastewater, and improvements in water quality, requiring all sectors to break out of their narrow siloes. In this way, a strong water sector will be able to support outcomes in other thematic areas related to poverty reduction and inequalities.

Bert Diphoorn
Vice-Chair, UN-Water

Yoka Brandt
Deputy Executive Director, UNICEF

Thomas Stelzer
Assistant Secretary-General, UN DESA

Contents

The financial contribution of the Governments of the Netherlands and of Switzerland is gratefully acknowledged.

Executive summary

Background: In November 2012 the UN system set out to forge a more robust and inclusive framework for development. That framework would be designed to meet needs articulated by 100 nations, and built from the priorities of 11 thematic consultations: education; environmental sustainability; conflict and fragility; energy; food security and nutrition; governance; growth & employment; health; inequalities; population; and fresh water. Over three stages, this report captures the essence of the process, outcomes, linkages and recommendations for water.

Global Outreach: First, the Water Thematic Consultation expanded outward through live events, social media and an interactive website to engage and amplify thousands of diverse voices. New perspectives from people in 185 Member States responded to weekly topics of widespread concern. High-level meetings absorbed views of government, business and civil society from The Hague to Monrovia, Liberia; Geneva, Switzerland; Tunis, Tunisia; Mumbai, India; and back. Face-to-face dialogues were bolstered and informed through web-based forums, interactive page views, comments, poll responses, live video feeds, e-discussions, surveys, reports and much more. Combined, the consultation proved to be an expansive international outreach process.

Inclusive synthesis: Next, the Consultation contracted inward to distil and organize thousands of responses and debates into this document. Over the course of five months of active participation of stakeholders, it emerged that **linkages exist between several of the consultation themes; but water underpins each and every one**.

Three Linked Elements: To articulate the complex nature of neglected issues, and show how a new framework could complete the unfinished business of development, the water thematic consultation went beyond a narrow approach of demanding toilets and taps for billions of still un- or under-served poor. Instead it addressed water, sanitation and hygiene (WASH); water resources management; and wastewater/water quality management as three vital and interdependent dimensions that, taken together, can secure universal access to water, for all, forever.

1. **The primacy of ensuring WASH access** was explicitly and strongly voiced. Despite enhancing water sources for 2 billion people since 1990, 783 million still lack access, 1.8 billion drink 'improved' but unsafe water, 2.5 billion lack improved sanitation and 1.1 billion defecate in the open. The absence of WASH spreads preventable disease and death to millions. It jeopardizes trust in governance, whether local or national. It costs 1.5% to 4.3% from GDP, stunts childhood growth, drains women's time and energy, empties school chairs, forces needless risks, and denies human dignity. But the converse is also true. Investing $1 in WASH yields at least $4.30 in revenue, a conservative estimate that rises as one includes tourism, natural asset protection, and productivity from combining WASH with classrooms and health facilities.

2. Largely ignored in the MDGs, **the crosscutting nature of water resource management was explored** in depth. Water's horizontal linkages reveal competition between energy, agriculture, industry, and nature.

Rising affluence, temperatures, populations, and pollution further intensify water stress. Yet potential routes to collaboration also emerged. Appropriate resource valuation could reduce energy's hunger for 8-44% of all water withdrawals, and water's thirst for up to 33% of all energy. A more efficient food supply chain could greatly enhance global nutrition supply without demanding more water. Such efforts to reduce waste can improve access for vulnerable populations, boost climate resilience and ease tensions in shared watersheds. But at root the water crisis was seen as a governance crisis. Resolution combines soft reforms – transparency, accountability, participatory decision-making – with hard investments in both civil works and 'natural infrastructure' that stores, conveys, cools and filters water.

3. Pollution of our rivers place billions of thirsty, hungry urban families that live downstream in danger. The dialogue on **wastewater management and water quality confirmed** that dilution of pollution was no longer a solution. Parties discussed how prevention, reduction, or removal of pollution to be both possible and profitable. They reconsidered the use, reuse, value and even meaning of "waste" water. As more than half of humanity lives in cities, contaminated discharge and surface runoff spread water-borne disease among billions. While real solutions yield high returns, the urban poor who need them most generate almost no taxes or influence; meanwhile politicians rarely invest if direct costs are immediate and indirect benefits appear only after they leave office or help those at a distance. Downstream, the impacted billions who depend on food from marine ecosystems could look upstream to slow, stop, or reverse nitrogen and phosphorous loads in the 90% untreated urban wastewater. Rewards could go beyond resilience to boost growth, jobs, and business certainty. But scale matters. Reuse options must relate to local circumstances, cultural norms, safety of use, awareness, and capacity.

Rights-Based Approach: The MDGs generated global momentum and national progress around water and sanitation goals as a moral imperative. This thematic consultation emphasized the broad economic benefits from judicious water use. Yet it was argued that incentives alone can't prevent unequal access for today's population, let alone for future generations. Indeed, to endure and reach everyone – especially the weakest, most remote, impoverished or unborn members in society – on an equal basis, parties felt reluctant to force water access unilaterally from above. Nor can rights take shape without due respect for local cultural, gender, political or natural context. Rather, it became clear through the consultation that **secure access to water must be recognized as a fundamental right for all**, which can't be taken away.

Ensuring Equity: In 2010 the UN General Assembly explicitly recognized the human rights to safe drinking water and sanitation. The discussions re-emphasised the need for the right to empower women and children with equity, allow the poorest and most vulnerable to negotiate from below, and help ensure that local point-of-use decisions are integrated across all three sub-sectors both 'upstream' to water resources as well as 'downstream' to wastewater treatment. The consultation listened to and amplified the voices of the next generation represented in the Youth Parliament, as well as the Beyond 2015 campaign of 260 civil society organisations from 60 countries.

A post-2015 agenda for water: The final stage synthesized cross-cutting lessons learnt from the implementation of the Millennium Development Goals (MDGs), and recommends a clear path forward that is measurable, inter-generational, pragmatic, and rests on the smart and equitable use of water. The MDGs proved to be a vital instrument that focused attention, momentum and accountability toward new funding, policies,

knowledge, capacity, and shared strategies that could expand access to clean water and sanitation. But in hindsight the water consultation also revealed some shortfalls of the MDGs: missing linkages, lack of rights, absence of integration, and the deepening inequalities over water among countries, societies, or families.

The water thematic consultation reached a peak in March 2013 at a high level meeting in The Hague, which set a new course for concerted action and global direction, capturing water's importance to the post-2015 development framework in these key points:

- Water is a key determinant in all aspects of social, economic and environmental development and must therefore be a central focus of any post-2015 framework for poverty eradication and global sustainable development.

- Water, Sanitation and Hygiene, Water Resources Management and Wastewater Management and Water Quality are all indispensable elements for building a water-secure world.

- Water security will be of growing importance. Water should be addressed adequately in the Post-2015 Development Agenda, in order to prevent crises in the water as well as in the water-dependent sectors.

- Governments play a key role in securing water for competing demands; however the quest for a water-secure world is a joint responsibility and can only be achieved through water cooperation at local, national, regional and global level and through partnerships with a multitude of stakeholders ranging from the citizens to policy makers to the private sector.

- Water-related capacity development, both at the individual and institutional levels, will be fundamental in the realization and implementation of the Post-2015 Development Agenda.

- Innovative, inclusive and sustainable financing mechanisms for water need to be implemented.

Part I
Overview

CONTEXT

Last November, the UN launched an unprecedented series of discussions about the Post-2015 development framework. These discussions took many forms across the UN, within Governments and through civil society. The aim is that an inclusive, open and transparent process, with multiple stakeholder participation, will produce a framework with the best development impact. According to the website, "The World We Want will gather the priorities of people from every corner of the world and help build a collective vision that will be used directly by the United Nations and World Leaders to plan a new development agenda launching in 2015, one that is based on the aspirations of all citizens." The World We Want 2015 Thematic Consultation on Water is a part of this process and this report attempts to synthesize the various components that went into this consultation, including the preparations for the online discussions, the web-based dialogue, face-to-face meetings, as well as a High-Level Forum which endorsed the Thematic Consultation's main messages.

SITUATING THE WATER THEMATIC CONSULTATION IN UN PROCESSES

In late 2011, the Secretary-General (SG) established a post-2015 UN Task Team, co-chaired by the UN Department of Economic and Social Affairs (UN DESA) and the UN Development Programme (UNDP). The Task Team is comprised of senior staff from a wide variety of UN organizations and the Bretton Woods Institutions. The Team's main output was to produce by June 2012 a post-2015 development agenda "roadmap" that will frame the work of the SG's High-Level Panel as well as inform discussion and debate at the 2013 UN General Assembly (GA). At the start of the 2013 GA there will be a high-level summit to review progress on the MDGs and chart a forward-looking agenda.

Beyond the UN System process, the UN Development Group (UNDG) (chaired by UNDP) led planning efforts to catalyse a "global conversation" on post-2015 through a series of up to 100 multi-stakeholder country consultations and eleven global thematic consultations. The thematic consultations focused on education, environmental sustainability, energy, food security and nutrition, governance, growth & employment, health, inequalities, population, conflict and fragility, and fresh water. The global conversation reviewed progress on the MDGs and discuss the needs and options for a new development framework. Like any true conversation, the 22 country consultations that focused on water – from Bangladesh and Benin to Uzbekistan and Uganda – informed the thematic consultations, and vice-versa.

ORGANIZING THE WATER THEMATIC CONSULTATIONS

The Water Thematic Consultation was facilitated by UN-Water, co-led by UNDESA and UNICEF, and co-hosted by Jordan, Liberia, Mozambique, Netherlands and Switzerland. Partners encouraged stakeholders to take stock of the lessons learnt from the implementation of the Millennium Development Goals (MDGs) on water and sanitation over the last decade. They considered how to formulate the key global challenges and priorities that will shape the post-2015 development framework in ways that are measurable, inter-generational, pragmatic, and rest on the smart and equitable use of water.

The Water Thematic Consultation reached out through online, web-based dialogue and social media platforms to encourage all stakeholders – including academia, civil society, end users, youth groups, and the private sector – to offer diverse perspectives and fresh insights. Such a massive outreach effort would have been unmanageable in the era before social media platforms eliminated distances between communities. But the effort came together quickly and yielded important outcomes. Countless e-discussions, online surveys, live video feeds and Q&A sessions empowered newer and younger voices to address priority issues with a special emphasis on inequalities in the field of water. Beyond the online platforms for discussion, the water consultation enabled face-to-face dialogues in Monrovia, Liberia; Tunis, Tunisia; Geneva, Switzerland; Mumbai, India and linked up to several other meetings taking place in the context of the consultation. The conversations culminated in a High-Level Meeting on World Water Day in The Hague to round up discussions and sharpen key messages to be taken forward over the summer in the different processes shaping the emerging development framework.

OUTREACH AND PROCESS

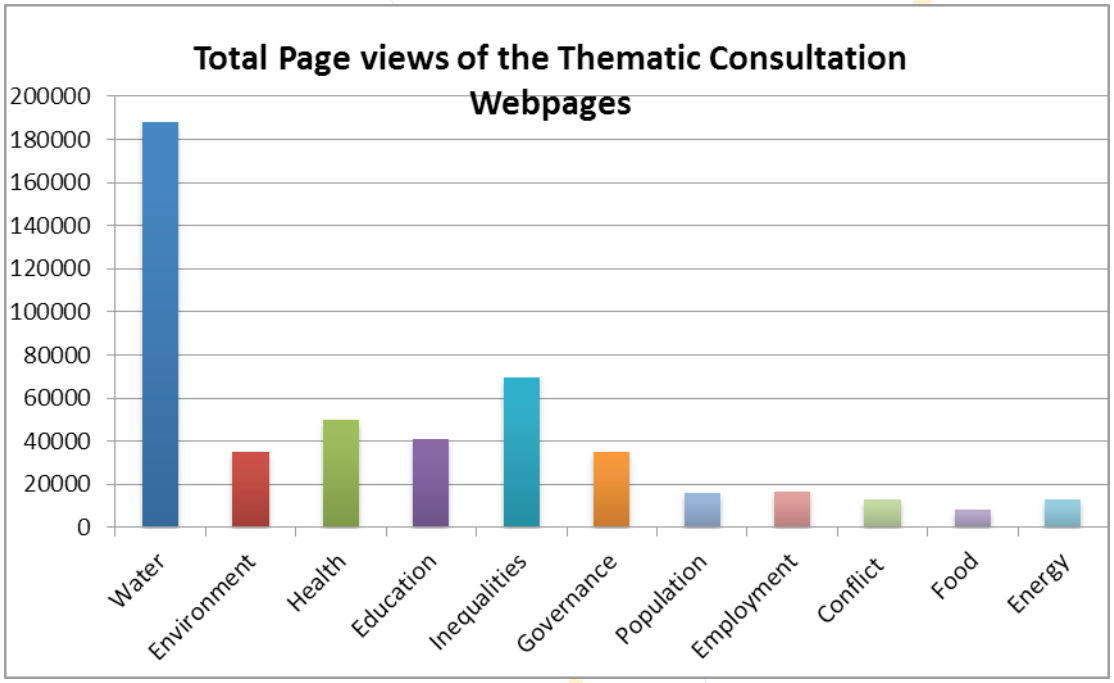
Starting in November 2012 and peaking at the end of March 2013, this Water Thematic Consultation embarked on one of the most ambitious participatory processes in recent history. The outreach was exhaustive yet at the same time invigorating. In the past, all too often, the constituency of the water sector ends up speaking to itself. While that ensures agreement in water conferences, it rarely gains traction in national policy. This consultation went outside the box to welcome all sectors.

The Consultation was conducted in three stages. Starting in November 2012 it expanded outward through social media and launching the Post-2015 Water Thematic Consultation interactive website to provoke, engage, and amplify thousands of diverse new voices and perspectives from people all over the globe. It then contracted inward to distil, and organize these responses and debates into one concise document. The final stage will synthesize cross-cutting lessons from past experience to recommend a pragmatic and equitable development path forward, consisting of a vision with integrated goals and specific targets.

Hosted on the World We Want platform, the water consultation website has spearheaded efforts to reach a global audience. Since its launch, the consultation has carried out dozens of surveys/polls, provided downloadable data on weekly topics, presented discussion questions/reports for comments, hosted live video Q&A sessions with experts, and featured live streaming of high level meetings. The website has generated a massive global response, eclipsing the other ten thematic consultations in terms volume and diversity. In total 52,520 unique users generated 188,207 total page views, 1,226 website comments, and 1,617 poll responses. These individuals represent 185 UN Member States, 8 non-member states/territories, and 44% are from Global South Countries.

Post-2015 Water social media pages were launched on Facebook (Waterpost2015) and Twitter @waterpost2015. Similar to the website, the response was substantial, diverse, and unique to this consultation. The Twitter handle has attracted 548 followers and the hash tags #waterpost2015 and #wastewater2015 have been tweeted and more than 3,500 times. The Facebook page on the other hand, has attracted 948 likes, 2,311 Facebook posts/comments, and a current total reach of about 385,000 users. Through both social media platforms the water consultation was able to target and gather the thoughts of a young people, who are sometimes forgotten in these processes. A youth discussion week hosted on Facebook attracted 190

comments from young people, who have continued to be active participants throughout the process. Water's dominance and diversity should hardly surprise. Other themes are as important as water, but all remain underpinned by water. Linkages are common between two or more themes; water alone is inextricably woven into the fabric of every single one.



Now recognized as an absolute and central prerequisite to development, water justifies its own explicit standalone goal, with integrated targets and measurable indicators. To clarify and explore water's diverse role, and following the orientation given by the Rio+20 Conference on Sustainable Development held in June 2012 , the Water Consultation married two complementary approaches and audiences. The general global consultation reached people broadly interested in water and encouraged them to share their views. More narrowly, three sub-consultations encouraged weekly in-depth discussions around the topics: Water, Sanitation and Hygiene (led by UNICEF); Water Resources Management (led by UN Economic Comission for Europe); and Wastewater Management and Water Quality (led by UN-Habitat and Aquafed). These three interdependent dimensions of water worked as sub-thematic tributatries of a single current. Every week the sub-consultations introduced a different topic with a framing paper that provided context. Five weeks of serial sub-consultations were followed by two weeks on cross-cutting discussions, targeting priority issues with a special emphasis on inequalities in the field of water and the linkages between water, food and energy (the water nexus). A fourth sub-consultation sought voices of younger generations and civil society to further enrich and diversify views.

FACE-TO-FACE MEETINGS

Beyond the online platforms for discussion, the Water Thematic Consultation has also linked up to and enabled face-to-face dialogues, each inspiring reflection and discussion on different aspects of water:

- In December 2012 the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) convened a consultation with 70 participants in The Hague on possible Post-2015 targets and indicators for water sanitation and hygiene. As the official monitoring mechanism for the water and sanitation MDGs, the JMP initiated an inclusive expert process to identify Post-2015 potential targets and monitoring indicators for water, sanitation, hygiene and equity/non-discrimination. The process considered the lessons from the MDGs, emergent thinking in the sector, the state of provision of WASH in its global and local context, and made key recommendations.

- A global water sector consultation meeting was held on 29th January 2013 in Monrovia in the context of the High-Level Panel's (HLP) third meeting. Members of the HLP, some 50 representatives of government, NGOs and civil society from around Africa and beyond were in attendance. The meeting formed a vital element of Thematic Consultation on Water and brought together all elements of the wider water sector including WASH, WRM (water resource management), wastewater management and water quality (WMWQ). The meeting prioritized messages on a future framework for water post-2015, and presented the Monrovia Water Declaration to members of the HLP on the 30th January.

- On 27 – 28 of February 2013, Switzerland sponsored a multi stakeholder meeting of 200 participants (including High Level representatives) in Geneva to focus on Water Resources Management (WRM), facilitated by the UN Economic Commission for Europe (UNECE); and Wastewater Management and Water Quality (WWMWQ), facilitated by UN-Habitat/Aquafed. Panel sessions on WRM and WWMWQ presented the main messages of the web consultations, and commented on the issues raised, the gaps and possible implications for the way forward.

  Eight discussion groups addressed the key priority issues that should be included in a post-2015 development agenda, and reported back to plenary. Six of the key issues identified during the group discussions were selected as themes for further consideration, including on: resilience to climate change and other global pressures; efficiency and reuse; transboundary cooperation; quality, protection, water quality and ecosystems; balancing uses and allocation; and governance frameworks and integrated water resources management (IWRM).

  Each of the groups discussed the following questions: what should be the future objectives to address the key water-related issues in a post-2015 development agenda; what actions should be taken to achieve these objectives, and can success be measured; and how are such objectives linked to other themes of both the water consultation and the other global thematic consultations. The meeting concluded with a wrap-up session summarizing the meeting's conclusions.

- On March 1st 2013 a total of 74 representatives of governments in Africa, Regional Economic Communities / River and Lakes Basin Organisations, Intergovernmental Organisations, development and financing partners, Civil Society Organisations and Non-Governmental Organisations including

youth and women organisations from Africa and beyond met in Tunis with a call for a distinct water goal to "Ensure a water secure world for all in the post-2015 global development agenda." The goal aims at guaranteeing water security for life and socio economic development taking into consideration issues as universal access to safe drinking water and sanitation, water for food, energy, and green growth. In its outcome report, the Africa wide water consultation in Tunis also agreed on targets for the subsectors of Water, Sanitation and Hygiene; Water Resources Management; and Wastewater and Water Quality Management.

- On 5 March 2013, in Mumbai, the UN Global Compact's CEO Water Mandate convened a multi-stakeholder meeting among **private sector** leaders, civil society groups UN agencies and other intergovernmental institutions. These parties set out to explore specifically the **role of business** in advancing potential policy objectives relating to increased access to WASH services, improved water resources management and governance, efficient water use, and pollution reduction. The event served as a formal input to the Global Consultation on Water and was live-streamed at the official consultation website. The meeting resulted in thoughtful and clear private sector contributions for the Post-2015 framework, such as how WASH targets are a prerequisite to the achievement of other sustainable development goals. A report on this event recommended that water should claim its own standalone topic or goal in the new development framework.

All these face-to face discussions were directly linked to the global Water Thematic Consultation, which culminated in a High-Level Meeting to round up discussions and sharpen key messages to be taken forward in the different processes shaping the emerging development framework. That meeting took place in The Hague in conjunction with the celebrations of World Water Day on 21-22 March 2013. A description of this meeting can be found later in this report under High Level Meeting.

PART II
SUBSTANTIVE DIALOGUES

The following sections summarize the Water Thematic Consultation's substantive interactions, which led to emerging recommendations and ideas for further exploration. As outlined in the "Outreach and Process" section, the dialogue structure allowed both general and focused discussion on water-related challenges. The sub-consultations on WASH, WRM and WMWQ were all accompanied by weekly framing papers to contextualize and guide the discussion. In addition, weekly discussions were summarized by the sub-consultation organisers. These documents are an integral part of the overall consultation process and remain a valuable resource on their own. After the summary of each sub-consultation, tables are provided with links to these papers and summaries. Each section is also followed by a box with emerging substantive recommendations.

MDGS SUCCESSES, UNFINISHED BUSINESSES AND NEGLECTED ISSUES

The MDGs have been - and remain - a vital instrument which led to a new global focus, helped nations formulate policies and priorities, stimulated an expansion in knowledge and capacity, and resulted in increased funding streams for investments in water and sanitation. Critically too, they created measurable goals which stimulated accountability at local, national and global levels. It took time to overcome the initial inertia, but the MDGs created momentum that must be retained and capitalised upon.

"The main lesson in my country is that the MDGs assisted the government to formulate programs and policies that are in line with current problems and challenges in Malawi. The government managed to formulate the Malawi Growth and Development Strategy (MGDS), which covers all areas under the MDGs. The document has been acting like the engine and platform for the implementation of MDGs as it is easy to monitor progress and impact of planned activities" – **Samuel Biton, Malawi**

The world met the MDG drinking water target five years ahead of the 2015 deadline; that meant more than 2 billion people have gained access to an improved water source since 1990. Yet despite this important milestone, 783 million people remain without access; moreover, 1.8 billion of those who gained an improved source still use water known to be unsafe to drink. Sustainability of the water services remains a challenge, as many pipes leak and pumps remain in disrepair. More alarming is that 2.5 billion people still have no access to improved sanitation, while 1.1 billion people still practice open defecation. Improving access to Sanitation is one of the most off-track MDGs. Rapid urbanisation is compounding the problem in the burgeoning number of cities in the developing world, and this unfinished business demands continued attention in the new development framework.

Monitoring of the water and sanitation MDG has revealed severe inequality of access. Inequalities extend beyond wealth and geography: girls and women are more likely to bear the burden of water collection; women without access to sanitation suffer the indignity of being forced to defecate in the open and are at risk from rape and assault; and the widespread lack of menstrual hygiene management facilities limits the

participation of women and girls in education and the workplace. Reducing inequalities is also recognized in other thematic consultations as essential for any new development framework. It is not good enough to pick off the easy to reach targets, and neglect the poorest and most vulnerable until last. The future development agenda must aim at tackling inequalities to realise basic human rights for all; it must seek, at minimum, for every person to have equal access to water, sanitation and hygiene.

"When addressing this issue on access to water, the needs of persons with disabilities should also be looked upon. As a person with mobility impairment and using wheelchair, it is very difficult for people like me to access water when water coming from the well. Reasonable accommodation should be provided to ensure that persons with disabilities can have access to clean water." –**Abner Manlapaz**

The MDGs also never sought to integrate the potential of water. The structure and implementation of water-related targets lacked explicit linkages to other goals. Priorities such as health, education, poverty alleviation, food and energy security could not meet their own targets for implementation without water. The vertical nature of the MDGs discouraged effective collaboration between sectors and failed to address the critical linkages between social, economic and environmental aspects of development. Nor did they encourage a more integrated approach to tackling the underlying determinants of poverty. The central importance of water – for people, for livelihoods, for the environment – was not addressed specifically but rather lumped under the environment management. Meanwhile, water resources and waste water management were virtually absent from the MDGs altogether.

"The MDGs have provided a common platform from which all stakeholders agree, plan and execute development. However, the one thing that the MDGs have done, unintentionally, is create silos - education has their own target, water has their own target etc so everyone who working in their own little silos and not talking or checking with one another for synergies and commonalities." –**Muthi Nhlema**

Emerging Recommendations

- To build on the undoubted strengths of the MDGs, any new agenda must also address their shortfalls: the *unfinished business and neglected issues*.
- Any new development framework must reduce inequalities.
- The new framework should go beyond WASH to address water resources management, waste water and water quality management.
- Water is a key determinant in all aspects of social, economic and environmental development and must therefore be a central focus of any post-2015 framework for poverty eradication and global sustainable development.
- A new goal around water should be aspirational, easy to communicate and with measurable targets and indicators.

WATER, SANITATION AND HYGIENE – THE CONTINUED CHALLENGES

WASH services bring about multiple social and developmental benefits that improve population health and nutrition, increase school attendance, save precious time, and enhance dignity and safety for women.

But there are hard and fast economic truths too: for example the economic impact of *not* investing in water and sanitation costs an enormous 4.3% of Sub Saharan African GDP. While under-five (U5) child mortality rates have been falling globally, diarrhoea remains the second leading cause of death; 88% of which are WASH-related. Nearly half of the 800,000 annual U5 diarrhoeal deaths occur in Africa. Early childhood diarrhoea and worm infection compromise both physical and cognitive development – further undermining the value of human capital to economic growth and development. Epidemiological studies show that 25% of all stunting in 24-month-old children is attributable to having five or more episodes of diarrhoea in the first 2 years of life; in turn significant deficits in cognitive performance are linked to stunting. More than half of school-age children in Africa suffer from worm infection, the root cause of which is poor sanitation and hygiene.

The start of the WASH sub-consultation discussed **aspirational objectives** of a new framework for WASH and set the stage for the discussions around the subject. Those discussions enriched the two-year UNICEF and WHO Joint Monitoring Programme , a broad, consultative expert process on new targets and indicators for the monitoring of WASH post-2015. First considerations turned around the suggested ambitious target to provide universal access to safe and sustainable water, sanitation and hygiene – targeting the most disadvantaged and marginalised groups in particular. Services must reach everybody within a reasonable time horizon. It is no longer enough to bring services to households; water and sanitation must also be in place in schools and health centres. Vital hygiene issues, such as hand washing and menstrual hygiene management, respectively help ensure public health and gender equality. WASH does not lack the technologies to quickly build a pit latrine, drill a borehole or provide soap; rather, the challenge is to ensure these systems are custom designed with community ownership and behaviour change are built to last decades with reliable daily operation, maintenance and use. This far more difficult task requires government leadership particularly at local levels, and a process-oriented approach that shifts social norms and behaviours for lasting change. In addition, WASH sustainability has complex dimensions, particularly in terms of linking 'upstream' to water resources and 'downstream' wastewater management. Devolving risks and responsibilities to local or household levels may improve outcomes, but only with support from external institutions.

> Can you imagine a house without toilet? I think most of us couldn't imagine living in a house without toilet, and I consider the same for schools. But unfortunately that's a reality in most developing countries. For instance, in Nicaragua around 75% of public schools have no adequate sanitation facilities.

Providing **students with access to WASH facilities** has been shown to boost attendance, increase achievement and promote equity. However existing data shows that 49 per cent of schools lack access to safe drinking water and 55 per cent of the schools lack access to sanitation facilities in middle and low-income countries. Discussions around provision of WASH services in schools generated the liveliest debate of the thematic consultation. Contributors clearly claimed that a school is more than classrooms and desks, and cannot be called

a school without the presence of toilets, taps and hygiene education. Participants emphasized the role of government, with Ministries of Education taking the lead, in ensuring that WASH facilities are present in schools. Obstacles to attend school must be removed. The empowerment of gender equity through WASH in Schools was discussed as a clear instrument to avoid girls dropping out school, partly because many are reluctant to continue their education when toilets and washstands are not private, not safe or simply not available. Adequate WASH facilities and menstrual hygiene education improves the quality of education for both female students and teachers.

Discussions on **WASH and governance** revealed that institutional capacity is fragmented; roles and responsibilities within government structures are not clear; there is inadequate management of resources and weak implementation of policies and regulations. Mechanisms are needed which hold political leaders and Governments accountable for fulfilling WASH-related promises and for the sustainability of services. Consumer's rights should be strengthened through legislation, and communities empowered to demand better services from their governments. There is also need for scrutiny as to where development funds actually end up.

The links between **WASH and Environmental Sustainability** were also discussed. The consultations clarified two-way opportunities for development and conservation organizations to integrate policies, plans and projects that combine protection of nature with access to WASH. Healthy freshwater systems improve the reliability, quantity and quality of water for drinking, cooking, irrigation and other uses. Conversely, well-planned sanitation programs protect freshwater ecosystems. Joint advocacy programs can maximize community participation, save funds, build synergies, and amplify the combined voice.

Water and sanitation remain a humane and moral imperative. But the final discussions on **WASH and Economic Development** made a compelling bottom-line case for governments to invest in water. Without adequate WASH investments, countries grow poorer, losing on average 1.5% of GDP per year. Children grow sicker, miss school, and this erases 5% GDP per year. In terms of value, WASH yields a $4.30 return on a $1 investment. These estimates are conservative; they exclude revenue from increased tourism (people on holiday dislike pit latrines), robust fisheries and increased property values.

Emerging Recommendations

- The next global target for WASH should be universal access to safe and sustainable water supply, sanitation and hygiene.
- State and local governments should progressively reduce WASH access inequalities.
- Ambitious new targets should build on the successes of the current MDGs and address the *remaining shortfalls and unfinished business.*
- As governments address hygiene access – hand washing and menstrual hygiene management – they also advance the critical determinants of public health and gender equity.
- Access to WASH services should be secured beyond households to include public installations, especially schools and health facilities .
- Increased investments in WASH achieve multiple social and developmental benefits, and create incentives to integrate cross-sectoral collaboration.
- At the heart of any new agenda must be the durability and environmental sustainability of WASH services.

Table 1 WASH - Framing Papers and Summaries

Aspirational objectives of JMP Facilitated by WaterAid	Framing paper:	http://www.worldwewant2015.org/node/301069
	Summary:	http://www.worldwewant2015.org/node/341054
WASH in Schools Facilitated by UNICEF and OHCHR	Framing paper:	http://www.worldwewant2015.org/node/302444
	Summary:	http://www.worldwewant2015.org/node/341053
WASH and Governance Facilitated by SKAT Foundation	Framing paper:	http://www.worldwewant2015.org/node/303873
	Summary:	http://www.worldwewant2015.org/node/341052
WASH and Environmental Sustainability Facilitated by WWF	Framing paper:	http://www.worldwewant2015.org/node/306093
	Summary:	http://www.worldwewant2015.org/node/341051
WASH and Economic Development Facilitated by the World Bank	Framing paper:	http://www.worldwewant2015.org/node/308088
	Summary:	http://www.worldwewant2015.org/node/341047

WATER RESOURCES MANAGEMENT

Effective management and development of water resources is essential for growth, poverty reduction and equity. In many parts of the world the livelihoods of the poorest are directly linked to water resources, such as for fishing, farming, household supply, navigation, small scale industry and livestock care. Water resources are crucial for socio-economic development and for maintaining healthy ecosystems. Water Resources Management aims at optimizing the use of available natural water flows and resources, including surface water and groundwater, to satisfy competing needs between both users and uses.

The **Water Resources Management** sub-consultation explored where, how and why water stress will intensify over the coming decades. As countries develop, increasing volumes of water are allocated for energy, food and industry. To achieve sustainable water development and promote needed investments, an integrated approach to water resources management needs to be implemented. This must ensure a transparent, equitable and sustainable balance of water use that satisfies humans needs – economic and social – as well as ecosystem requirements.

> "Water and energy are so intimately linked that actions to increase access to one of them will inevitably have effects on the other. If we are wise we can tap in to the synergies present and increase access to both. If unwise we may trap ourselves in a downward spiral." – *Jens, in "(Em)Powering a thirsty world" sub-consultation.*

All energy production requires water. Conversely, it takes energy to transport, treat and heat water as well as to build, operate and maintain water systems. Few fully grasp or appreciate the **Energy/Water** linkages, but they are real and rise with development. Worldwide, energy uses 8% of all freshwater withdrawals, but rich countries divert up to 44% to energy production. The fast route to efficiency is raising prices on water and power. But this is politically fraught; as both resources are regarded as basic human needs, often offered free, or subsidized, to families and farms. Without better valuation of water resources and understanding of its link to energy, nations are ill equipped to deal with a warming world.

Most **Climate Change Related Risks** – urban heat waves, melting snowpack, longer droughts, increased wildfires, drying reservoirs, rising sea levels, desiccating soils - involve **water**. Even regions slammed by storms

can't use the extra runoff; to absorb extreme unpredictable floods, dam operators must empty reservoirs. Increased climate variability means increased water variability, and developing countries are most vulnerable. Water is also critical for climate change mitigation, as many efforts to reduce carbon emissions and to sustain carbon storage in plants and soil rely on water availability. While some politicians still do not understand or appreciate the need to adapt, water managers can work with the right mix of adaptation and mitigation efforts, share knowledge, and build long-term resilience by investing in appropriate infrastructure.

The discussion on Water for Nature; Nature for Water showed how water comes through and from nature – which stores, conveys, cools and filters it – so, in order to secure these environmental services, institutions should invest in 'natural infrastructure.' Natural infrastructure complements augments or replaces traditional (and expensive) reservoirs, dams, levees and canals. Water management can't treat nature as secondary to development; rather, good management can empower people to negotiate integrated solutions that offer a high return. The week explored priorities, like how balancing allocation of water for nature can help ensure water or food security.

Water for Food discussions indicated that producing enough food for one person for one day requires about 3,000 litres of water. To feed 7-9 billion people, careless decisions could dry up aquifers and streams. Already, 40-50% of all nutrition – along with half of all water embedded within food – gets lost in the increasingly long food chain moving crops out from rural farms into urban mouths. Yet efficiency gains that reduce direct and indirect wastage of water throughout the food value chain, from field to fork, could save very significant amounts water and money. The 'Green Revolution' warded off hunger due to finite arable land; today's limits imposed by water call for a Blue Revolution' that is smart about what to grow, how to irrigate, who demands what, and how to share.

Water for Peace recognized that water remains an incentive for coordinated policy, bilateral trade development, shared management, and peaceful cooperation between countries. International water law, such as the 1997 UN Watercourses Convention and the 1992 UNECE Water Convention, provided the frameworks for cooperation. More efforts are needed to facilitate transboundary agreements and joint institutions for all basins and aquifers. Furthermore, progress is complicated by demographic shifts and risk multipliers of a changing climate. The quest for water rarely provokes conflict across borders, but unequal access to water often sparks violence within them. Consequently, the public wants to be more involved in order to have a say in the development of transboundary cooperation.

The water crisis is really a governance crisis. The dialogue on **Governing & Managing Water Resources for Sustainable Development** suggested the crisis is less global than "multi-local" and there is no single blueprint to solve local problems. Effective governance requires a focus on soft reforms as well as on hard investments. What works in one place may not translate to another, which has different needs. An assessment is needed of the types of governance architecture that can deliver on sustainable water development. Stakeholder voice and transparency are important ingredients for improved decision-making on water allocations. An effective water governance system would apply the principles of transparency, accountability and cooperation. This will be crucial in order to promote the needed investments for developing appropriate infrastructure.

Emerging Recommendations

- To achieve sustainable development and promote needed investments, integrate the approach to water resources management and improve water governance systems.
- Ensure water is used in ways that are socially equitable, environmentally sustainable and economically beneficial by using water efficiently and balancing needs.
- Include economically viable measures for the protection and sustainable management of water resources into adaptation, mitigation and resilience strategies at all levels.
- Establish strong and long-term transboundary cooperation, relying on sound legal and institutional arrangements, such as provided by multilateral and bilateral agreements and joint basin governing institutions.
- Value and protect water-related ecosystems to draw economic benefits with a high return on investment.

Table 2 Water Resources Management - Framing Papers and Summaries

Water for Energy, Energy for Water Facilitated by SIWI	Framing paper:	http://www.worldwewant2015.org/node/300353
	Summary:	http://www.worldwewant2015.org/node/341063
Climate Change and Water-related Risks Facilitated by WMO and UNESCO	Framing paper:	http://www.worldwewant2015.org/node/302441
	Summary:	http://www.worldwewant2015.org/node/341064
Water for Nature, Nature for Water Facilitated by IUCN	Framing paper:	http://www.worldwewant2015.org/node/307127
	Summary:	http://www.worldwewant2015.org/node/341056
Water for Food Facilitated by FAO	Framing paper:	http://www.worldwewant2015.org/node/306056
	Summary:	http://www.worldwewant2015.org/node/341059
Governing & Managing Water Resources for Sustainable Development Facilitated by UNECE, UNDP, UNEP and SIWI	Framing paper:	http://www.worldwewant2015.org/node/308041
	Summary:	http://www.worldwewant2015.org/node/341057
Governing & Managing Water Resources for Sustainable Development Facilitated by UNECE, UNDP, UNEP and SIWI	Framing paper:	http://www.worldwewant2015.org/node/308056
	Summary:	http://www.worldwewant2015.org/node/341065

WASTEWATER MANAGEMENT AND WATER QUALITY

Demand for water is growing at twice the rate of population growth. Without effective strategies to manage wastewater production, its treatment and reuse, development will be constrained. The most readily available ways to preserve water resources and to reduce the demand on finite freshwater resources are: protecting water resources from pollution, reducing unaccounted-for-water, and collecting and treating water once it has been used to make possible its beneficial reuse or recycling. Preventing and removing pollution is essential to maintain the "renew-ability" of a renewable resource. For most uses, water quality is as important as water quantity.

For millennia, small agrarian populations could treat rivers as free sewers, but seven billion mostly urban and industrialized individuals mean humanity all lives downstream, in danger. **Wastewater Management and Water Quality** discussions explored why the dilution of pollution is no longer a solution, and reconsidered our use, reuse, treatment, value and even meaning, of "waste."

> "Any public health initiative has to include an *education and awareness* component. The other solution is to empower individuals, especially women, at the local level to encourage community ownership of projects, and to make the projects self-sustaining." – *Raji, on "Wastewater and Health"*.

When the MDGs were agreed to, the world was predominantly rural; today most live in cities. This rapid shift will increasingly govern the production and use of **Wastewater in an Urbanizing World**, especially as the majority of future population growth will take place in urban areas of developing countries that already have poor infrastructure. Contaminated used water discharge and polluted surface runoff carry water-borne disease, degrade natural systems, and have material economic impacts. To address impacts and build capacity requires political will. Alas, politicians rarely act to provide wastewater infrastructure because often benefits are felt after their "political time" and are most visible downstream. Water pollution and poverty often go together. This often means that those people who are most affected by bad waste-water management generate almost no taxes and even less influence. Poverty traps the poor in a vicious circle of degradation and disease. Yet urban areas represent an opportunity in disguise, if leaders can turn liabilities to assets, and introduce sustainable approaches with judicious investments.

Everyone and everything lives downstream, but ultimately the accumulated impacts fall on marine ecosystems. **Impacts of Wastewater on Oceans – The Nitrogen and Phosphorus challenge discussion** linked degradation of marine ecosystems to the 90 % of wastewater that flows untreated into coastal areas. The resulting excessive nutrient loads cause eutrophication, and dead zones, which erode the habitat resilience and food sources for billions. As protein grows more expensive, partnerships to replenish fisheries may have strong incentives to look upstream and slow and stop pollution at its source.

An interactive live-streamed panel highlighted that **Wastewater reuse – Development and Innovation** remains a complex issue that needs solutions developed in relation to local circumstances and requirements. Most politicians are unmotivated, unconcerned, and uninformed about wastewater and water re-use. Decision-makers will take action when offered value propositions and potential solutions that show how reuse technologies bring effective, lean, and robust economic benefits. Rather than quantify a fixed outcome, targets must improve the quality of the reuse process, with attention to cultural norms, safety of use, raising awareness and building capacity.

Almost all water use causes some form of pollution and loss of quality. Dirty runoff always flows into and pollutes other waterways. The strong case for **Collecting and Treating Urban Water after use** is not only that it protects downstream users, but also that it can be used again for other purposes. In moral terms, it was unanimously recognised that it is 'urgent' to reduce the wastewater pollution that is among the leading causes of water borne diseases and degradation of ecosystems. Yet this moral imperative has material economic consequences that will continue to escalate if not dealt with early.

That can happen, if we reframe our escalating crises as an **Economic Opportunity in Wastewater and Water Quality**. Right now politicians regard pollution from untreated wastewater as purely negative, a danger to confront, top down, and at their peril. But the risk reveals a potential reward. From another angle

wastewater management processes have the capacity to transform 'pollution' into assets that smart leaders embrace, voluntarily, from the bottom up. Scale matters. Sound management policies and fair enforcement are best approached as local issues which require local action for local impacts and local rewards. Rewards go beyond public health or natural resilience to boost economic growth, create jobs, provide business certainty, increase revenues, attract investors and improve lifestyles and wellbeing.

The consultation advocated an approach to managing wastewater and ensuring water quality through the 3R's: **R**educe pollution, **R**emove pollution, and **R**euse water.

Emerging Recommendations

- To protect water quality, devise and implement targets to prevent polluting substances entering water bodies. (The **Reduce** objective)
- To protect both people and nature from pollution, collect and treat used water and wastewater requires before it is returned to nature. (The **Remove** objective)
- To consider wastewater as a resource, implement policies, investments and practices for reuse and recycling of water. (The **Reuse** objective)

Table 3 Wastewater Management and Water Quality - Framing Papers and Summary

Wastewater in an Urbanizing World Facilitated by UN-Habitat	Framing paper:	Non Applicable
Impact of wastewater on oceans-nitrogen & phosphorous challenge Facilitated by UNEP	Brief:	http://www.worldwewant2015.org/node/302481
Wastewater reuse-development, innovation Facilitated by IWA	Background paper:	http://www.worldwewant2015.org/node/304075
Wastewater reuse-development, innovation Facilitated by IWA Collecting and treating urban water after use Facilitated by UN-Habitat/Aquafed	Framing paper:	http://www.worldwewant2015.org/node/306023
Economic opportunities in wastewater Facilitated by OECD/Aquafed	Framing paper:	http://www.worldwewant2015.org/node/308025
	General Summary:	http://www.worldwewant2015.org/node/317931

HUMAN RIGHTS APPROACH TO SAFE DRINKING WATER AND SANITATION AND THE BIGGER WATER AGENDA

The discussions on the post-2015 development framework examined how human rights can address a number of gaps in the MDG agenda, particularly the silence on non-discrimination and inequality. The link between water and human rights is hardly new, but for many years it remained implicit. That changed in 2010, when a UN General Assembly resolution explicitly recognized the human rights to safe drinking water and sanitation. Even so those rights were primarily interpreted as being focused on ensuring *domestic water supply and sanitation*, and went no further. However, the right to water and sanitation and other

interdependent human rights are increasingly discussed in the broader water sector context of competing demands and integrated supplies. Water and sanitation interventions at any point in the water cycle have consequences upstream and downstream. Secure access for more than 7 billion people thus in turn will have serious implications for the sustainability of water resources and the way water resources and wastewater have been managed and allocated to different competing uses.

To ensure the sustainability and the uninterrupted and long-term enjoyment of rights related to water, it is essential not only that present generations enjoy the benefits of water and sanitation, but also that future generations are catered for. Sustainability has economic, environmental, and social dimensions and benefits. It requires looking beyond simply providing people with access to WASH services, but also ensuring that planning and budgets take into account the need for infrastructure to last a long time and for effective institutions and personnel for operation and maintenance to be in place on a permanent basis. At a broader level, sustainability can only be ensured through the protection and conservation of ecosystems to ensure water quality and safeguard people's health. In the case of sanitation, in particular, ensuring sustainability also involves changes in behaviour such as moving away from open defecation.

Water diversions for agricultural irrigation have consequences for communities who face hunger, and their implicit right to food. This too is an essential dimension of the discussion on water use, for example whether to prioritize small-scale subsistence farming or large-scale fruit farming for export. Likewise, given the grim and deadly statistics surrounding water-borne disease and diarrhoea, discussions around pollution or water quality and quantity are intimately linked to enjoyment of the universal rights to health, life, and liberty. Water demands differ widely: globally, 70 per cent of water used is in agriculture, and only eight per cent of water is allocated to household use; but each fraction needs careful consideration. Sound water resource management is essential to managing competing demands and resolving conflicts as well as to eradicating poverty and hunger, and achieving the full range of human rights.

"The post-2015 development agenda must explicitly promote and ensure the engagement of poor and marginalised water users in decision making. Participatory water resource management is critical to ensure that equality and non-discrimination in water allocation and management are realised. Local communities must be empowered to plan and manage water and related natural resources through community-based, inclusive and participatory water management". –**Lis Martin**

Little data are available on who benefits or does not benefit from wastewater management. In fact painfully little information can be found on the global wastewater situation at all. This is a serious lapse, given that unmanaged and untreated wastewater spreads disease and has a direct impact on aquatic ecosystems, disrupting drinking water supplies, food production, urban development and industry. The urgency of reversing this situation must be recognized, building on the water and sanitation MDGs.

Emerging Recommendations

- The human right to water and sanitation should be explicitly recognised as fundamental to the implementation of the new development agenda.
- As the water sector strives to be more integrated, human rights issues must be addressed across the three interlinked subsectors of WASH, water resources, and wastewater and water quality.
- Ensure both present and future generations sustain and enjoy the uninterrupted and long-term human rights related to water and sanitation.

THE WATER NEXUS

It is increasingly clear that water cannot be managed in isolation. The water, food and energy nexus is gaining traction across many forums, including the water thematic consultation. Trade-offs between these different sectors must be considered before policies are developed or investments made. Participants were guided by contributions from the International Water Association and IUCN, which looked at the nexus in terms of infrastructure development and climate change.

"Benefit sharing across sectors can be possible if there are clear laid out policies and laws that are respected by ALL. Otherwise, the powerful actors will always find their way to the detriment of the weaker ones and the environment." – **Kimbowa Richard**

"The issue we face in modern day society is we forget the inherent linkages between water, energy, and food. We tend to look at shortages of each of these resources in isolation and try to fix them without fully understanding the impact of our actions. For example, if we want to produce food in a location where the natural ecosystem cannot support our favorite crops, we "fix" the problem by pumping up groundwater or transporting it from long distances and mixing it with fertilizers (energy) to grow the crops. This fix usually means an incredibly inefficient redistribution of resources that end up hurting ecosystems and debilitating the natural cycles of our planet." – **Dirk Propfe**

Emerging Recommendations

- Innovative financing incentives are needed to promote a nexus approach.
- The nexus approach should be supported as a framework to ensure benefit sharing across sectors.

YOUTH AND CIVIL SOCIETY VOICES

Through different social media, the fourth sub-consultation of the Water Thematic Consultation sought to amplify the voices of younger generations and civil society in order to further enrich and diversify views around water challenges and the post-2015 development framework.

A **Youth Parliament** assembled at the Pavillon de l'eau, in Paris, France on 11 February 2013 and weighed in during the International Year of Water Cooperation to ensure their collective voices were listened to in discussions about how water's impacts on their all too often underrepresented generation. The Water

Thematic Consultation provided the Youth Parliament with the social media tools (Water Post-2015 Facebook and Twitter accounts) to gather their voices against the water challenges that need to be considered when discussing the new developing post-2015 framework. They committed to solutions with emphasis on unequal access to water and sanitation, its linkages with climate change and more equitable water governance, including aspects related to gender equality.

The Youth Parliament affirmed a commitment to cooperate and contribute to our governments' efforts in achieving "The Future We Want", as well as in the implementation of other water-related international agreements. They recognized that the lack of strategic infrastructure and increase of pollution by human activities, including deforestation, industrial production, unsustainable consumption and uncontrolled waste, affects the quality and quantity of freshwater. An increasing concern was raised about the insufficient knowledge and capacities at all levels regarding the causes and consequences of global changes including climate change, natural disasters, migration of populations, ocean acidification, desertification and rapid depletion of potable water resources was recognised. They acknowledged that enhanced cooperation, good governance and stakeholders' participation at local, national, international and basin levels are essential for fair, and inclusive water distribution based on the local circumstances. The Youth Parliament also highlighted the role of parliaments in generating inclusive participation in cooperation with governments, civil society actors, water and sanitation experts, indigenous people, women, youth, and children, because we can altogether achieve great things with relatively small efforts. Above all they accepted responsibility to take concrete actions according to the need and reality of our specific water resources, for water being accessible to everyone.

"*We may not have the proper resources to make the big changes ourselves, but we can do something much more important in the meantime which is to create awareness for the cause. As young people, we are learning new values in the face of climate change and society, so it is important that we promote and protect what is important in our resources.*" – Youth Parliament Statement

Beyond 2015 is an international campaign aiming to kick-start and accelerate the post-2015 planning process. The campaign brings together **more than 260 organisations from 60 countries**. Beyond 2015's vision is of working with others to create a civil society consensus around a minimum standard of legitimacy for a post-2015 framework, both in terms of the process and the framework itself.

In a breakout session to the official Water Thematic Consultation, Beyond 2015 addressed the three water sub-consultation topics: Water, Sanitation and Hygiene (WASH); Water Resources Management; and Wastewater and Water Quality. Beyond 2015 focused on setting out the importance of these topics for the overall post-2015 development agenda and argued that the agreed overarching focus on poverty reduction for the post-2015 agenda cannot be achieved unless these three dimensions of water are addressed holistically. Integrating these themes into the future agenda is essential to realising all of the social, economic and environmental dimensions of sustainable development. As an integrated voice of civil society organisations, recommendations prepared by Beyond 2015 firmly stated the need for a common set of principles that are key to achieving progress across the dimensions of the water theme, but also reach beyond the subject.

HIGH-LEVEL MEETING

The High-Level Meeting rounding up the Water Thematic Consultation took place from 21-22 March 2013, in The Hague. Hosted by the government of the Netherlands, the meeting included a Multi-Stakeholder Dialogue on Water in the Post-2015 Development Agenda, called "Wings for Water", and celebrated international World Water Day on the theme of water cooperation.

The meeting brought together representatives of governments, international organizations, civil society, religious bodies, the private sector and youth to discuss the outcomes of the Consultation and the Dutch "Wings for Water" Initiative outcome, the "Wake-Up Call on Water."

On the first day, participants convened for the Multi-Stakeholder Dialogue on Water in the Post-2015 Development Agenda. The day began with a high-level opening session, with keynotes by HRH the Prince of Orange, the Netherlands and Chair of the UN Secretary General's Advisory Board on Water and Sanitation (UNSGAB), along with Ellen Johnson Sirleaf, President of Liberia, Chair, High-Level Panel of Eminent Persons on the Post-2015 Development Agenda (HLP).

To kick off a more interactive session the panel consisting of representatives from UNICEF, UNHABITAT and UNECE presented the process and outcomes of the Thematic Consultation. The opening session was followed by two roundtable sessions where participants discussed the outcomes of the consultation process as presented in the "Advance Summary of the Consultation's Synthesis Report" and elements for the 'Wake Up Call' linked to issues on water and poverty reduction, equity and sustainability, and removing barriers to scaling-up progress through inclusive financing for water, sanitation and hygiene, water resources management, and wastewater management and water quality.

The roundtable discussions concluded that there was a convergence in the discussions and the outcomes of the consultation. They agreed the consultation had been able to capture the most important future challenges for water post-2015. However, participants identified the following issues as needing higher attention or to be more clearly stated:

- The human right to water and sanitation shall be explicitly recognized
- Water cooperation at global, regional, national and local level is essential to reach lasting results
- The truly crosscutting nature of water must be recognized and water's interlinkages to food and energy security should be stated explicitly.
- The need to put sustainable financing mechanisms for water particularly for asset replacement and O&M higher on the agenda
- Make better use of existing financing by identifying realistic targets and low-cost options for managing wastewater and water quality

The day concluded with a presentation on how input from the roundtables would feed back into the Global Thematic Consultation on Water, and the presentation of the final "Wake Up Call On Water."

The High-Level Forum discussed how to raise the profile of water cooperation, and endorsed the outcome of the Global Thematic Consultation on Water in an outcome statement. The high-level segment also linked

up with the concurrent session at the UN headquarters in New York and delivered the outcome statement from the consultation.

Endorsed Conclusions and The Way Forward, High Level Forum The Hague March 22

Based on participants' contributions to the Thematic Consultation on Water it is clear that:

- Water is a key determinant in all aspects of social, economic and environmental development and must therefore be a central focus of any post-2015 framework for poverty eradication and global sustainable development.
- Water, Sanitation and Hygiene, Water Resources Management and Wastewater Management and Water Quality are all indispensable elements for building a water-secure world.
- Water security will be of growing importance. Water should be addressed adequately in the Post-2015 Development Agenda, in order to prevent crises in the water as well as in the water-dependent sectors.
- Governments play a key role in securing water for competing demands; however the quest for a water-secure world is a joint responsibility and can only be achieved through water cooperation at local, national, regional and global level and through partnerships with a multitude of stakeholders ranging from the citizens to policy makers to the private sector.
- Water-related capacity development, both at the individual and institutional levels, will be fundamental in the realization and implementation of the Post-2015 Development Agenda.
- Innovative, inclusive and sustainable financing mechanisms for water need to be implemented.

The way forward

On the eve of the consultations on the Post-2015 Development Agenda, the world must first achieve and then build on and go beyond the MDGs and existing commitments. The new agenda needs to encourage an integrated approach expressed in universally agreed goals which are simple, measurable and able to focus policies, resources and all partners on delivering concrete outcomes that improve people's lives and protect their future and environment.

There must be ambitious goals and targets which take account of unfinished business and the emerging and future challenges. These goals must inspire and create incentives for a change in behaviour to manage and allocate resources in a sustainable way whose benefits reach every person without discrimination.

- The world must aim for universal access to safe and sustainable water, sanitation and hygiene services.
- Ground and surface water should be monitored and governed sustainably and in an integrated manner to satisfy human needs while respecting ecosystem requirements.
- All used water and wastewater should be collected and treated before it is returned to nature and managed under principles of pollution prevention and reuse.

CONTRIBUTING TO THE POST-2015 DEVELOPMENT FRAMEWORK

Distilling thousands of voices and hundreds of pages into a succinct input of a global political process is a daunting task. The Water Thematic Consultation benefited from the participation of community activists, academics, water experts, farmers, teachers, politicians along with many others who shared how water, or the lack of it, influenced their lives. Now, these voices will be taken forward to influence the complex discussions, negotiations and processes that will lead to the post-2015 framework

The High-Level Forum meeting discussed above, endorsed the outcomes and main messages of the Consultation and made it abundantly clear that *water* – encapsulating WASH, water resources management and wastewater management along with quality – must feature prominently in the new development framework. Water justifies and claims its own standalone goal with clear targets and measurable indicators. Water should be recognized in other goals such as health, food, energy so that water's fundamental role in support of life, economic development and well-being can be addressed properly in the Post-2015 Development Agenda.

Given that the Water Consultation was focused on gathering a multitude of views and voices to determine development priorities, rather than as a technical exercise to determine specific targets or quantified monitoring frameworks, the main messages endorsed by the High Level Forum are broad rather than specific. However, behind all of the consultation messages there are rigorous on-going efforts to assess how best the global community can develop targets supported by robust and practical monitoring tools, all of which build on the experience gathered since 2000.

Going forward, the Water Thematic Consultation outcomes give legitimacy to speak about the importance of water for a future development framework. It will inform key events and discussions, most immediately the Secretary-General's High-Level Panel of Eminent Persons, several of whom attended the Water Consultation's High-Level Forum. In addition, this report will be offered to dialogues such as the UN Water's working group on the formulation of a draft common position for a water sustainable development goal. It will also contribute to the Secretary-General's report to the planned special session of the UN General Assembly meeting on the post-2015 agenda. The aim is for the Consultation co-sponsoring countries and all Member States to pick up these water messages in the intergovernmental discussions including through the Open Working Group on Sustainable Development Goals. Other processes will be approached, such as the Sustainable Development Solutions Network and the Beyond 2015 network. At the same time, it is essential to remember that right now 780 million lack access to an improved source of drinking water; a staggering 2.5 billion still lack improved sanitation. The priority must be to make as much progress as possible on the existing MDG targets before, not after, 2015.

The organizers wish to thank all the individuals, organizations and governments who have contributed to making this Consultation such a useful effort. This is only the beginning of a complex dialogue that will continue to happen in many places and on various levels over the next three years. One thing is certain; water is a key determinant in all aspects of social, economic and environmental development. It is a precious resource that must be recognized as fundamental for development.

PART III
SYNTHESIS OF ONLINE CONTRIBUTIONS

WATER, SANITATION & HYGIENE (WASH)[1]

Discussions the first week considered the suggested ambitious target to provide **universal access to safe and sustainable water, sanitation and hygiene** – targeting the most disadvantaged and marginalized groups in particular. Services must reach everybody within a reasonable time horizon. It is no longer enough to bring services to households; water and sanitation must also be in place in equally critical schools and health centers. Vital hygiene issues, such as hand washing and menstrual hygiene management, respectively help determine public health and gender equality.

WASH does not lack the technologies to quickly build a pit latrine, drill a borehole, provide soap bottle; rather, the challenge is to ensure these systems are custom designed with community ownership and are **built to last decades with reliable daily operation,** maintenance and use. This far more difficult task requires government leadership particularly at local levels, [2] and a process-oriented approach that shifts social norms and behaviors for lasting change. In addition, WASH sustainability has complex dimensions, linked 'upstream' to water resources[3] and 'downstream' to wastewater management. Devolving risks and responsibilities[4] to local or household levels may improve outcomes, but only with support from external institutions.[5]

Government officials rarely strengthen accountability without pressure from the community on WASH budget preparation, implementation and monitoring.[6] **WASH can become affordable** following "microcredit service among the marginalized and outreach to people as piloted in rural Bangladesh" either through standard or customized processes.[7] We can overcome inequalities at every level through policy and practice;[8] a checklist helps identify discrimination in relation to access to WASH at all levels.[9] Identify which groups suffer the worst access due to specific physical, cultural, and institutional barriers[10] then work on design, policy and budget changes that counter the stigma.[11]

A decade ago, MDG WASH targets focused only on homes. Post-2015 targets must include 'extra-household' settings, even going beyond schools and health centers to enhance WASH access in workplaces, markets, transit hubs, mass gatherings, detention centres and refugee camps. "WASH" means drinking water, sanitation and hygiene,[12] but priority matters: So **which aspects and elements are most important?** and how far can they be globally measured and monitored Post-2015? Water should be free from harmful organic, inorganic or radioactive contaminants, Free from odor, with good color appearance, accessible, affordable, sufficient. Sanitation should involve safe collection, storage, treatment and disposal of human excreta. Personal hygiene is critical in food handling, water supply chains, adequate hand washing facilities with soap at critical times, free from having to defecate in the open.[13]

The **biggest challenges facing** WASH? Short term: sustainability of existing infrastructure; long-term: increasing water scarcity from overconsumption, climate change and environmental degradation.[14] "The biggest challenges are finding systems which actually work given the constraints of any given locality. There is a general attitude that success is measured by the take-up of any given technology, whether or not it has been proven to work or has any kind of procedure in place to measure effectiveness. Sanitation is seen as a minority issue by too many people, and interventions are allowed to continue when they have not been proven to give any measurable improvement."[15]

Universal access is realistic and **achievable – but by when?** To some, 2025 seemed a premature and unlikely time frame, given funding constraints, the lack of political will and competing priorities within governments. Others felt there was no alternative.[16] But it won't achieve targets by itself; WASH parties must engage other resources, including land use, energy and fuel wood harvesting.[17] Unity is strength: "The WASH community cannot continue being afraid of establishing the links to water governance."[18]

WASH IN SCHOOLS

Less than **half of low income country schools lack taps, let alone toilets.**[19] The risks that children face are multiple, including disease,[20] drop-outs, even death.[21] It is unknown how many schools suffer, and what they lack – and the absence of good data[22] reveals a low priority for governments. WASH has been focused on households, and must be extended to the 'learning' environment where kids spend most of their day and form their habits. The benefit of a vision and target – of all primary and secondary schools equipped with WASH – is that it embraces several themes at once in an example of how water security underpins health, education, governance and inequality.

Contributors not only **imagined, but speant each day in schools without toilets.** Too often a school may have 3 floors, sixty classrooms and no toilet. "It has been an embarrassment for me to defecate openly during school time, or wait in queue for a long to use the dirty toilet. [23] A learning **place without WASH can never become a school**, because it discriminates against the privacy needs by gender, it teaches that it is acceptable to foul one's habitat and risk disease, and it increases absenteeism while lowering education standards.[24] Without meeting basic water and sanitation needs and in schools without toilets, children are constantly exposed to risk of preventable disease.[25] But if we 'catch' citizens young, future generations will be reap immense health dividends. The benefits of toilets in schools – linked to hand washing with soap – turns children into adults who practice good hygiene at home and will not put up with open defecation in their communities.[26] Still, simply counting the numbers of toilets or taps provided – without considering quality of construction and enduring functionality – makes matters worse, and defeats having a WASH target.[27] "Not all 'toilets' are toilets. Some distribute rather than prevent disease: If 'shit' is brought together and mishandled, it turns into a 'bomb' ready to explode."[28]

> "Policy makers need to visit the field, speak with those affected, see the need for themselves and then act with purpose and passion to build the infrastructure necessary. The gap between the halls of government and the reality on the ground is too wide; the willingness to perceive a desperate situation is too narrow. The health and well being of people without a voice is surely at risk". -- Michael Frederiksen

Without WASH in schools, girls suffer most.[29] One skips school "when i have menstrual period because i do not know what should i do as even my mother does not know and teachers do not orient me and there is 'no toilet'." Half the children face such issues, [30] so WASH should integrate menstrual hygiene into the school curriculum and identify feasible and measurable indicators to make girls trust teachers.[31] Sierra Leone's civil war destroyed school infrastructures, leading to open defecation and outbreak of cholera.[32] Sabina from Nepal shared how Mentsrual Hygiene Management (MHM) can turn this around.[33] The equitable learning chain linkage[34] rests on common sense: with WASH privacy, [35] girls can attend school during menstrual periods.[36] It may be one form of segregation where separate -- toilets prescribed for boys and girls – is equal.[37] This taboo must be addressed at scale.xxxviii

As a matter of ensuring equal human rights, [39] **government is responsible for securing WASH in all schools**, but the right scale, capacity and funding improve success. [40] Since Education Departments oversee all schools, accountability lies with them.[41] That may be too high level; [42] an agency's district education office balances local needs to reach the last child off the radar.[43] As in Ethiopia, the facilities should be owned and managed by the education office while schools can procure the required services.[44] A rights-based approach will create demand from below, empowering kids to demand WASH services.[45]

To ensure WASH access for all schools, the policymakers, [46] teachers, communities and parents all have a role. To make this real, we must enforce public health regulations without exception, and suspend school operation when there are no toilets or taps in schools.[47] WASH should be a high priority in school rankings with incentives that reward access and curriculum.[48] Parents and children must demand their rights from the government, local authorities, and donor agencies.[49] Sierra Leone's "School-Led Total Sanitation" (SLTS) leverages community awareness, learning and fun; its 5.6 million people could achieve 100% WASH coverage[50] if a school triggers at least 3 catchment communities.

WASH AND GOVERNANCE

Discussions showed **institutional capacity is fragmented;** roles and responsibilities within government structures are unclear; there is inadequate management of resources and weak regulation. Mechanisms must hold political leaders and Governments accountable for fulfilling WASH-related promises. Legislation should strengthen consumer's rights, and empower communities to demand better services from governing officials. We also need to scrutinize where development funds actually end up.

We have the means, methods and technology for 100% access to WASH, having already improved water access for 2 billion and sanitation for 1.8 billion over two decades.[51] But there is no magic solution to reach the last child because **people differ, as do local contexts**. A demand-driven WASH approach focuses on

particulars of class, culture, location, gender, age; it takes longer up front, but works better and lasts longer, for more people. **Ending inequality in WASH** cannot ignore current imbalances, since decision makers concentrate power & authority, while those who lack services are dispersed with weak voices. The resulting discrimination may be intentional or unintentional, rural vs urban, within communities or households. WASH equity demands transparency and accountability, but numbers add clout.[52] The WASH work of private charities, bilateral aid, and other donors are important, but must be tied upstream and down. Securing WASH access for all is not a question of money or technology; it is a matter of effective governance.[53] Politics matters from rural toilet to urban school to trans-boundary river. Confused governance gaps[54] hinder water policy and limit environmental and economic outcomes.

To improve the efficiency of actions, make the new framework **reflect clear linkages between WASH and health**, education, gender, economic development and environmental sustainability.[55] System quality matters more than quantity: WASH technology should recycle valuable organic matter through containment, treatment, transport, conditioning and reuse of the substances.[56] "We all want permanent access for all, but too much money goes into building new wells and hardly any money into making what exists work better. In water we are going backward every time a well breaks down and is not repaired."[57] Smart, ambitious targets quantify unified progress linking water, sanitation, hygiene, wastewater treatment, and water resource management, and challenge rich and poor countries alike, since human rights violations related to WASH are by no means limited to the South![58]

To change the current situation of water governance, processes and decision-making, avoid the quest for total agreement. Escape analysis paralysis. Involve as many diverse stakeholders, with different points of view, in a transparent process, but don't get overwhelmed, and be cautious of conclusions.[59] Appreciate demand as much as supply. "Get all policy makers to live with the communities for a week; sleep with them, walk and work with them at the grassroots to arrive at good practical policies, processes and decisions."[60] Prioritize WASH less as charity than "an engine to economic development, since a wealthy nation needs a healthy population."[61] Rank goals based on multiplier effects: the sanitation target in the MDGs has been holding back progress in other areas, yet priority for sanitation has not been increased.[62] Integrate the old ways with new technology revival of the traditional approach of the eco-centric culture.[63]

A universally accessible WASH world is constrained by government incapacity, official unaccountability, social inequality, lack of training, funding, and joint monitoring.[64] Materialism and consumerism turns people inward to advance their own circumstances. We focus on inputs, rather than the quality of outcomes. Those working in water need to collaborate to attract more funding.[65] Poverty, and its mirror, excessive wealth and exploitation, lead to the destruction of social trust and infrastructure, which exacerbate the problems of the poor.[66] Governments and international donors only want to spend on hardware since this is justified as capital investment. There is no money for the extension and awareness work - for salaries and operational expenses of making investments sustainable in WASH.[67]

WASH AND ENVIRONMENTAL SUSTAINABILITY

Discussion this week explored the links between WASH and Environmental Sustainability. It clarified direct, two-way opportunities for development and conservation organizations to integrate policies, plans and

projects that combine protection of nature with access to WASH. Healthy freshwater systems improve the reliability, quantity and quality of water for drinking, cooking, irrigation and other uses. Conversely, well-planned sanitation programs protect freshwater ecosystems. Joint advocacy programs maximize community participation, save funds, build synergies, and amplify the combined voice of water conservation and WASH programming.[68]

Potential benefits, pitfalls, challenges and opportunities for better integration include inequity between communities. For MDG 7, national governments would tell provincial or local governments to meet X indicator on new latrines or wells. To comply, the official with limited resources and capacity set out to 'tick the box.' The result served "low hanging fruit" of easy, cheap, nearby communities but ignored those hard to reach. Migrants overwhelmed services in a negative spiral of decreased biodiversity and health.[69] Think outside that box. People in Nias Island, Indonesia discovered how flies and other vectors contaminate water, so passed local laws to protect their sources. But the donor-funded 6-month project was strictly focused on WASH and could not scale or replicate in policy and process.[70] There is a governance clash between donor funds and the project's beneficiary country, which is not autonomous.[71] The urban/rural divide is a barrier and opportunity. Natural infrastructure filters water, regulates flow, stores reserves. While nature can't solve WASH problems, 1/3 of major cities get drinking water directly from forested protected areas, while 90% of the untreated sewage discharges into aquatic biodiversity. [72]

Stories of integration between WASH and environmental sustainability are rare. A quest for success stories yielded one reforestation project[73] and an important lesson about the applicability and challenge of targets. The U.S. claims "100%" access to WASH, but in reality 1.5 million people – migrant workers, Native Americans, homeless – still lack safe access. The predictable result is an increase in diarrhea and unregulated contamination of rivers and groundwater. As countries develop, emerging middle-classes targets must be able to handle the environmental pressure and demands on WASH for all citizens.[74]

To measure progress and establish baselines, devote more time and attention to adequate, quantifiable and time-bound targets and indicators addressing the linkages between WASH and environmental sustainability. MDG7 lacked targets on sustainable development and biodiversity loss, resulting in weak, disjointed action. If we incorporate the vital linkages between WASH and environmental sustainability it will foster concrete and measurable progress.[75] Monitoring and evaluation cost money – which is why groundwater reporting (quality and quantity) remains largely unreported – but are essential to shaping, and keeping a focus on, strong goals.[76]

To promote the value of integration among national government and local communities, stress environmental sustainability as the base of development aid. Without nature, the costs for conserving drinking water will rise astronomically, water resources will desiccate, and the quantity will decrease.[77] Governments have a short-term incentive to invest in WASH at the household level for the sake of building community trust and capacity for longer term conservation projects.[78]

WASH AND ECONOMIC DEVELOPMENT

Water and sanitation remain a humane and moral imperative. But discussions on WASH and Economic Development made a compelling bottom-line case for governments to invest in water. Without adequate

WASH investments, countries grow poorer, losing on average 1.5% of GDP per year. Children grow sicker, miss school, and erase another 5% GDP per year. And in terms of value, WASH yields a $4.30 return on a $1 investment. These conservative estimates exclude revenue from increased tourism (people on holiday don't favor pit latrines), robust fisheries and increased property values.

To speed up the achievement of MDGs in water supply and sanitation, prioritize the political importance of, intersection with, integration by, and dependence on, water. Development in all other sectors is impossible without access to water, both as a basic need and driver of progress elsewhere.[79] The current MDG framework does not cross-integrate WASH across other goals on health, education and gender equality.[80] Without raising ambitions and then holding people to account, the potential to meet the needs of even just half of the population could be lost.[81]

That said, haste could also make waste. Rather than speed up efforts to meet abstract targets ahead, let's improve what we're doing on the ground right now; incorrect coverage statistics don't take into account the infrastructure that no longer works.[82] Combine social marketing with appeals to reason: advocacy through forum drama, workshops, games, music, art, sports, social media, etc. ensure the community knows what it wants and can articulate the importance of water supply and sanitation.[83] There is a connection between cost and level of access; as society ages and retires or loses their jobs, WASH services may become unaffordable. The socially acceptable price – 2.5 EUR per cubic meter for drinking water + compulsory collection and treatment of waste water – allow just 20 l per person per day.[84]

Other economic impacts of WASH justify investment. The SHARE Research Consortium's 'Sanitation Markets Pathfinder Paper' assesses how sanitation markets currently work. It identifies how potential market failures may affect the ability to extend appropriate and sustainable sanitation services, especially to the poor and to recommend potential interventions to address such market failures. [85]

We can **achieve universal access to improved WASH** when we hold African and other governments to account on existing promises, set ambitious dates for real universal access, tie targets to health and education, and make sure the human right to water and sanitation is properly recognised.[86] In concert with health and education, South Asia leaders must agree to end open defecation by 2025 and basic sanitation to all by 2030 [87] Let us be as ambitious for the world as Africa is for itself: focus interventions and embrace innovations, sustainability, social norms and behavior change to reach out at scale.[88]

To achieve universal access, **we should mobilize** experienced 'voices from below' as building blocks towards the main report.[89] Donors are ready to put the resources where the need is greatest.[90] But direct outside support for WASH helps little: if a foreign donor gives $5 million for construction of toilets, it helps 5,000-50,000 families; if that same $5 million raises awareness they impact 1,000,000-3,000,000 people who, convinced of the health, social and economic benefits will find a way to build their own toilet, and thus value it all the more.[91] Committees within communities know who to contact at local government and council levels to advocate for the fulfillment of the MDGs, but need funds and research training because without baseline research, there is no monitoring and evaluation of interventions.[923]

We can leverage the domestic private sector on results-based financing[93] and small-scale financing.[94]

WATER RESOURCES MANAGEMENT (WRM)

Water for energy, energy for water

> "Water and energy are so intimately linked that actions to increase access to one of them will inevitably have effects on the other. If we are wise we can tap in to the synergies present and increase access to both. If unwise we may trap ourselves in a downward spiral." – Jens, "(Em)Powering a thirsty world" sub-consultation.

While agriculture remains the world's largest force in extracting water, energy is increasingly thirsty, gaining ground and, in some regions, surpassing irrigation as the dominant water user. Today, energy uses 8% of all freshwater withdrawals worldwide, but in countries like the US use rises to 40-44%. Irrigated grains are rapidly being converted from food into fuel, taking water with them in the process.[95] Energy is also the most dynamic and volatile sector. Global energy consumption will increase by almost 50 % over the next 20 years. No form of energy production is possible without water at some stage in its lifecycle, even in the production of wind turbines or solar panels.[96] Conversely, it takes vast and growing amounts of energy to heat, treat, pump, lift, move, convey, operate and maintain water systems; indeed, water use is the largest consumer of energy in the state California.[97]

Few appreciate the hidden linkages in the water-energy nexus. Both resource use systems are natural monopolies, publicly run, with few incentives to conserve since utilities cover costs through rates based on consumption.[98] Affordable standard tools can correct how water is used for energy production.[99] Efficiency will help ease the choke points, but only so much as it makes the resources more affordable for more uses. Whether losses occur in poorly maintained energy and water distribution systems, outdated or ill-functioning production technologies, or simply as a consequence of wasteful habits, the net result is the same: fewer resources to meet rising demands, higher long term costs and hampered development.[100]

The shortest path to efficiency requires our **putting a price on water for power**. But utility authorities lack the political will to do so; imposing a unilateral increase is seen as worse than taxation: paying more for the same service, and no room to negotiate. Finally, it is hardly clear why power should be any different in experiencing a scarcity price, when other users would be free from this imposition.[101] Water is "borrowed" for energy production in passage through the turbines or coolers; but energy also consumes water, since 11% - 85% of withdrawals never returns to the source clean and cool; and by taking it away water cannot be used elsewhere.[102] Some propose auctions in basins for the available volume after a sufficient amount has been set aside for environmental functions.[103]

A water-secure world is impossible without energy security, and vice-versa. But the energy sector typically has more political clout than water and the environment, and this imbalance should be anticipated and addressed through governance.[104] Hydropower dams offer a cost effective, reliable, technology that is a mature and efficient source of potentially renewable energy.[105] Dams deliver substantial benefits, but they come with an unacceptable and often unnecessary social and environmental cost.[106] At best, existing dams can be retrofit and upgraded for hydropower; but developers must go beyond educating investors and affected communities of the risks – respectively assumed and imposed -- both for social displacement and ecological damages. "Hence, the heads of state and ministers should pay with jail or economically, the consequences of their actions."[107]

Wise plans demand **sharing information between energy & water managers**, especially to coordinate demands upstream and down, or in advance of releases from reservoirs.[108] Other issues to share include demand and use of water for energy, energy for water, and environmental impacts.[109] How you rank integrated water resource management priorities depends on where you live. Lima should internalize that in the desert water itself is the priority.[110] For the poor, easy and equitable availability of the bare minimum quantity of fresh drinking water should be first priority.[111] IWRM has no meaning if it includes everything else as equally important, including the focus on the role of women, so redefining what we mean under INTEGRATED management could be one of the objectives.[112]

Climate Change and Water-related Risks

Climate change will intensify the hydrological cycle, even as global greenhouse gas emissions continue to rise.[113] Smart water management could bind global efforts to cool our warming planet with local efforts to absorb its unavoidable shocks.[114] Yet leaders rarely make the linkages. Virtually every climate change impact -- urban heat waves, melting snowpack, longer droughts, increased wildfires, drying reservoirs, rising sea levels, desiccating soils -- boils down to the loss of fresh water. Even sudden, torrential rain can's be saved, as dam operators must lower reservoirs to absorb runoff. So **climate volatility often means water volatility**.[115] Developing countries are most vulnerable to persistent drought, extreme weather, sea-level rise, coastal erosion.[116] But the political world seems to treat adaptation as either too expensive or futile surrender.[117]

Climate change directly and indirectly affects people in Kazakhstan as it increases the frequency and duration of heat waves, reduced rainfall, and intensity of precipitation causing higher evaporation punctuated by sudden spring floods.[118] In the Middle East and North Africa, climate change is seen as a continuation for thousands of years of drought, and while technical responses – fossil aquifer mining, desalination, and drip irrigation – help, the region is considering population control and balancing demand to shrinking supply.[119] Bulgaria faces even hotter and dryer summers followed by worse and more frequent floods, depriving 7 to 10% of the population of drinking water for months.[120]

We must avoid the unmanageable, and manage the unavoidable. But a spirited debate broke out over the rank of **mitigation vs. adaption** as some dismiss the latter as 'relief therapy' rather than a cure,[121] or uncertainty as models misjudge how Arctic ice melt 13 years faster: "What we have seen or speculated is tip of an ice-berg, we don't know what lies beneath." [122] Economically, mitigation can save families and firms money, while adaptation involves spending more.[123] Lack of money or time forbids poor countries to adapt water management to rapid changes.[124] With some dissent, [125] **people found it hard to implement the "no regrets" strategy** that rarely has monetary value; "we are over-dependent on yardsticks such as GDP that discards the value of natural habitat upon which the economy itself depends."[126]

Reduced demands on water and energy drive **climate mitigation and adaptation synergy** from the household to the farm to the forest or factory. Top solutions address both imperatives at once: a rain-fed infrastructure program in Mexico[127] proves that restoring watersheds and preserving water and soil can boost both adaptation and mitigation.[128] Not all agreed. Strategies differ by time, affluence and place: mitigation requires a national/international response targeting production, especially in developed countries; local water adaptation decreases risk exposure and should be priority for fragile ecosystems and underdeveloped

nations.[129] "If we apply regional solutions to local problems and mobilise comparative advantage instead of political economy, we can turn climate change from threat into opportunity."[130]

Adaptation starts with managing water-related risks. But some impacts are not just unavoidable; some are unknowable. So the vulnerable face a future of growing uncertainty and need strategies for withstanding shocks. Adaptation must build resilience in 'hot spots'.[131] But to identify them first[132] we need an Atlas of Water Vulnerability.[133] One further factor for 3 billion people is **inequality**. A poor cotton farmer in an Indian village is displaced by upstream landowners who deplete shallow groundwater tables by irrigating with carbon emitting deep well pumps during protracted drought: "That chasm between rich and poor- exists everywhere; climate change will to drag the poor in the frontline."[134]

Maybe a Climate Change Genie will rid the world of consumerism; [135]make multinational firms switch places with the people in the poor, resource-rich countries their organizations are pillaging;[136] send a time capsule back 150 years to convince pre-industrial age leaders of different development path; [137] cause people who suffer to be the same who cause water degradation;[138] or reduce the uncertainty of the climate change and establish more risk assessment models for mitigation and adaptation.[139]

Water for Nature, Nature for Water

All water comes through and from nature, which stores, conveys, cools, and filters runoff. So, in order to secure these environmental services, **institutions should invest in 'natural infrastructure**.' Natural infrastructure complements, augments, or replaces traditional (and far more expensive) reservoirs, dams, levees and canals. Water management can't treat nature as secondary to development; rather, good management empowers people to negotiate integrated solutions that offer a high return. Discussions explored priorities, like how allocation of water for nature can help ensure water or food security. Solutions that incorporate natural infrastructure enhance efficiency, effectiveness and equity, but also spur economic progress towards long-term availability.[140] Some 15 long-term jobs are created for every US$1m invested in river restoration.[141]Even investments in coastal barriers like reefs and mangroves can curb sea level rise for water security (as related to drinking water, agriculture, etc.).[142]

Healthy freshwater ecosystems secure development for economic, political and ethical reasons. It costs more to clean up degraded water than to protect it in the first place.[143] The process is not magic, but people won't acknowledge the benefits from healthy ecosystems if they don't have to pay for them.[144] It is costly to keep crippling nature's ability to provide the clean water we need to thrive.[145] Conversely, "what happens to development when water IS NOT available for ecosystems? Without access, people have to import their service from elsewhere."[146] But unfortunately, to the public and politicians, it is not clear yet how to identify the value of those services.[147]

There is enough water for nature and for people, and we can create win-win situations,[148]lxxbut only if people are politically empowered, informed by data, and free to negotiate trade offs.[149] Distance matters; the further we are removed from water, the less we value it, and must belatedly repair this resource.[150] Humans have human rights to life and liberty, and rivers have river rights to flow with integrity, balance and health; the difference in rights is qualitative, not quantitative.[151] We must **convince development leaders** that nature

can provide solutions for water security through proper intervention in any particular area.[152] The TEEB Report on Water and Wetlands[153] provides evidence of just how much and how valuable naturally-functioning wetlands deliver to people, with clear cost-benefit analyses compared against alternative approaches.[154]

> "Instead of paying what it costs to transport and treat water we should also pay for withdrawing water for other potential uses. But with water it is rarely so simple, given our special relationship with water and the moral and emotional strings attached to water as a human right. Still such a cultural value should not hinder us from using a tool of overriding importance for allocation and efficiency."

One can make an **economic case for development through ecosystem restoration**. But you cannot value a service treated as worthless. There is a distinction between cost and value. Regulation creates markets for services that are not easily monetized yet immeasurably support us. Finances raised through sale prices cover regulation and repair costs, creating an environmentally positive economic model that replaces the negative, divisive one.[155] Floodplain restoration helps manage extreme floods, save lives, prevents property damage, and adds ecological value to the natural landscape.[156] Against assumptions, rivers and lakes are worth 1.5 times more than tropical rainforests; inland floodplains, marshes and swamps worth 8 times more; estuarial zones are over 60 times higher.[157]

A c**ompelling target** would be a biodiversity indicator, flexible enough to adjust to unavoidable human influence and "external" factors like climate change, yet retain emotional value.[158] Ensure X% of clean freshwater is governed by a collaborative body, or river basin organization.[159] Increase the number of water allocation decisions based on ensuring nature receives its share.[160] That would force allocators to identify and agree on sharing of water among all users, a 'simple' means of triggering processes that are needed for all of water resource management. Other WRM target indicators include ensuring a percentage of environmental water requirements are met, percentage reduction in biochemical oxygen demand per capita, or abstractions as a percentage of flow are reduced, all by a certain year.[161]

Water for Food

Each day each human must convert at least 3,000 liters of Water for Food. [162] To feed 7-9 billion people, careless decisions could dry up aquifers and streams. Already, 40-50% of all nutrition – along with half of all water embedded within food – gets lost in the increasingly long food chain moving crops out from rural farms into urban mouths. Yet efficiency gains from field to fork save water and money. [163] The 'Green Revolution' warded off hunger due to finite arable land; today's limits call for a Blue Revolution' that is smart about what to grow, how to irrigate, who demands what, and how to share. [164]

Behaviour changes off the farm influence water demand on it. Urban dwellers shift to water intense meaty diets. **Individual consumers and farmers are at the centre of the solutions, so integrated solutions require as much emphasis on demand reduction as supply escalation.** Today's challenges are to produce more food with less water per unit and plan food security in a changing climate. Right now, budgets don't reflect the priority of linking water and food as a single integrated option.[165]

For a hungry world, most felt scarce water must be used to grow food, not biofuels,[166] especially since fuels can be produced from post-harvest waste.[167] But farmers and global commerce are price-sensitive and self-interested and seek comparative advantage; [168] efficiency means they can use less water to sell biofuels and import or buy water-efficient food grown elsewhere.[169] Besides, most farms require petroleum-based products, and ethanol can come from irrigated corn, rain-fed sugarcane, leftover cellulose, or jatropha that grows where food crops cannot be cultivated.[170]

In time of water crisis, water should go for drinking. Size and scale matters less than use; cows and crops on commercial farms need water to drink in the same way as cows and crops on smallholdings"[171] Besides, both are farmers, so does it make sense to re-allocating water within the category of the biggest users?[172] Equally important is whether the food grown is eaten locally, equitably and efficiently within the watershed, or shipped beyond the basin for the benefit of one.[173] "**Technology can be used more efficiently,** but is it available to the poorest and most vulnerable, and do they have the skills to use it?"[174]

We are all guilty of throwing away rotten surplus, and must make conscious choices. [175] Consumers don't realize the amount of water they are consuming, but even if they did, "the spirit is willing but the flesh is weak".[176]A bacon, eggs, toast and coffee breakfast may consume several thousand liters of virtual water, damaging landscapes and depriving downstream users. Is that enough to **make you change your diet to reduce your "water footprint"?** Only the rising price of foodstuffs which use so much water will make people change to alternatives available."[177] Awareness is key, but the whole chain, including the policy or regulatory body, must take action.[178]

Wastage of food is "a criminal loss, as if snatched out of the mouths of the hungry and poor lot, but also wastage of precious water that has gone into producing this food. Preserving one-third of food that otherwise would be ruined, is as good as producing an extra 33%."[179]ci In Sri Lanka the same vegetable crop is harvested almost at the same time and hence very often there is a glut, and the crop is wasted. With diverse varieties at different times of the year most of the waste can be reduced, letting parties invest in systems so excess food can be stored.[180]

Water for Peace

Water can help coordinate policy, trade development, shared management, and peaceful cooperation between countries. International water law like the 1997 UN Watercourses Convention and the 1992 UNECE Water Convention, provides frameworks.[181] More efforts are needed to facilitate transboundary agreements and joint institutions for all basin and aquifers. Furthermore, progress is complicated by demographic shifts and risk multipliers of a changing climate. The quest for water rarely provokes conflict across borders, but unequal access to water often sparks violence within them. Consequently, the public wants to be more involved in order to have a say in the development of transboundary cooperation.

The world's 276 international river basins, which account for nearly half of the earth's land surface, generate roughly 60% of global freshwater flow and are home to approximately 40% of the world's population. A total of 145 nations contribute territory to international basins.[182] The Latin root for "rival" traces back to "those who share the same watercourse."[183] Against rising global demand for water, and complex

geopolitical tensions, leading institutions at the end of the 20th Century – such as the World Bank, US Central Intelligence Agency, or the British Ministry of Defense – began to warn about the **growing risk of international "water wars**."[184] While these have never materialized,[185] there is a difference between the negative absence of war over water and the positive presence of peace.[186]

Riparians share interests, risks and opportunities in the joint development, use, management and protection of transboundary water resources.[187] For example, a water storage or energy generating dam finds its natural place in a mountainous upstream country, while the downstream plains are often better suited for agriculture. These **geographic conditions create the potential for cooperation** in terms of the benefits to be shared beyond water – in this case, energy and food. In contrast, lack of cooperation and disputes over water result in inefficient water management, impacting water quantity, quality, and socioeconomic integrity. Giving the public an opportunity to express concerns improves transboundary water cooperation by making information widely available, and providing mechanisms for participation.

Regular contacts and consultations can lead to and reinforce cooperation, if there's a structured institutional mechanism. Riparians enter into bilateral and multilateral agreements and establish joint bodies on the basis of those agreements. For example, European stakeholders greatly advanced joint management of transboundary waters overcoming tensions through daily cooperation e.g. on the Rhone; where even electricity companies cooperate regarding hydropower plants. There is also an unprecedented transboundary aquifer agreement between France and Switzerland.[188] On rivers like the Meuse, Rhine, Moselle, or Saar, cooperation takes place via 50-year-old river (basin) commissions that build trust, enhance understanding and exchange experience about water use and climate adaptation.[189]

These mechanisms must arise organically and require constant reinforcement. Joint commissions are more effective in addressing conflicts or tensions than the Plenipotentiaries,[190] but there is not the one recipe for all cases. The suitable cooperation mechanism depends on the special situation and/or case.[191] "In the Aral Sea Basin we have more institutions than we have water; so agreements alone matter less than their realization. Not all countries of the basin take part in the 1992 Convention, and while all countries claim that they act according to international law, everybody understands it differently."[192] While cooperation on transboundary rivers is developed in many basins, it is largely non-existing for groundwater resources and needs to be built. There is little information for the general public about groundwater.[193] **International organizations**, the UN, donor agencies and NGOs can help riparian countries establish fruitful cooperation. They can show policy-makers the quantifiable benefits of sharing waters in terms of peace, economic and social development, environmental protection, climate change adaptation.[194] cxviClimate change reduces the water resources available, so governments must share and collaborate on strategies to adapt to floods, droughts and extreme weather events together.[195] Cooperation can improve through cross-fertilization and broader participation in joint bodies, even outside the basin.[196]

Governing & Managing Water Resources for Sustainable Development

The water crisis is really a governance crisis. But online discussions suggested the crisis is "multi-local" [197] and no single global blueprint can solve local problems. Governance requires soft reforms and hard investments. What works in one place may not scale to different needs. Assess the types of governance architecture that can deliver on sustainable water development. Stakeholder voice and transparency are

important ingredients in effective decision-making on water allocations. An effective water governance system applies the principles of transparency, accountability and cooperation. Doing so will promote the needed investments for developing appropriate infrastructure.

The level of water governance matters as much as the kind. **The water crisis hardly** requires global governance, or technocratic interventions. Rather, it demands focusing on social issues.[198] The "experts" neglect stakeholders and users, who are excluded from management and feel no responsibility for either problems or solutions."[199] Corruption affects service delivery in the water sector and aggravates the water crisis in Africa.[200] Too often, **governance is reactive when it should be proactive**; Maharashtra drought leads to shortage because it wastes 30-40% through poor governance.[201] Water governance must derive from below; one can't simply 'transfer' what works here to somewhere that can't afford the analysis or jurisdictional enforcements.[202] Indeed, cultural, religious and political intentions play major roles in water sustainability.[203] Indonesia's water governance, for example, must arise from demands in each island.[204]

Nations face unique governance challenges. Water governance requires coordination across constituencies and sector users.[205] A nation's lack of joined-up thinking[206] forms a barrier to water resources management and development.[207] Water is low on the political agenda because it is never seen as directly related to growth,[208] even though everything depends on it; so we must ensure water's policy, plans, laws, pricing, subsidies etc are not contradictory."[209] But this demands a new way of thinking and governing. "We are able to manage complexity - mobile phones operate everywhere and people go into space – but in water we are still stuck in a rigid sector approach with institutions operating in isolation."[210]

Sri Lanka must look to its past. Centuries ago, kings constructed large reservoirs, or tanks, to store run-off. But time, industrial priorities, and neglect gradually degraded tanks, which need rehabilitation. **A sense of ownership or incentives can improve the situation from below.**[211] Ethiopia needs integration. The country is focused on achieving their energy demand or agricultural output without considering the equitable usage of the same water for other sectors or by other stakeholders, and always forget the water demands for wildlife, wildlife habitat, forests…creating imbalance of the natural system.[212] In Jamaica, abstractors are reluctant to cooperate, based on the belief that water is free and should not be regulated in an efficient manner.[213] Benin is divided upstream and down, lacks equitable access to safe drinking water, must reduce degradation, destruction and disappearance of water, and avoid the risk of flooding and extreme drought over time.[214]

An explicit water resources goal would be useful with targets based on 1) Water for socio-economic development and environmental protection; and 2) Implementing an integrated water resources management approach.[215] Quantifying the carbon footprint helps us try to reduce greenhouse gases; a universally accepted indicator could attract more attention to the care of water. But foremost we must define a common reference for what "access to water" means.[216] After all, the MDG targets for water in most sub-Saharan African countries has been met mainly for cities yet show little to no real improvement in rural areas.[217]

WASTEWATER MANAGEMENT & WATER QUALITY

Wastewater in an urbanizing world[208]

For millennia, small agrarian populations could afford to treat rivers as free sewers. Today, 7 billion mostly urban and industrialized individuals mean we all live downstream, in danger. Discussions explored why the

dilution of pollution is no longer a solution, and reconsidered our use, reuse, treatment, value and even meaning, of "waste." Most population growth will occur in developing country cities that already have poor infrastructure.[219] Untreated wastewater discharge and polluted surface runoff carry water-borne disease and degrade natural systems. To address impacts and build capacity you need political will. But politicians rarely act to provide wastewater infrastructure because often benefits are felt after their "political time"[220] and are most visible downstream. Worse, those most affected by bad waste-water management generate almost no taxes and even less influence. Yet urban areas represent an opportunity in disguise, if leaders can turn liabilities to assets, and thus introduce sustainable approaches.

To address the impacts of wastewater on public health, missing elements include institutional capacity, coordination and political will.[221] No "clear-cut methodologies link diseases to poor wastewater treatment, so decision-makers don't connect the dots.[222] We must value clean water as much as good health, but don't generalize[223]: "We cannot go on simply throwing this resource away; developing countries have an opportunity to rethink the whole process which can be founded on today's world, not yesterday's."[224] With ample technical solutions, one must understand and apply wastewater approaches that best fit each local context.[225]

> "It is such an irony that the Curative Approaches got the better of Preventive Approaches. The prime need of the hour is to initiate the effective and result oriented focus to prevent the Contaminants / Pollutants finding their ways to the Water Bodies." -- **João Barata, Thu, January 24, 2013 at 05.35 pm**

The situation may be worse; counting sanitation without sewage treatment lowers the global estimate to only 40% of the global population having access to adequate sanitation. But a healthy debate[226] broke out over the domestic wastewater-health linkages.[227] Too often, solutions reach for "end-of-pipe" WWTP approaches, when we should **focus on dispersed, non-point source solutions.**

As most urban growth will occur in the developing world, it brings challenges for provision of wastewater infrastructure and **severe consequences for political inaction – and rewards for** sustainably managing resources. Despite this, politicians and policy makers, both at global and local level, give low priority to the provision of sustainable wastewater management. Professionals must combine accurate research with public pressure. Above all, the term "wastewater" needs a makeover. It won't get positive publicity unless it can overcome hurdles of cultural taboos, local traditions, even religious backlash.

Politicians seldom act because responsible efforts rarely win votes.[228] Officials feel no pressure from constituents to clean water, when direct costs are immediate and obvious, while indirect benefits remain diffuse, delayed, silent and invisible.[229] Those most severely affected by bad wastewater management pay little or nothing in taxes and have almost no influence on policy making.[230] Despite a new policy approach to natural resources in some countries, the effect of waste-water in our ecosystem has been undermined and remains a silent threat. [231] But there's hope. In Bolivia, Cochabamba is starting to debate wastewater treatment to reduce pollution and incentivize reuse in agriculture and forestry.[232]

The world's urban population increases 1 million per week, **posing new risks**.[233] Indonesia reallocated responsibilities for wastewater to the local governments, without money, skills, managers, or assets to do so. As people move to cities, they become consumers, disconnected from decision makers, with no chain of accountability.[234] Inadequate infrastructure is also to blame. Streams become open sewer lines, without responsible owners.[235] Unless Kampala tackles pollution throughout the larger Lake Victoria basin,[236] the rapidly expanding city's[237] raw sewage impacts all water users.[238]

Impact of wastewater on oceans- the nitrogen & phosphorous challenge [239]

Everyone and everything lives downstream, but accumulated impacts ultimately fall on marine ecosystems. Large populations are dependent on coastal and ocean resources for survival and well-being. Yet marine ecosystems are being degraded by human activities on land. This week's online discussions linked degradation of marine ecosystems to the 90 % of wastewater that flows untreated into coastal areas. [240] The resulting excessive nutrient loads cause eutrophication, and create dead zones, that erode the natural resilience and food sources that support billions. This undermines biological diversity, natural resilience and the capacity to provide fundamental ecosystem services, impacting both rural and urban populations and affecting sectors from health to industry, agriculture, fisheries and tourism. As protein grows more expensive, partnerships to replenish fisheries are looking upstream to slow and stop pollution at its source.

A global partnership for wastewater management should provide flexibility in the transfer of effective and affordable technologies, awareness, knowledge and policy – all to strengthen local authorities. [241] In community management of wastewater treatment infrastructure, farmers operate and maintain systems because they reuse the effluent for irrigation.[242] The best cooperative models link private and public aims, [243] and focus on the recovery of nutrient, energy and water resources. Others stimulate regional cooperation on wastewater management for transboundary rivers.[244] In all cases, the private has to manage; the public must control; and citizens have to be involved in oversight responsibilities.[245]

To monitor progress on global targets for wastewater management, we must first establish an accurate baseline of information at the national level. While specifics would need debate to clarify, there were suggested parameters. [246] These could consist, measured as a percentage, in: amount of untreated wastewater discharged, decline in health cases, decrease in fish production, increase is costs of treatment, decrease in resources needed, or increase in safe activities for irrigation.[247]

Setting global targets for nutrient reduction is tricky, due to large differences in the capacity of developed and developing countries. Classic nutrient removal plants are too energy and/or chemical intensive to apply broadly.[248] It makes more sense instead to emphasize nutrient recovery and reuse, apply stringent regulations, focus on law enforcement that controls discharges, and reduce contamination.[249]

To reduce wastewater pollution, **global targets should consist of local targets**. Targets to reduce % of wastewater within a fixed period of time should consider what's unique, or shared, among regions and countries. National targets are easier to formulate, achieve, monitor and evaluate. On the other hand, it is worth benchmarking and rewarding the best global performers.[250]

The wastewater and eutrophication problem creates dead zones along our coasts, escalating the cost of protein by killing off seafood. To reverse this, leaders must frame the problem in the context of national and regional development goals. Multiple sectors must collaborate[251] and results will come through: clear policy frameworks, defined institutional responsibility, and integrated thinking that strengthens cooperation, knowledge sharing and capacity. [252]

Wastewater reuse-development, innovation[253]

An interactive, live-streamed panel[254] highlighted that wastewater reuse remains a complex issue and solutions need to be developed in relation to local circumstances and requirements. Most politicians are unmotivated, unconcerned, and uninformed about wastewater and water re-use. Decision-makers only take action when offered value propositions and potential solutions that show how reuse technologies bring effective, lean, and robust economic benefits. Rather than quantify a fixed outcome, targets must improve the quality of the reuse process, with attention to cultural norms, safety, and capacity building.

Targets for water reuse must be able to measure progress towards their achievement. Developed, data-rich, countries can monitor how much nitrogen and phosphorus gets reduced,[255] or target the percentage of water reused from the total amount of the wastewater generated, adjusted to economic or social impacts. But that requires costly, sophisticated assessment methodology, which most countries can't afford or maintain.[256] It also might appeal only to countries with agricultural opportunities for reuse downstream of their cities.[257] Accountability of water reuse at household is tricky (especially in developing countries).[258] We can go beyond wastewater irrigation numbers (m3 or ha) to resource recovery numbers,[259] and link targets to a regional water stress factor, where water reuse is more valuable to all.[260] For many streams, reusable water becomes 'ecological flow' -- that can lead to the unfortunate appropriation of river water flows.[261] Given vast differences, it's better to offer a menu of diverse options to choose from, rather that force all into a predefined mould.[262]

Good examples of water reuse at scale are rare. Some initiatives date back half a century, suggesting water reuse is neither a recent practice nor current priority. In Zimbabwe, Bulawayo treated water reused for park irrigation while Harare irrigated pastures and meat production; but these may no longer be functioning.[263]Korea's small scale water and sanitation reuse systems could be scaled to larger population or even mega city.[264] Spain reclaimed water for use in three municipal networks.[265]

Obstacles to water reuse practices include inertia, incapacity, institutional fragmentation, perceived risks, unwillingness to fund research and development, political myopia, low revenues and high costs. While high, these can be overcome. Multi-stakeholder platforms build cooperation and knowledge exchanges.[266] Incapacity and negative images, [267] can be reversed as the value of water rises to reduce risks and increase rewards.[268] Inconsistent regulations impair water reuse, no matter how safe the reclamation treatment is,[269] require us to convince the general public that reuse is good, safe and future-proof.[270] Scale is hard, but can also be addressed. Many regional initiatives arise more from necessity than desire to achieve a sustainable system, but we can identify a common theme –like greywater reuse versus fresh water purification, or conservation vs desalination – for much greater potential. [271]

People might **consume products produced with reused water.** But opacity, weak monitoring policies[272] and lack of investment conspire to create doubt. With a secure, transparent, treatment process one might

drink out of a septic tank.[273] **To ensure wastewater is safe for reuse**, keep out hard-to-remove substances, match water production to seasonal demands, and ensure it maintains quality from time of production to point of use.[274] Separate greywater from black water.[275] Apply sound, reliable and transparent operation of the treatment facilities.[276] The best use for treated wastewater always lies in the eye of the beholder. **The most appropriate use** could face the highest competition, consume (or save) the most water, or generate the most revenues. Water availability is both physical and economic, so not limited to dry climates.[277] Greywater reuse for high-value products (such as irrigating olive trees) is extremely important in water scarce areas.[278] Properly treated wastewater could have a range of uses, including: landscape/ golf courses, groundwater recharge, industrial cooling, irrigating biofuels, or street cleaning. But listing isn't enough without an aggressive cost-benefit analysis, and campaigns that address public's "yuck" attitude within each region's local climate, regulations, soil conditions, topography, industry base, community needs and monitoring.[279]

Collecting and treating urban water after usel[280]

Almost all uses of water cause some form of pollution and loss of quality. Dirty runoff always flows into and pollutes other waterways. The strong case for Collecting and Treating Urban Water after use is not only that it protects downstream users, but that it can be used again for other purposes. In moral terms, it was unanimously recognized as 'urgent' to reduce the wastewater pollution that are among the leading causes of water borne diseases and degradation of ecosystems. This has material economic consequences, and will become a huge problem in the future if not dealt with.

In moral terms, it was unanimously recognized as [281] **urgent to reduce the deadly harm caused** by wastewater pollution, not only to current populations but to future generations. In Uganda, wastewater pollution coupled with inadequate treatment facilities are among the leading causes of water borne diseases that remain a leading killer.[282] Suffering is unnecessary, and can be corrected. Santiago, Chile's 6 million inhabitants once had only 3% coverage of wastewater treatment; but an ambitious effort brought 100% coverage in a decade, improving public health, natural resilience and economic growth.[283] In a political context, urgency is relative. To a local authority in a low-income country, everything is "urgent" – energy supply; crowded hospitals; striking teachers – with too few funds to go around, and no clear priorities.[284]

All forms of wastewater can be collected in cities, but most question if they need to. [285] While possible, the process would prove complicated and costly[286] and won't work without cooperation by constituentsl[287] Most big, established cities can't overhaul systems retroactively; for each city and each condition a solution differs environmentally and economically.[288] Let's first see if we effectively treat water already collected; if not, focus precious time and money avoiding concentrated pollution in the first place.[289]

Today's 7 billion mostly urban people mean wastewater **treatment is a necessity**, not a luxury, [290] and as essential to all as access to potable water.[291] Why? Because like a neglected but highly contagious virus or a tiny but infected scratch, it can quickly spread far and wide – just as raw excrement dumped locally in Kampala's small Nakivubu channel spreads human waste throughout the Lake Victoria basin[292] – to resist even expensive interventions or painful cures that sever a limb.[2903] Solid waste was long taken for granted, until overflowing dumps became a visible threat and lead to the cultural legitimacy and art of recycling.[294] The extent of treatment depends on the past source, future use, and who pays. Irrigators would want nitrogen

and phosphorous left in, but pathogens taken out. Yet in all cases, the focus should remain on "avoid, reduce, recover and (only after all other options have been exploited) treatment" of wastewater.[295]

> "Wastewater treatment is part of the Human Right to Water and Sanitation, and has been recognized through the UN Resolution 64/292" – Katharine Cross

An **international vision** of wastewater – shared among water activists, thinkers, and professionals – can drive a new spirit toward a locally-global action.[296] How? An urgent vision may put it on the global agenda for discussion, mobilize funding in support of local action, and create treaties for management upstream and down.

Developed countries could provide assistance to developing countries. Punitive measures should be made as a safety net for those countries that will not follow.[297] With limited "time" to trigger local action, a global vision could drive cooperation into research and development of various strategies (including reuse), treatment technologies and infrastructure designs. Still, locally established goals, targets and indicators are best suited to reduce global impacts. A vision is desirable, but not a "silver bullet" to stir action and improve management of pollution in used water.[298]

Economic opportunities in wastewater and water qualityl[299]

Right now politicians regard pollution from untreated wastewater as purely negative, a danger to confront, top down, as a moral imperative, and at their peril. But **the risk reveals a potential reward**. From another angle wastewater management processes have the capacity to transform 'pollution' into assets that smart leaders voluntarily embrace from the bottom up. Scale matters. Sound management policies and fair enforcement are best approached as local issues which require local action for local impacts and local rewards. Rewards go beyond public health or natural resilience to boost economic growth, create jobs, provide business certainty, increase revenues, attract investors and improve lifestyles and wellbeing. In discussions, contributors explored the priorities, costs/benefits, barriers, and targets of doing so. They showed how wastewater can be part of the solution – as a source of water in water-scarce areas when treated "fit for use". But grasping opportunities will require improved financing and better governance, scaling up successful efforts and overcoming policy and institutional barriers

Priorities for wastewater collection and treatment and water quality include devolution of authority to locally-tailored solutions, a comprehensive approach to local implementation, looking at the natural infrastructure 'software' beyond steel and concrete technology, and spreading responsibility equitably to all. An integrated approach to wastewater management encompasses tactics of the 3 R's – reduce, remedy, reuse – based on the principle that water is a renewable, but irreplaceable, resource.

This requires **systems thinking**. Water supply benefits the individual, who pays the cost of personal consumption. By sharp contrast, sewage collection and treatment benefits the entire community, which require taxpayer subsidies. Bad subsidies build 'white elephant' infrastructure. Good subsidies invest in results: treated sewage.[300] Since each community generates and suffers from different sources of pollution or waste, coherent plans must be customized to specific demands and capacity.[301] While location and demographics differ, everyone faces some degree and form of water quality threat, so the overarching priority everywhere should be to avoid water pollution in the first place.[302]

Wastewater collection and treatment can save society money when compared to the alternative. Front end accountability (i.e. "the polluter pays principle") shifts costs to the individual or firm, saving money the community would have to spend on remedial clean-up. Urban design can work with free natural systems, saving costs of manmade infrastructure. Recovering wastewater is cheaper than buying new sources from scratch. Education costs less than enforcement. Targeted 'upstream' investments save broad 'downstream' expenses.[303] Yet it remains extremely hard to estimate benefit-costs at scale or over time without political rigor and solid data. Re-plumbing all urban households with urine-separating toilets may cost more or less than revamping existing centralized sewerage treatment infrastructure.[304]

The **biggest barriers to safe water** are ignorance and prejudice. Neither local nor global communities can overcome these as long as wastewater information is vague, missing, or confused by the "unsexy" yuck factor. It is time to rebrand the cause, from the dirty, ugly "wastewater reuse" to a far more appealing 'water reuse.' People may then stop throwing away a precious resource.[305]

Targets can be achieved by 2030 if they are realistic, focus on "turning-the-tide" on a big problem, set up a basic framework for measuring outcomes at the local level, and establish a credible 15 year baseline. Indeed, "the existence of a global Target is more important than its quantitative value".[306]

References / Source documents

In addition to the weekly thematic consultation framing papers the following sources provided the context and background for the water thematic consultation Synthesis Report:

REPORTS

General

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2012), Progress on Drinking Water and Sanitation: 2012 Update. P.34. Available at: http://www.unicef.org/media/files/JMPreport2012.pdf (Last visited 18 Feb 2013).

World Bank, The Water Blog, submission by Guy Hutton (2013), What costs the world $260 billion a year? http://blogs.worldbank.org/water/what-costs-the-world-260-billion-each-year (Last visited 18 Feb 2013).

Beyond 2015, The post-2015 development agenda: what good is it for health equity? Available at: http://www.beyond2015.org/sites/default/files/Health%20Beyond%202015%20paper.pdf

Tracking progress on Child and Maternal Nutrition. P.5. Available at: http://www.unicef.org/publications/files/Tracking_Progress_on_Child_and_Maternal_Nutrition_EN_110309.pdf

Human Development Report 2006. Beyond scarcity: Power, poverty and the global water crisis. P. 47. Available at: http://hdr.undp.org/en/media/HDR06-complete.pdf

World Bank/WSP, Economics of Sanitation Initiative, Press release 2012//390//SDN, Inadequate Sanitation Costs 18 African Countries Around US $5.5 Billion Each Year. http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:23170309~pagePK:34370~piPK:34424~theSitePK:4607,00.html

WHO (2012), Global cost and benefits of drinking-water supply and sanitation interventions to reach the MDG target and universal coverage. http://www.who.int/water_sanitation_health/publications/2012/globalcosts.pdf.

The United Nations World Water Development Report UNESCO (2003), Water for People, Water for Life. P. 228. http://unesdoc.unesco.org/images/0012/001297/129726e.pdf#page=311.

Grafton, Q. R., & Hussey, K. (2011), Water Resources Planning and Management. New York: Cambridge University Press.

Overseas Development Institute, Eva Ludi (2009), Climate change, water and food security. Available at: http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/4116.pdf.

The World Commission on Dams. http://www.internationalrivers.org/campaigns/the-world-commission-on-dams

World Water Assessment Programme (2012), The United Nations World Water Development Report 4: Managing Water under Uncertainty and Risk. P. 40. Available at: http://unesdoc.unesco.org/images/0021/002156/215644e.pdf (Last visited 18 Feb 2013).

A. Carius, et.al., ESCP Policy Brief (2004), Water, Conflict and Cooperation. Available at: http://www.wilsoncenter.org/sites/default/files/ecspr10_unf-caribelko.pdf

Bigas, H. (Ed.), (2012), The Global Water Crisis: Addressing an Urgent Security Issue. Papers for the InterAction Council, 2011-2012. P. 26-32. http://www.inweh.unu.edu/WaterSecurity/documents/WaterSecurity_FINAL_Aug2012.pdf

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2012), Progress on Drinking Water and Sanitation: 2012 Update. P.31. Available at: http://www.unicef.org/media/files/JMPreport2012.pdf

UN (2010), Report of the independent expert on the issue of human rights obligations related to access to safe drinking water and sanitation, Catarina de Albuquerque. UN Doc. A/65/254: http://www.un.org/Depts/dhl/resguide/r65.shtml.

UNDP (2006), Human Development Report 2006. Beyond scarcity: Power, poverty and the global water crisis. P. 174. Available at: http://hdr.undp.org/en/media/HDR06-complete.pdf

WATER, SANITATION & HYGIENE

Tackling the Silent Killer. The case for Sanitation. WaterAid (2008) http://www.wateraidamerica.org/includes/documents/cm_docs/2008/t/tacking_the_silent_killer_the_case_for_sanitation_1.pdf.

UNICEF Water, Sanitation, and Hygiene Annual Report 2011. http://www.ausaid.gov.au/aidissues/watersanitation/Documents/unicef-wash-annual-rep.pdf.

UN Human Rights Council (2012), Report of the Special Rapporteur on the human right to safe drinking water and sanitation, Catarina de Albuquerque. Stigma and the realization of the human rights to water and sanitation. UN Doc A/HRC/21/42. Available at: http://www.un.org/Depts/dhl/resguide/r65.shtml

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2012), Progress on Drinking Water and Sanitation: 2012 Update: http://www.unicef.org/media/files/JMPreport2012.pdf.

Unicef/WHO (2011), Drinking Water Equity, Safety and Sustainability: Thematic report on drinking water 2011. P. 22. Available at: http://www.wssinfo.org/fileadmin/user_upload/resources/report_wash_low.pdf.

See: General Comment No. 15 (2002) on the Right to Water (arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights) CESCR, E/C.12/2002/11 (2002) & Committee on Economic, Social and Cultural Rights, Statement on the Right to Sanitation, E/C.12/2010/1 (2010).

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2012), Progress on Drinking Water and Sanitation: 2012 Update. http://www.unicef.org/media/files/JMPreport2012.pdf

WATER RESOURCES MANAGEMENT

Water and Climate Coalition, Proposals to the Climate Change Negotiations DOHA, Qatar, 26 November – 6 December, 2012. http://www.stakeholderforum.org/fileadmin/files/Water_and_Climate_Coalition_Doha_Positions.pdf

For more on the concept of virtual water, see: http://www.allianceforwaterstewardship.org & www.waterfootprint.org.

See dedicated chronological database on water conflicts at http://www.worldwater.org/conflict/

World Water Assessment Programme (2012), The United Nations World Water Development Report 4: Managing Water under Uncertainty and Risk. P. 67.
Available at: http://unesdoc.unesco.org/images/0021/002156/215644e.pdf (Last visited 18 Feb 2013).

UN Department of Economic and Social Affairs (2008), Participatory Governance and the Millennium Development Goals (MDGs). United Nations New York, 2008. Available at: http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN028359.pdf (Last visited 18 Feb 2013).

Human Development Report 2006. Beyond scarcity: Power, poverty and the global water crisis. UNDP, New York, 2006.

Participatory Governance and the Millennium Development Goals (MDGs). UN DESA. United Nations New York, 2008. P. 14-15. Available at: http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN028359.pdf.

IWMI Africa Regional Office, Integrating 'livelihoods' into integrated water resources management: taking the integration paradigm to its logical next step for developing countries.
http://www.sarpn.org/documents/d0000575/P530_IWMI.pdf

WASTEWATER MANAGEMENT & WATER QUALITY

Norman. Peerless. and Takkouche. , 2010 Effects of Sewerage on diarrhoea and enteric infections, The Lancet Infectious Diseases Volume 10 Issue 8 Pages 536 -544

Rio+20 Outcome Document - The Future We Want. Available at: http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf

UN Water Statistics on Pollution. Available at: http://www.unwater.org/statistics_pollu.html

UNEP, UN Habitat (2010), Sick Water? The central role of wastewater management in sustainable development. A Rapid Response Assessment: http://www.unep.org/pdf/SickWater_screen.pdf

UNSGAB submission to Rio+20 Zero Draft: http://www.uncsd2012.org/rio20/content/documents/UNSGAB%20contribution%20UNCSD.pdf

UN-Water Policy Brief on Water Quality. http://www.unwater.org/downloads/waterquality_policybrief.pdf

BASD Submission to Rio+20 Zero Draft. Available at: http://basd2012.org/wp-content/uploads/2012/02/ZeroDraftStatement.pdf

AquaFed submission to Rio+20 Zero Draft. Available at: http://basd2012.org/wp-content/themes/basd/img/pdf/BASD-Rio+20-AquaFedContribution.pdf

UNGA - Res 65/153. Follow-up to the International Year of Sanitation, 2008: http://www.sanitationdrive2015.org/Documents/5YD%20Resolution.pdf

Ministerial Statement from the 6th World Water Forum. Available at: http://www.worldwaterforum6.org/en/news/single/article/the-ministerial-declaration-of-the-6th-world-water-forum/

Waage, J., Banerji, R., Campbell, O., Chirwa, E., Collender, G., Dieltiens, V., Dorward, A., Godfrey-Faussett, P., Hanvoravongchai, P., Kingdon, G., Little, A., Mills, A., Mulholland, K., Mwinga, A., North, A., Patcharanarumol, W., Poulton, C., Tangcharoensathien, V., Unterhalter, E., 2010. The Millennium Development Goals: a cross-sectoral analysis and principles for goal setting after 2015. Lancet, 376: 991-1023.
http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673610611968.pdf

Byass, P., Graham, W. J., 2011. Grappling with uncertainties along the MDG trail. Lancet, 378: 1119-1120. Available at: http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673611614190.pdf

OECD, 2012. OECD Environmental Outlook to 2050. OECD Publishing: http://www.oecd.org/env/environmentalindicatorsmodellingandoutlooks/oecdenvironmentaloutlookto2050theconsequencesofinaction.htm

ANNEX 1
OUTREACH ACTIVITIES

1. PURPOSE

The purpose of the Post-2015 Water Thematic Consultation was to bring in voices from a broad range of stakeholders in order to formulate how water should be addressed in the post-2015 development agenda. The consultation drew upon contributions from stakeholders in the private sector, academia, civil society, youth organisations, NGOs, the UN system and wider public.

2. OUTREACH APPROACHES

The consultation co-leads collaborated with many partners to ensure significant output from the different platforms and from the thematic sub-consultations. Outreach efforts were employed to grow awareness and opportunity for participation on worldwewant2015.org/water.

3. STREAM PARTNERS, INCLUDING VIDEO CONTENT PRODUCED

a) Water Resources Management:
Week 1: Water for Energy, Energy for Water (Led by SIWI)
Week 2: Climate Change and Water-Related Risks (Led by WMO and UNESCO)
Week 3: Water for Nature and Nature for Water (Led by IUCN with CBD, UNEP and WWF)
Week 4: Water for Food (Led by FAO)
Week 5: Water for Peace (Led by UNECE and UNESCO)
Week 5: (2nd topic) Governing and Managing Water Resources for Sustainable Development (Led by UNECE, UNDP, UNEP, and SIWI)

b) Wastewater Management and Water Quality:
Week 1: Wastewater in an urbanizing world (Led by UN-Habitat)
Week 2: Impact of wastewater on oceans - The nitrogen and phosphorous challenge (led by UNEP)
Week 3: Waterwater Reuse - development and innovation (Led by IWA)
Week 4: Collecting and treating urban water after use (Led by UN-Habitat/AquaFed)
Week 5: Economic opportunities in wastewater (Led by OECD/AquaFed)

c) Water, Sanitation, and Hygiene (WASH):
Week 1: Consultation on the 3 top line Aspirational Objectives of the JMP (Led by WaterAid);
Week 2: Consultation on WASH and Education, including issues such as Menstrual Hygiene (Led by UNICEF);
Week 3: Consultation on WASH and Governance (Led by SKAT Foundation)
Week 4: Consultation on Sustainability, with focus on Environmental Sustainability (Led by WWF);
Week 5: Consultation on WASH and Economic Development (Led by WSP).

Video content produced for the consultation

1. Interviews at High-Level African Dialogue on the Water-Food-Energy Nexus- UN-DESA
2. Catarina De Albuquerque on a Water Goal- OHCHR
3. Tom Slaymaker Introducing WASH Week 1- WaterAid
4. The Prince of Orange of the Netherlands Willem-Alexander on WasteWater- UN-Habitat
5. Water and Energy: Torgny Holmgren, Executive Director of the Stockholm International Water Institute – SIWI
6. UN-Habitat Executive Director, Dr. Joan Clos, Introduces the Wastewater Sub-Consultation- UN-Habitat
7. Climate Change and Water, Dr. Harry F. Lins, Hydrologist- WMO
8. WASH in Schools – UNICEF
9. Menstrual Hygiene- Catarina De Albuquerque- OHCHR
10. The Nutrient Challenge, Impact of wastewater on oceans-the Nitrogen and Phosphorous challenge- UNEP
11. Discovering Water Re-use-IWA
12. Post-2015 Development Agenda Water People, Power, and Politics- RWSN
13. Sustainable Solutions for Africa- IUCN
14. Post-2015 Water Consultation: Mark Smith on Water for Nature, Nature for Water- IUCN
15. The Blind Spot of the water cycle- Aquafed
16. Angel Gurría, Secretary-General of the OECD - Wastewater and Water Quality-OECD
17. Conflict and Groundwater-(collaboration led by UNECE)
18. Water Governance- UNDP
19. Sanjay Wijesekera, Chief of WASH, UNICEF on Framework – UNICEF
20. Mr. Maarten Gischler, Deputy Head Water & Environment, Ministry of Foreign Affairs, The Netherlands- UNECE
21. Mr. George W.K. Yarngo, Assistant Minister of Public Works, Liberia- UNECE
22. Nexus Dialogue on Water Infrastructure Solutions- IUCN

Other Videos:

23. Livestream Q&A with Dr. Mickey Glantz – WMO
24. Livestream of the Wastewater Live Q&A on Resource Reuse- IUCN
25. Livestream Q&A on Water and Economics- Guy Hutton – WSP
26. Livestream Q&A on Water and Governance with Hakan Tropp- SIWI
27. Livestream Q&A on Transboundary Issues Professor Dr. Patricia Wouters, founding Director of the Dundee UNESCO Centre for Water Law, Policy and Science, Scotland – UNESCO
28. Meeting Livestream on Addressing Inequalites in WASH- UNICEF
29. Meeting Livestream on Post-2015 Thematic Consultation at World Bank-WSP
30. Meeting Livestream Post-2015 Geneva Meeting-UNECE (Still waiting for video)
31. Meeting Livestream of CEO Water Mandate in Mumbai (Still waiting for video)-CEO Water Mandate

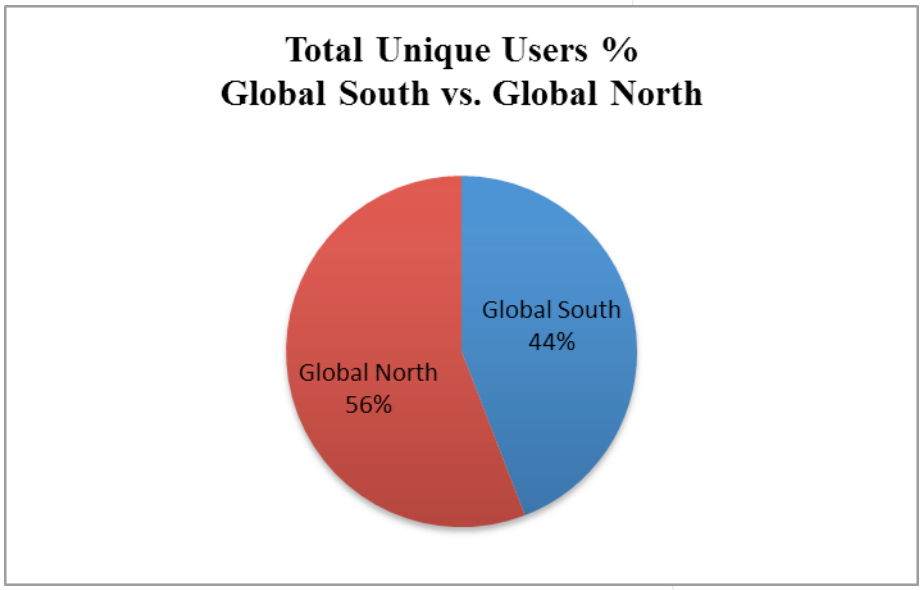
4. USER TRAFFIC ANALYTICS

The Post-2015 Water Thematic On-line Web Consultation continues to run on four platforms, the web-page at worldwewant2015.org/water, the Facebook page at facebook.com/waterpost2015, our Twitter @ waterpost2015 with our hashtags #waterpost2015/#wastewater2015, and the WaterPost2015 YouTube channel. Each platform records vital user traffic analytic data, such as user location, length of stay, unique pageviews, etc. with the use of analytic software. The raw analytic data below is the totals since our launch of the website.

From Launch to Now Total Analytic Figures

All Water Connected Pages:

- Total Pageviews: 188,207
- Total Unique Pageviews: 52,520 users from 185 UN member states and 8 non-member states/territories
- Total User Comments: 1,266
- Total User Poll Question Responses: 1,617
- Total Users who are Yes For Water (See Homepage): 4,524 from 121 UN member states and OP
- Total User Questions Answered During a Live stream Q&A: 119
- Average Time User Spends on Pages: 2min 35sec (Site Average: 1min 551sec)
- Bounce Rate, 18.19% -percentage of users who view only one page during a session, the platform average was 28.23%
- Since our launch, Water Connected Pages represent 12% of all traffic on the World We Want platform.



*This graph shows the location breakdown of the 52,520 unique users Global North or Global South.

5. SOCIAL MEDIA ACTIVITIES

a) Twitter: https://twitter.com/WaterPost2015

Hashtags: @waterpost2015 #waterpost2015 #wastewater2015

Twitter has mostly been used as a tool to promote the consultation to users to participate and answer questions, watch video-streaming on worldwewant2015.org/water or on facebook.com/waterpost2015.

Key metrics:

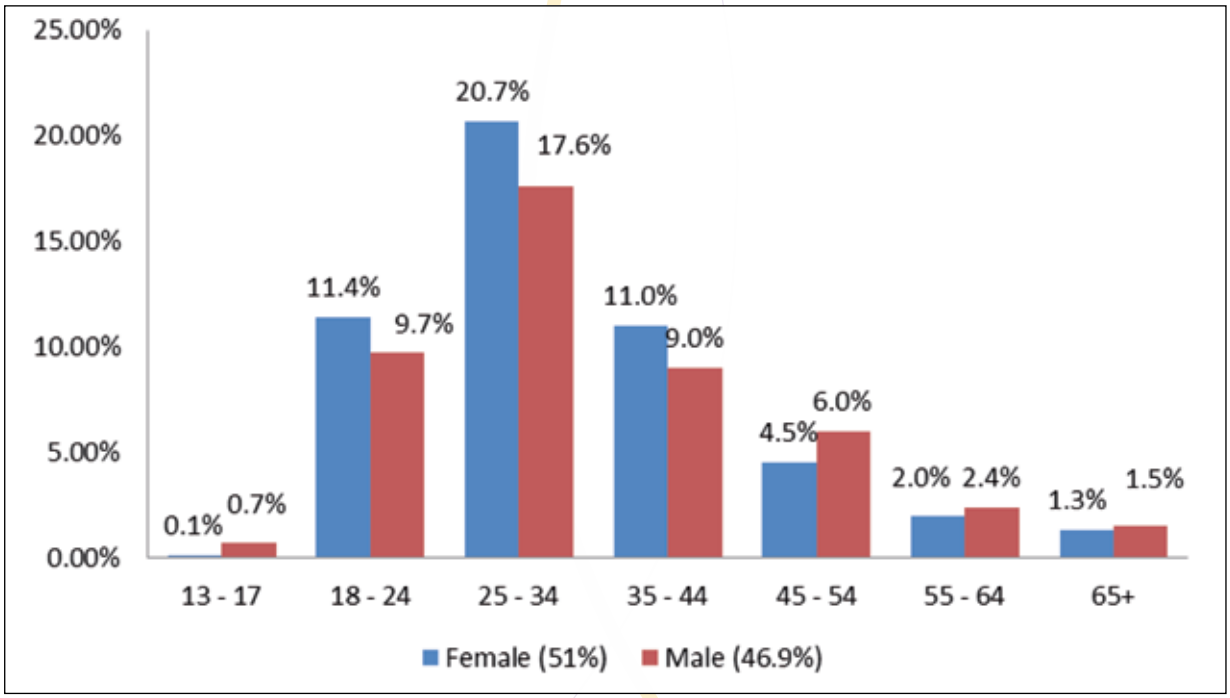
- Total Tweets Using #waterpost2015- 3,319
- Total Tweets Using #wastewater2015 – 307
- Total Followers of @waterpost2015-548

b) Facebook: https://www.facebook.com/waterpost2015

Due to the familiarity of younger (18-34) users with social media platforms and the critical mass of them in existing civil society and youth group accounts, we facilitated discussions on facebook.com/waterpost2015. We invited a variety of NGOs and young people's groups to reach directly into the consultation in this accessible and familiar way and follow the group, and participate.

- Total Unique User Contributions (Posts, Comments, Stories Shared)- 2,311
- Total Likes on the Page - 948
- Total Facebook Reach - 385,137 (The number of people who are friends with users who liked the Page)
- % of our Facebook Page Traffic are users

Facebook likes: female/male breakdown



c) World youth parliament for water (social media highlights)

190 Youth Comments were received under a one-week period, covering the following thematic issues;

"We may not have the proper resources to make the big changes ourselves, but we can do something much more important in the meantime which is to create awareness for the cause. As young people, we are learning new values in the face of climate change and society, so it is important that we promote and protect what is important in our resources."

Theme	No. of comments
Advocacy	24
WASH	24
WRM	26
Waste Water	10
Water Quality	8
Drinking Water	7
Linkages	6
Cooperation	11
Governance	31
Consultation promotion	15
Human right	5
Economics	5
Environment	4
Youth	36
Risk	1
Sustainability	13
Social Responsibility	8

6. PRESS HIGHLIGHTS

- http://www.rural-water-supply.net/en/projekts/details/59
- http://www.trust.org/alertnet/blogs/the-battle-for-water/experts-take-debate-over-global-water-development-goals-to-the-web/
- http://blogs.reuters.com/the-human-impact/2013/01/21/over-to-you-experts-take-water-development-goals-debate-to-web/
- http://www.thebrokeronline.eu/Articles/Post-2015-SDGs-or-Post-MDGs
- http://imaginepeace.com/archives/12671/5

Interviews with Cecilia Scharp (UNICEF) and Bart Devos (World Youth Parliament for Water) will be published in SIWI's magazine, Stockholm Water Front, at the end of March.

ANNEX 2 OUTCOME STATEMENT - HIGH LEVEL MEETING IN THE HAGUE

RECOGNITION OF OUTCOMES, HIGH LEVEL FORUM – WORLD WATER DAY

THE HAGUE, 22 MARCH, 2013

We, the High Level Forum, assembled in The Hague on World Water Day 2013, recognize the key outcomes and recommendations of the Thematic Consultation on Water in the Post-2015 Development Agenda, as presented in the advance summary of the consultation's synthesis report. We discussed water cooperation as an essential means to achieve a water secure world.

This process has allowed for an inclusive and bottom-up approach that encouraged all stakeholders to help construct a new sustainable development framework that is measurable, realistic and inter-generational that will promote an equitable and sustainable use of water for growth and development. People from 185 Member States, and 8 non-Member States/territories, have participated through social media and meetings at the national, regional and global levels. It engaged a wide range of stakeholders from national authorities, civil society, youth and the private sector in the discussion on the role of water in a future sustainable development framework. A synthesis report, that will soon be available for public comment, provides a comprehensive view of the outcomes of the consultation.

Lessons learnt and remaining business

Today, 783 million people still remain without access to an improved water supply. Many more use water that is unsafe to drink. The current MDG target on sanitation will be missed by a significant margin as more than 2.5 billion people still lack improved sanitation. Open defecation is still practiced by 1.1 billion people. Lack of sanitation is holding back progress in other areas including child and maternal health, girls' education, nutrition, gender equity and economic growth. One of the greatest challenges the world faces today is that so many people are deprived of the human right to safe drinking water and sanitation. This situation demands strengthened attention in the post-2015 development framework.

Despite being situated within the goal of environmental sustainability, the MDG target for water and sanitation does not address the wider water agenda as called for at Rio+20, including water resources and wastewater management and issues of water quality, which are crucial for sustainable development. Access to

water, sanitation and hygiene, food and energy production, disaster risk reduction, industrial development and healthy ecosystems rely on the availability of clean water managed sustainably.

Although water challenges are growing incrementally, complacency is not an option. Political recognition and policy action are urgently needed. Significant water-related challenges remain. Water pollution continues to grow and more than 80% of used water is discharged to nature untreated. This is not only a threat to the environment, economic development and human health, but also a waste of valuable resources.

Over 1.7 billion people currently live in river basins where water use exceeds recharge, leading to the desiccation of rivers and depletion of groundwater.The pressures on and pollution of water resources that

more and more countries are experiencing will undoubtedly increase by 2030. Higher rates of urbanization will mean a growing demand for drinking water and industrial use with consequent higher waste disposal and treatment. Feeding a world of nine billion people in 2050 will require more water for food. The demands for energy will more than double and, at the same time, extreme events, droughts and floods will also increase.

Conclusions

Based on participants' contributions to the Thematic Consultation on Water it is clear that:

- Water is a key determinant in all aspects of social, economic and environmental development and must therefore be a central focus of any post-2015 framework for poverty eradication and global sustainable development.

- Water, Sanitation and Hygiene, Water Resources Management and Wastewater Management and Water Quality are all indispensable elements for building a water-secure world.

- Water security will be of growing importance. Water should be addressed adequately in the Post-2015 Development Agenda, in order to prevent crises in the water as well as in the water-dependent sectors.

- Governments play a key role in securing water for competing demands; however the quest for a water-secure world is a joint responsibility and can only be achieved through water cooperation at local, national, regional and global level and through partnerships with a multitude of stakeholders ranging from the citizens to policy makers to the private sector.

- Water-related capacity development, both at the individual and institutional levels, will be fundamental in the realization and implementation of the Post-2015 Development Agenda.

- Innovative, inclusive and sustainable financing mechanisms for water need to be implemented.

The way forward

On the eve of the consultations on the Post-2015 Development Agenda, the world must first achieve and then build on and go beyond the MDGs and existing commitments. The new agenda needs to encourage an integrated approach expressed in universally agreed goals which are simple, measurable and able to focus

policies, resources and all partners on delivering concrete outcomes that improve people's lives and protect their future and environment.

There must be ambitious goals and targets which take account of unfinished business and the emerging and future challenges. These goals must inspire and create incentives for a change in behaviour to manage and allocate resources in a sustainable way whose benefits reach every person without discrimination.

- The world must aim for universal access to safe and sustainable water, sanitation and hygiene services.
- Ground and surface water should be monitored and governed sustainably and in an integrated manner to satisfy human needs while respecting ecosystem requirements.
- All used water and wastewater should be collected and treated before it is returned to nature and managed under principles of pollution prevention and reuse.

Based on the overwhelming participation of stakeholders during the Thematic Consultation on Water, and our own deliberations, we, the High Level Forum, welcome the advance summary of the consultation's synthesis report and recognise that water is a prerequisite in the future development framework in order to attain vital economic, equity, employment, health, educational, agriculture/food and energy benefits and for maintaining ecosystems services and supporting resilience to climate change.

We commit ourselves to bringing these messages to the attention of relevant fora, such as the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda.

Notes

1. Week 1 WASH consultation content received nearly 2,000 page views over the period for contributions, with just over 1,000 of these being unique. The content achieved a 12% interaction rate with 122 poll or comment interactions produced from 1,059 unique page views. The consultation content was highly relevant, with a bounce rate of only 7% as compared with a wider platform average of 18%. In addition, users were highly engaged in Week 1 consultation content with an average 2min 12 second visit duration, as compared with 2min 06 seconds elsewhere on the platform.
2. http://www.worldwewant2015.org/file/301069/download/326578
3. Anonymous, Fri, February 1, 2013 at 01.08 am
4. Jose Gesti Tue, January 22, 2013 at 04.57 pm
5. Vincent Casey, Fri, January 18, 2013 at 09.11 am
6. Waled Mahmud, MDS, M.Com.Mgt. PGD. Mgt., Tue, January 22, 2013 at 08.17 am
7. Waled Mahmud, MDS, M.Com.Mgt. PGD. Mgt.
   Thu, January 31, 2013 at 12.52 pm
8. http://www.wateraid.org/international/what_we_do/how_we_work/equity_and_inclusion/8349.asp
9. http://www.wssinfo.org/fileadmin/user_upload/resources/JMP-END-WG-Final-Report-20120821.pdf
10. https://wedc-knowledge.lboro.ac.uk/collections/equity-inclusion/
11. Louisa Gosling, WaterAid, Thu, January 17, 2013 at 04.06 pm
12. The Joint Monitoring Programme (JMP) working groups Drinking water refers to water used by humans for drinking, cooking, food preparation and personal hygiene. Sanitation refers to the provision of facilities and services for safe disposal of human urine and faeces. Hygiene refers to a particular focus on facilities for handwashing and for menstrual hygiene management (MHM).
13. Gladys Nagawa (UWASNET/FAN/EWP), Tue, January 15, 2013 at 04.01 pm
14. Anonymous Mon, January 14, 2013 at 10.25 pm
15. Joe Turner Tue, January 15, 2013 at 04.29 pm
16. Pankaj Tue, January 15, 2013 at 12.39 pm
17. See framing paper for week
18. Anonymous Mon, January 14, 2013 at 10.25 pm
19. It is not unusual to find that a national monitoring system considers a school to be providing adequate access to sanitation, even though 300 children are using latrine hole. FRAMING position paper for week
20. 80% of all infection is transmitted by hand and that children washing their hands 4 times a day in the school environment can reduce gastro by 50% and the flu by 24% we should be using the first line of defence aginst all viruses and germs which is washing with soap and water.
21. Children's Global Hygiene Foundation Sun, February 3, 2013 at 06.27 am
22. Mamita Bora Thakkar Sat, January 26, 2013 at 05.18 pm; "Business as usual will not work. We need rapid acceleration of efforts at all levels. We need better monitoring that moves beyond numbers for "reporting" purpose, to measuring and tracking real progress. In India despite the Supreme Court order to complete WASH targets in all schools of the country by Mach 2013, yet only 79% of schools have girl's toilet, and more

importantly only 48% of these have 'useable' girls' toilets (Annual Status of Education Report 2012). This gap in functinality vs coverage mean tremendous loss of capital cost investment and any hope for sustained coverage."

23. Kawsar, 10, a student of Class IV of Bandaikhara Government Primary School at Bagmara Rajshahi , contributed by Mahfuj Wed, February 6, 2013 at 06.29 pm
24. Anonymous Thu, January 31, 2013 at 02.58 am
25. In terms of health care of preventable diseases such as ARI, Diarrhoea, skin diseases, trachoma, conjunctivities etc…from Kencho Namgyal Mon, January 28, 2013 at 12.28 pm
26. Greg Keast Sat, January 26, 2013 at 06.58 pm
27. Nanakkumar Santdasani Sat, January 26, 2013 at 06.33 pm
28. Michael Forson Thu, January 24, 2013 at 05.04 pm
29. Framing paper…gender and WASH
30. Anonymous Sun, January 27, 2013 at 05.43 am; Maintenance of school toilets have never been considered a high priority of the education sector and water supply and sanitation department often feel that their job is restricted till to the povision of hardware facilities. Education and water supply and sanitaion department can no longer work in silos. Study in Maharashtra informs that nearly 60% girls of menstruating age do not attend school during menstrual days in the absence of lack of privacy to change
31. Diana Iskreva Mon, February 11, 2013 at 04.40 pm
32. Abdulai Wed, January 23, 2013 at 01.22 pm
33. Murat Sahin Tue, January 22, 2013 at 01.54 pm: Across Nepal, WaterAid and its partners are working with schools to provide gender-separated toilets for girls and boys. In a menstrual hygiene management study conducted in 2009, more than half of the girls reported being absent from school at some time during menstruation. The main reason cited was the lack of privacy for cleaning and washing, mentioned by 41% of respondents. Sabina Roka, a 15-year-old student at Simle School, previously had to use the boys' toilets because there were no separate toilets for girls. She explains that during menstruation: "We didn't have anywhere to go and change our pads. After each lesson there is a bell and then we have to go to the next class. If you aren't there in time you miss the class and so when we had our period we often had to attend one class and then miss the next." At Sabina's school, and others, WaterAid has built gender-sensitive toilets and provided training in menstrual hygiene management for students and staff. "We really struggled before and it's hard to compare then and now as there is so much improvement," Sabina reported. "We feel very happy that we don't need to miss classes anymore and that we can carry on with our studies."
34. Kazumi Inden: In Sierra Leone the recently conducted baseline study for rural WASH in Schools Programme shows correlations between girls' absenteeism and lack of school latrine. This trend is greater among girls of menstural age (14-19 years old) and with lack of segregated latrine by sex.
Mon, January 28, 2013 at 10.58 pm
35. Nagendra Sun, January 27, 2013 at 12.24 pm
36. Kencho Namgyal Mon, January 28, 2013 at 12.12 pm
37. Diana Iskreva Mon, February 11, 2013 at 05.06 pm
38. Gregor von Medeazza Wed, January 23, 2013 at 03.07 pm
39. Marco Daniel Fri, February 1, 2013 at 08.49 am
40. María Inés Sarmiento Tue, January 29, 2013 at 10.30 am
41. Arnold Cole Tue, January 29, 2013 at 12.24 pm
42. Parag Mendke Thu, January 24, 2013 at 07.04 am

43. Ramati Jalloh Thu, January 31, 2013 at 02.05 pm
44. Getachew Hailemichael Thu, January 31, 2013 at 05.20 am
45. Jane Bevan, Mon, January 28, 2013 at 01.50 pm
46. Michael Frederiksen Wed, January 23, 2013 at 06.23 pm "Policy makers need to visit the field, speak with those affected, see the need for themselves and then act with purpose and passion to build the infrastructure necessary. The gap between the halls of government and the reality on the ground is too wide; the willingness to perceive a desperate situation is too narrow. The health and well being of people without a voice is surely at risk".
47. Kabuka Tue, January 29, 2013 at 01.23 am
48. Goutam Mahato Thu, January 24, 2013 at 03.05 pm
49. Abdulai KaiKai Sun, January 27, 2013 at 11.26 am
50. Kazumi Inden Mon, January 28, 2013 at 11.24 pm : First, of course SLTS triggers villagers in catchment communities of the school on sanitation and hygiene issues both at home and in school. Hygiene promotion by children is usually shocking for parents at the first sight, which leads to deeper understanding and trust on schoolchildren later on. Second, not only many parents take actions to improve their sanitation and hygiene but also they realize the importance of schooling for their own children (coz they experience that children can bring important messages from school to home). As parents increase their recognition of school, they are more likely engaged in school management to create better learning environment with Child Friendly and funcational WASH facilities. Last but not least, hygiene promotion can be fun and entertaining. Children can grow their pride and responsibility to continue participating in hygiene promotion without much burden. This is one of the beauties to engage a school as a permanent structure in a community. Sustainability of activity implementation is more likely ensured.
51. Framing paper
52. Examples through WFP, Habitat and elsewhere…
53. Cite how much has been spent on WASH with little to show for it…
54. The OECD has developed aMulti-level Governance Framework that helps identify these obstacles critical to the implementation of water policies. They are:
    - a policy gap: the unclear allocation of roles and responsibilities;
    - an administrative gap: the mismatch between hydrological and administrative boundaries;
    - an information gap: asymmetries of information between levels of government;
    - a capacity gap: a lack of capacity of local actors;
    - a funding gap: insufficient r or unstable resources to effectively implement water policies an sub-national level:
    - an objective gap: competition between government agencies;
    - an accountability gap: a lack of citizen concern
55. Alison Macintyre Thu, January 31, 2013 at 04.59 am
56. Martin Regelsberger Wed, January 30, 2013 at 04.11 pm
57. Philippe Lacour-Gayet Tue, January 29, 2013 at 05.48 am
58. Rick Johnston Mon, January 28, 2013 at 01.04 pm
59. Egbert HJ Schroten Kerstin Danert (for Charles in Nigeria) Mon, February 4, 2013 at 12.45 pm
60. Dennis Alioni Fri, February 1, 2013 at 07.54 am
61. Vaal Benjamin Thu, January 31, 2013 at 08.15 am
62. Luke Lovell Thu, January 31, 2013 at 05.57 am
63. Dr Satya Prakash Mehra Mon, January 28, 2013 at 09.45 am

64. Sophie Mon, February 4, 2013 at 02.35 am
65. Summary input on consultation week
66. Martin Regelsberger Wed, January 30, 2013 at 04.18 pm
67. Depinder Kapur Sat, February 2, 2013 at 06.00 pm
68. Framing paper for week…
69. Marc Dettmann Wed, February 6, 2013 at 09.48 pm
70. Declan Hearne Fri, February 8, 2013 at 01.55 am
71. Olivier Vieu Thu, February 7, 2013 at 01.10 pm
72. Sarah Davidson, TNC Fri, February 8, 2013 at 05.18 pm
73. Flavia loures. WWF Tue, February 19, 2013 at 02.20 am talking about… Freshwater Drinking Systems in Rio Chiquito (Polochic River basin) Guatemala Remembering her first arrival in Río Chiquito at age 10, Santos Choc recalls: "There was no water, and throughout my life we never had running water. Only now, 43 years later we have been able to get water in each of our homes and, more importantly, we will not get sick because the water is treated. The project also brought reforestation activities and a honey project that has now proudly produced 350 Liters of honey both for consumption and sale."
74. Marc Dettmann Wed, February 6, 2013 at 10.07 pm
75. Flavia Loures, WWF, Wed, February 6, 2013 at 09.59 pm
76. Marc Dettmann Wed, February 6, 2013 at 09.28 pm
77. Anonymous Fri, February 8, 2013 at 04.41 pm
78. Marc Dettmann Tue, February 5, 2013 at 02.25 pm
79. Nancy Balfour Tue, February 12, 2013 at 06.54 am
80. Bethlehem Mengistu Sun, February 17, 2013 at 07.50 pm
81. Abdul Nashiru, WaterAid Regional Advocacy Manager West Africa. Sun, February 17, 2013 at 07.42 pm
82. Khumbu Zuma Sun, February 17, 2013 at 11.09 am
83. Betty Aliba Fri, February 15, 2013 at 01.56 pm
84. Diana Iskreva Mon, February 11, 2013 at 04.04 pm
85. "http://www.shareresearch.org/LocalResources/SHARE_sanitation_markets_pathfinder_Dec_2012.pdf" http://www.shareresearch.org/LocalResources/SHARE_sanitation_markets_pathfinder_Dec_2012.pdf Governments don't know or appreciate how much sanitation improves the health, water, environment and tourism sectors, or how simplified sewerage offers a cost-effective alternative. The paper examines three main market segments alongside the sanitation value chain, starting with markets for providing 'access' to sanitation, markets for transport and treatment activities and finally, markets for reuse services. The paper draws on the Economics of Sanitation Initiative (ESI) analysis of economic impacts of sanitation such as time and health gains from latrine access, water resource protection , increase in tourism activity and benefits from waste re-use.
86. Abdul Nashiru, WaterAid Regional Advocacy Manager West Africa. Sun, February 17, 2013 at 07.53 pm
87. Mustafa Talpur Fri, February 15, 2013 at 05.07 am
88. Cecilia Tue, February 12, 2013 at 11.40 pm
89. Khumbu Zuma Sun, February 17, 2013 at 05.16 pm
90. Mustafa Talpur Fri, February 15, 2013 at 05.13 am
91. Diana Iskreva Mon, February 11, 2013 at 04.27 pm

92. James Goodhew
Tue, February 12, 2013 at 07.50 pm

93. "http://www.wsp.org/sites/wsp.org/files/publications/WSP-Tremolet-Results-Based-Financing.pdf" http://www.wsp.org/sites/wsp.org/files/publications/WSP-Tremolet-Results-Based-Financing.pdf

94. "http://www.shareresearch.org/LocalResources/EUWI_and_SHARE_report_on_small_scale_finance_in_WATSAN_April_2012.pdf" http://www.shareresearch.org/LocalResources/EUWI_and_SHARE_report_on_small_scale_finance_in_WATSAN_April_2012.pdf
WSP and the SHARE Research Consortium co-published a working paper entitled 'Identifying the potential for results-based financing for sanitation'(http://www.wsp.org/sites/wsp.org/files/publications/WSP-Tremolet-Results-Based-Financing.pdf).The paper identifies practical ideas for advancing the use of innovative financing mechanisms focused on results and performance, with a view to supporting the delivery of sustainable sanitation services. RBF instruments are relatively new in the sanitation sector but appear to have the potential to improve the sanitation sector's focus on results and performance verification. The paper finds that, going forward, it will therefore be necessary to invest great care in their design and to evaluate the costs and benefits of such schemes, particularly when compared to more traditional forms of financing. Ultimately, the success of RBF instruments depends on behaviour change also at the sector level. A multi-donor trust fund, such as that established for other health-related MDGs, could be established for expanding the use of RBF for sanitation. Strong performance verification methods and empirical evidence would be needed to support the use of RBF instruments for improving sanitation.
Households in developing countries invest more than donors or governments in water and sanitation (WATSAN) services, but these investments are often 'sub-optimal', because of limited access to finance. To investigate this, the SHARE Research Consortium and EUWI published a paper entitled 'Small-scale finance for water and sanitation'(http://www.shareresearch.org/LocalResources/EUWI_and_SHARE_report_on_small_scale_finance_in_WATSAN_April_2012.pdf). Experience shows that supporting MFIs and commercial banks to expand their services into WATSAN can be more effective than attempting to impart business and financial management skills to existing WATSAN NGOs. Building the capacity of financial institutions to get involved in providing WATSAN products is critical, as financial institutions have a certain level of rigour and can be better trusted to collect payments. Supporting SSF is only one instrument among many others and it is not a panacea.

95. Pp. 44 Water Security…Thirsty Energy

96. WRI report…

97. Pacific Institute, Energy Down the Drain

98. This also has a compound effect on climate change mitigation, due to burning carbon, and adaptation, due to water extraction. In short, one cannot address climate change without simultaneously recognizing the water and energy mix, especially where resources are unevenly distributed.

99. Framing paper…

100. SOURCE

101. From Consultation…

102. Daniel Valensuela, Thu, January 31, 2013 at 08.20 am

103. Jens Berggren, Thu, January 17, 2013 at 02.58 pm

104. Iulia Paperny, Thu, January 17, 2013 at 10.07 am

105. Andreas Lindstrom, Fri, January 18, 2013 at 12.46 pm

106. The World Commission on Dams. Information available at: http://www.internationalrivers.org/campaigns/the-world-commission-on-dams (Last visited 18 Feb 2013).

107. Blanca Tamara Solís González, Mon, January 21, 2013 at 04.45 pm

108. Iulia Paperny Thu, January 17, 2013 at 10.38 am

109. Rick, Tue, January 15, 2013 at 08.46 am
110. Malena Lucen, Tue, January 29, 2013 at 03.11 pm
111. Prakash Gupte, Thu, January 17, 2013 at 05.56 pm
112. Iulia Paperny Thu, January 17, 2013 at 10.26 am
113. The Future We Want, adopted at Rio+20,
114. Framing paper water and Climate… Water is the fundamental link between the climate system, human society and the environment, and is the primary medium through which climate change influences Earth's ecosystem and thus the livelihood and well-being of societies.
115. Copenhagen's missing ingredient: water "http://articles.latimes.com/2009/nov/30/opinion/la-oe-workman30-2009nov30" http://articles.latimes.com/2009/nov/30/opinion/la-oe-workman30-2009nov30
116. A 3-minute video message by Dr. Harry Lins, a hydrologist with over 40 years research and programme management experience on topics related to climate and water was displayed throughout the week and was viewed over 168 times. The purpose of the video message was to trigger discussions among the audience. In his message, Dr. Lins shared some insight on water-related risks associated with climatic variability and change, and stressed that understanding changes in the distribution and nature of hydrologic hazards associated with climatic variability and change is essential in planning for and adapting to future climatic conditions. Dr. Lins also mentioned the need for societies to adapt to a very wide range of hazards. He also mentioned two critical tools to human's ability to minimize the adverse impacts of water-related risks:
Integrated Water Resources Management and Adaptive Water Management for which the need for comprehensive long-term hydrological and meteorological monitoring networks are essential.
117. See poll for this week: Most water resources managers do not seem to consider climate change information in their long-term planning. What do you think is the reason? _e question poll received a total of 80 votes, and the six possible answers were subdivided as follows: 35% of the poll participants answered that the reason was because the water managers feel there is still too much uncertainty to justify concrete actions; 28,75% answered it is because they are aware of the impacts but they don't know what to do; 15% answered it is because they ignore the potential impacts of climate change on water resources; 12,5% chose to answer none of the above; 7,5% answered it is because they think the impact of Climate Change on water resources will not be signi_cant; and _nally 1,25% answered it is because they don't believe in Climate Change.
118. Svetlana Dolgikh Fri, January 25, 2013 at 05.22 am
119. Anonymous Thu, January 24, 2013 at 08.16 pm
120. Diana Iskreva Mon, February 11, 2013 at 05.41 pm
121. Zandaryaa, Sarantuyaa Mon, January 28, 2013 at 06.38 pm
122. Pranav Pokhrel Sat, January 26, 2013 at 04.51 am
123. Henk van Schaik Thu, January 24, 2013 at 01.40 pm
124. Drago Tue, January 22, 2013 at 05.06 pm
125. Henk van Schaik Thu, January 24, 2013 at 01.42 pm
126. pranav pokhrel Thu, January 24, 2013 at 08.10 pm
127. http://www.d4wcc.org.mx/images/documentos/Catalogo/wandccmex2007-2012.pdf
128. Colin Herron Thu, January 31, 2013 at 06.21 pm
129. Parasmanibhandari Fri, January 25, 2013 at 06.40 am
130. Phil Riddell Thu, January 31, 2013 at 01.01 pm
131. IUCN Water Wed, January 23, 2013 at 11.48 am

132. Colin Herron Thu, January 31, 2013 at 06.14 pm
133. "http://www.d4wcc.org.mx/images/documentos/Catalogo/wandccmex2007-2012.pdf" http://www.d4wcc.org.mx/images/documentos/Catalogo/wandccmex2007-2012.pdf that cross-references social vulnerability; precipitation and temperature flux; rainy season and tropical cyclones; surface water; irrigation; and water quality
134. pranav pokhrel Thu, January 24, 2013 at 08.42 pm
135. pranav pokhrel Thu, January 24, 2013 at 04.25 am
136. Laurra Olmsted Mon, February 11, 2013 at 06.37 pm
137. Colin Herron Thu, January 31, 2013 at 05.56 pm
138. Julie Watson Wed, January 30, 2013 at 06.37 pm
139. Zandaryaa, Sarantuyaa Mon, January 28, 2013 at 06.12 pm
140. Watershed management saved US$5b in capital costs for New York City and US$300m annually; storage of Beijing's drinking water in Miyun watershed forests is worth US$1.9b annually. The Nakivumbo swamp provides water purification for Kampala, Uganda worth US$2m per year compared to costs of US$235,000. Tonle Sap lake and Mekong river fisheries supply 70-75% of people's animal protein intake in Cambodia, are worth up to US $500m annually and employ 2m people. Returns on investment in soil conservation has significantly extended the life expectancy of the Itaipu dam (Brazil, Paraguay); watershed management has been worth US$15-40m for the Paute hydroelectric scheme (Ecuador). Watershed restoration on the Loess Plateau (China) has eliminated the need for drought-related emergency food aid to a region that is home to 50m people.
141. IUCN framing paper.
142. Christopher Dunn Wed, January 30, 2013 at 09.18 pm
143. Jerry Thu, February 7, 2013 at 12.50 pm
144. Charly Mon, February 4, 2013 at 12.15 pm
145. Sarah Davidson, TNC, Sat, February 2, 2013 at 05.54 pm
146. Patrick MacQuarrie Tue, January 29, 2013 at 01.30 pm
147. Heide Jekel Tue, January 29, 2013 at 09.41 am
148. Krischan Tue, January 29, 2013 at 12.23 pm
149. domitile vallee Sun, February 3, 2013 at 02.31 pm
150. Michael Forson Wed, January 30, 2013 at 08.19 pm
151. Linda Sheehan, Earth Law Center, Mon, January 28, 2013 at 09.25 pm
152. "mailto:ulrickmsami@yahoo.com" ulrickmsami@yahoo.com Mon, February 4, 2013 at 07.15 am
153. http://www.iucn.org/about/work/programmes/water/?11840/Urgent-need-to-focus-on-wetlands-as-natural-solutions-to-global-water-crisis
154. Heide Jekel Tue, January 29, 2013 at 09.48 am
155. Dylan B Wed, January 30, 2013 at 09.45 am
156. Tarik Hassan Thu, January 31, 2013 at 01.01 pm
157. Nick Davidson Thu, January 31, 2013 at 02.23 pm
158. Krischan Tue, January 29, 2013 at 12.15 pm
159. Julie Watson Wed, January 30, 2013 at 05.40 pm
160. Ele Jan Wed, January 30, 2013 at 06.01 am

161. Joakim Harlin Tue, January 29, 2013 at 11.47 am
162. Framing Paper
163. See Field to Fork…SIWI/IWMI
164. Ibid
165. Sylvand Kamugisha Tue, February 5, 2013 at 09.01 am
166. Nick Fri, February 8, 2013 at 08.54 am
167. domitile vallee Mon, February 4, 2013 at 04.47 pm
168. J. A. Sagardoy Thu, February 7, 2013 at 05.51 pm
169. "mailto:ulrickmsami@yahoo.com" ulrickmsami@yahoo.com Mon, February 11, 2013 at 08.44 am
170. Dr. Stanley Weeraratna, Sri Lanka Fri, February 8, 2013 at 12.08 pm
171. David KING Sat, February 9, 2013 at 11.46 am
172. Michael Mon, February 4, 2013 at 05.43 pm
173. Charly Mon, February 4, 2013 at 12.08 pm
174. Danilo Salas Mon, February 4, 2013 at 04.32 pm
175. Anonymous Mon, February 4, 2013 at 06.13 pm
176. Anna-Katharina Deinhard Thu, February 7, 2013 at 11.11 am
177. "mailto:ulrickmsami@yahoo.com" ulrickmsami@yahoo.com Mon, February 11, 2013 at 10.01 am
178. domitile vallee Thu, February 7, 2013 at 04.50 pm
179. KN Sharma Thu, February 7, 2013 at 07.44 am
180. Dr. Stanley Weeraratna, Sri Lanka Fri, February 8, 2013 at 10.20 am
181. Aaron Wolf, Claudia Sadoff, in Water Security.
182. Water Security definition, UN Water
183. Water Management in Islam, see also Aaron Wolf.
184. Workman, Heart of Dryness.
185. See Turton, et al., Water Security
186. Ibid.
187. Sadoff, David Grey, World Bank.
188. Sonja Koeppel Sun, February 17, 2013 at 05.54 pm
189. Heide Jekel Tue, February 12, 2013 at 08.30 pm
190. Serhiy Mon, February 11, 2013 at 04.00 pm
191. Heide Jekel Tue, February 12, 2013 at 08.45 pm
192. Alexander Wed, February 13, 2013 at 09.02 am
193. Water for Peace Summary Document,/Anna Savinova from Sun, February 17, 2013 at 08.57 pm
194. Sonja Koeppel Sun, February 17, 2013 at 06.03 pm
195. Anna Savinova Sun, February 17, 2013 at 08.53 pm
196. Serhiy Mon, February 11, 2013 at 04.06 pm

197. Adrian Sym Mon, February 11, 2013 at 11.09 am
198. Mogens Dyhr-Nielsen Fri, February 15, 2013 at 09.52 am
199. Cecy Oliveira Thu, February 14, 2013 at 08.55 am
200. Ocero PR Wed, February 13, 2013 at 07.51 am
201. Upendra Wed, February 13, 2013 at 03.14 am
202. Dr. Raul Pacheco-Vega Tue, February 12, 2013 at 03.08 pm
203. SP Tue, February 12, 2013 at 07.45 am
204. Bambang Priyambodo Mon, February 11, 2013 at 02.28 pm
205. roger g rivero b Wed, February 13, 2013 at 06.48 pm
206. Andrea Bernal Mon, February 11, 2013 at 07.13 pm
207. Stanley Weera-ratna Wed, February 13, 2013 at 03.56 pm
208. Alan Hall Thu, February 14, 2013 at 11.59 am
209. Lyliane Mon, February 11, 2013 at 12.49 pm
210. Alan Hall Wed, February 13, 2013 at 01.01 pm
211. Stanley Weera-ratna Wed, February 13, 2013 at 03.59 pm
212. Ms. Munini Tefera from UNDP Ethiopia Tue, February 12, 2013 at 12.58 pm
213. Basil Fernandez Mon, February 11, 2013 at 03.59 pm
214. Elisabeth TOSSOU Tue, February 12, 2013 at 07.55 am
215. Gareth James Lloyd, Wed, February 13, 2013 at 02.28 pm
216. Andrea Bernal Mon, February 11, 2013 at 07.25 pm
217. Laurra Olmsted Mon, February 11, 2013 at 06.12 pm
218. This week's discussion was led by UN-Habitat
219. Since the 19th century, cholera has been successfully controlled in the United States and Northern Europe by developing and maintaining effective water and sewage systems. More recently, improved on-site sanitation systems have been advocated for, as well as curative approaches and effective vaccines. Yet, large populations, particularly children, continue to suffer from diarrheal diseases, and the responsible authorities are seemly unable to respond with an effective approach or prevent the problem from happening in the first place.
220. "The issue of wastewater management is considered by politicians to be past their political time for them to be concerned with it and they believe they cannot win votes on it" – The Prince of Orange.
221. Natasha Fri, January 25, 2013 at 08.31 am
222. Iulia Paperny Thu, January 17, 2013 at 10.44 am
223. According to wastewater discussion moderator
224. Bob Taylor Mon, February 11, 2013 at 04.38 pm
225. Joao Barata
226. "The approach to managing wastewater differs in cities across the globe, and cover a wider range of interventions; but lack of appropriate levels of service has led to many impacts on public health." -- Wastewater Discussion Moderator, Wed, January 16, 2013 at 02.09 pm
227. "Is there evidence that low levels of sewage treatment have a significant effect on public health IF basic sanitation access is available AND surface water is being treated properly? I don't believe the experience supports

the claim that poor domestic wastewater (not industrial wastewater) treatment is a major public health threat."-- Really? (Anonymous) Tue, January 15, 2013 at 01.46 pm

228. Video message The Prince of Orange, Netherlands. It is "past their political time"
229. Robert Goodwin, Fri, January 18, 2013 at 02.34 pm
230. Krischan Tue, January 15, 2013 at 09.42 am
231. JUAN PABLO MALLARINO, Thu, January 17, 2013 at 08.47 pm
232. CLAUDIA Tue, January 15, 2013 at 08.11 pm
233. according to UNDESA
234. Jose Cordovilla, Sun, January 20, 2013 at 12.47 pm
235. Nripendra Sarma, Guwahati, Assam, India , Fri, January 18, 2013 at 05.44 pm
236. XM, Fri, January 18, 2013 at 04.47 pm
237. Robert Goodwin, Fri, January 18, 2013 at 02.42 pm
238. Krischan, Tue, January 15, 2013 at 09.36 am
239. This week's consultation was led by UNEP
240. According to the Sick Water? report (UNEP & UN-Habitat, 2010), up
241. Waled Mahmud, MDS, M.Com.Mgt. PGD. Mgt. Tue, January 22, 2013 at 07.12 am
242. Matthew Verbyla Fri, January 25, 2013 at 03.21 pm
243. Nora Thu, January 24, 2013 at 06.25 am
244. Carsten Wentink Wed, January 23, 2013 at 01.48 pm
245. Giovanni De Feo Thu, January 24, 2013 at 07.47 am
246. Iulia Paperny Thu, January 24, 2013 at 08.26 am
247. Davis Rweyemamu Thu, January 31, 2013 at 12.13 pm
248. Krischan Mon, January 21, 2013 at 09.08 am
249. Carolina Beatriz Venegas Martinez Sun, February 17, 2013 at 04.16 pm
250. Davis Rweyemam Thu, January 31, 2013 at 01.07 pm
251. Carsten Wentink Wed, January 23, 2013 at 01.23 pm
252. Davis Rweyemamu Thu, January 31, 2013 at 02.00 pm
253. With 994 unique page views and 54 coments received, discussion was led by International Water Association
254. Joppe Cramwinckel of the World Business Council for Sustainable Development, Valentine Lazarova of Suez Environment, Graham Alabaster of UN-Habitat and Javier Mateo-Sagasta Davila of FAO. The discussion was moderated by Dr. Jonathan Parkinson of the International Water Association
255. Professor Jaeweon Cho - Gwangju Institute of Science and Technology, South Korea, Tue, February 5, 2013 at 12.09 am
256. Dr. Roumiana Hranova - University of Botswana Tue, February 5, 2013 at 12.26 am
257. Pay DRECHSEL Tue, February 5, 2013 at 05.22 am
258. Davis Rweyemamu Tue, February 5, 2013 at 02.56 pm
259. Manzoor Qadir Thu, January 31, 2013 at 04.52 pm

260. Krischan Tue, January 29, 2013 at 12.40 pm
261. Zenrainman. Mon, February 4, 2013 at 05.44 pm
262. Genoher Louis Sala, Head Applied Research / Technical Service Reuse Mon, February 4, 2013 at 09.57 pm
263. Dr. Roumiana Hranova - University of Botswana Tue, February 5, 2013 at 12.32 am
264. Professor Jaeweon Cho - Gwangju Institute of Science and Technology, South Korea Tue, February 5, 2013 at 12.11 am
265. Genoher Louis Sala, Head Applied Research / Technical Service Reuse Mon, February 4, 2013 at 10.00 pm
266. Lis Mullin Bernhardt Wed, January 30, 2013 at 02.33 pm
267. Dr. Roumiana Hranova - University of Botswana Tue, February 5, 2013 at 12.36 am
268. Pay DRECHSEL Tue, January 29, 2013 at 03.04 pm
269. Genoher Louis Sala, Head Applied Research / Technical Service Reuse Mon, February 4, 2013 at 10.01 pm
270. Thomas Van Waeyenberge Wed, January 30, 2013 at 04.21 pm
271. Justin Mon, February 11, 2013 at 04.13 am
272. Thomas Van Waeyenberge Mon, January 28, 2013 at 03.08 pm
273. Krischan Tue, January 29, 2013 at 12.35 pm
274. Dr. Rafael Mujeriego, Professor of Environmental Engineering (Retired), School of Civil Engineering, Universidad Politécnica de Cataluña Thu, February 7, 2013 at 09.20 pm
275. Professor Jaeweon Cho - Gwangju Institute of Science and Technology, South KoreaTue, February 5, 2013 at 12.12 am
276. Dr. Roumiana Hranova - University of Botswana Tue, February 5, 2013 at 12.33 am
277. Pay DRECHSEL Mon, January 28, 2013 at 11.08 am
278. Manzoor Qadir Wed, January 30, 2013 at 02.00 pm
279. Raji Lukkoor Thu, January 31, 2013 at 05.38 pm
280. Discussion Led by AquaFed
281. 19 people agreed
282. Dr. Denis Byamukama Fri, February 8, 2013 at 11.02 am
283. Caroline Mairesse Thu, February 7, 2013 at 09.13 am
284. Pay Drechsel
285. Jerome Kemper Wed, February 6, 2013 at 06.20 am
286. Anonymous Sat, February 9, 2013 at 07.17 pm
287. Dave A. Wed, February 6, 2013 at 10.27 am
288. Pedro Garcia Wed, February 6, 2013 at 04.21 pm
289. Arnaud Mon, February 4, 2013 at 11.57 am
290. 19 respondents agreed
291. DD…
292. Kimbowa Richard Tue, February 5, 2013 at 11.39 am
293. Dave A. Wed, February 6, 2013 at 10.37 am

294. CIBPA Wed, February 6, 2013 at 09.55 am
295. ChrisZurbrugg Mon, February 4, 2013 at 07.15 pm
296. Dr. Riant Nugroho, Mon, February 4, 2013 at 02.49 pm
297. Dave A., Wed, February 6, 2013 at 10.47 am
298. Kimbowa Richard
299. Consultation led by Organization for Economic Cooperation and Development (OECD)
300. jerson kelman Sat, February 16, 2013 at 10.06 pm
301. Carolina Beatriz Venegas Martinez Sun, February 17, 2013 at 04.33 pm
302. Gérard Mon, February 11, 2013 at 08.40 pm
303. GDO Mon, February 11, 2013 at 08.53 pm
304. M Bruce Beck Thu, February 14, 2013 at 05.30 pm
305. Insert Source from discussion…
306. Gerard Payen Mon, February 18, 2013 at 07.29 am