POLICY BRIEF

March 2015
Number 31

Placing Water at the Core of the Sustainable Development Goals (SDGs): Why an Integrated Perspective is Needed

Key Messages

- Sharply escalating demands, worsening pollution, and extreme climatic events jeopardise the security of the world's water systems. An integrated perspective that positions water at the core of the Sustainable Development Goals (SDGs) can help make these systems more secure.
- Failure to operationalise an integrated perspective could conversely undermine several key sustainability objectives. The areas of food, health, energy, and environment are most at risk.
- Integrated Water Resources Management (IWRM) has already made some progress in many countries, but making it fully operational requires actively pursuing policies and practices that leverage synergies between water and other sustainability objectives by using integrated approaches. In that sense, integrated approaches, both within and between sectors, should be one of the cornerstones of the SDGs.
- Which synergies countries pursue will vary depending on the importance they attach to 1) improved access, 2) enhanced efficiency, and 3) systems transformation.
- Governance arrangements that engage multiple stakeholders at multiple levels will become more critical as countries move from the first to the third set of the above priorities.
- Countries should draft SDGs roadmaps with an integrated perspective as a central pillar, and set nationally appropriate numerical targets to guide implementation.

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I Water goal in the context of looming water security crisis

Water is fundamental for the production of food, the preservation of ecosystems, the sustenance of communities, and the survival of life itself. By the same token, growing water insecurity threatens the safe operating space of human society (Rockström, et al. 2009). At present, many of the world's water systems are heading toward water security crises.[1] The trends in Table 1 underscore that a global water security crisis is indeed imminent. Both the magnitude and immediacy of this threat are highlighted in the 2014 Global Risk Report that holds a water crisis as one of the top five global risks (WEF 2014).

Table 1 Indications of a water security crisis

Areas	Crisis situation
Water and sanitation	As of 2012, 748 million people lacked an access to improved source of drinking-water, and 2.5 billion people did not use improved sanitation and 1 billion practiced open defecation (WHO/UNICEF 2014).
Water for food	70% of the blue water withdrawals at global level go to irrigation. An additional billion tonne of cereals and 200 million tonnes of meat will need to be produced annually by 2050 to satisfy growing food demand for projected 9 billion population. Production of each kilogram of cereal requires 1,500 litres of water and meat production requires 8-10 times more water than cereal.
Water for energy and industry	15% of the world's total water withdrawals in 2010—or about 583 billion m^3—were used for energy production. Roughly 70% of industrial water use is for energy production. Global water withdrawals are projected to increase by some 55% through 2050 due to growing demands from manufacturing (400%), thermal electricity generation (140%) and domestic use (130%).
Water scarcity	Over 1.4 billion people currently live in river basins where the use of water exceeds minimum recharge levels, leading to the desiccation of rivers and depletion of groundwater. By 2025, 1.8 billion people will be living in countries or regions with absolute water scarcity (<500 m^3/capita/year), and two-thirds of the world's population could be living under water stressed (<1,700 m^3/capita/year) conditions.
Water-Food-Energy Nexus	Demand for water, food and energy is expected to rise by 30-50% by 2030. Any strategies to deal with this demand by ignoring interconnections between these areas risks serious unintended consequences (WEF 2011).
Water pollution	Up to 90% of wastewater in developing countries flows untreated into water bodies. 80% of Asia's Rivers are in poor health threatening US$ 1.75 trillion in ecosystem services per year (ADB/APWF 2013).
Water related disasters	The frequency and intensity of water-related hazards is generally rising. By 2050 the number of people vulnerable to flood disaster is expected to increase to 2 billion.
Climate impacts	Climate change could force an additional 1.8 billion people to live in a water scarce environment by 2080. Rain-dependent agriculture could be down by 50 percent by 2020 due to climate change impacts.

Source: UN-Water Statistics (http://www.unwater.org/statisticscitedon2015January10), unless specified

Achieving water security is an enormous challenge due to the size and diversity of water needs. These needs include offering sufficient supplies to over 740 million people with inadequate access to safe drinking water and over two billion without sanitation; doubling food production for over nine billion people by 2050; meeting burgeoning demands from fast-growing numbers of city dwellers; and fuelling energy generation and economic development for the foreseeable future. These needs must be met, moreover, without jeopardising flows required to maintain healthy ecosystems, while remaining resilient in the face of a changing climate. In fact, these three trends—sharply escalating water demand, worsening pollution and the increasing incidence of extreme climatic events—are making it progressively harder to provide water in the right place, at the right time and in the right form.

[1] UN-Water defines water security as the capacity of a population to safeguard sustainable access to adequate quantities of and acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.

The outcome document of the Rio+20 meeting (The Future We Want) recognises the linkages between water security and other key global challenges. In so doing, it effectively places water at the core of sustainable development. This pivotal status is also reflected in the first draft of the Sustainable Development Goals (the outcome document of the Open Working Group – OWG),[2] which includes water and sanitation as a separate goal with a comprehensive list of specific targets (Box 1).

BOX 1 Proposed goal for water and sanitation in the draft SDGs (as of March 2015)

Proposed Goal 6. Ensure availability and sustainable management of water and sanitation for all

Key Targets:

6.1 by 2030, achieve universal and equitable access to safe and affordable drinking water for all

6.2 by 2030, achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

6.3 by 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and increasing recycling and safe reuse by x% globally

6.4 by 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity

6.5 by 2030 implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

6.6 by 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Enabling Targets

6.a by 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6.b support and strengthen the participation of local communities for improving water and sanitation management

Placing water at the centre of sustainable development agenda is not only a welcome development, but is also in keeping with the outcomes of recent high-profile studies, assessments, and major fora (UNU/UNOSD 2013, Griggs, et al. 2013, GWP 2014, UN-Water 2014, UNSGAB 2014).[3] A standalone water goal can raise the profile of water issues and signal the political commitment to address water issues. However, the inclusion of a water goal does not guarantee effective solutions to the planet's water security challenges. One concern is that the central role of water in meeting poverty reduction, food security, energy, health and other sustainability goals is less pronounced in the current draft of the Sustainable Development Goals (SDGs) than in the "The Future We Want." Similarly, there is a chance that the inclusion of a standalone goal will continue with a basically sectoral approach to implementation. This lesson is learned from the implementation of earlier global agreements—such as Agenda 21 and the Johannesburg Plan of Implementation (JPoI)—that share many features with the current OWG goal.

The upcoming SDGs provide a historic opportunity to lay a new international foundation for dealing with the looming water security crisis. Seizing this opportunity is essential not only for addressing water issues in a narrow sense, but it is a prerequisite for making significant progress on a wide range of development issues. What is needed is a truly operational integrated perspective that can position a water goal within the broader framework of SDGs so that it can complement and underpin progress in other areas that cut across economic sectors as

[2] "Introduction to the proposal of the open working group for sustainable development goals", July 2014, http://sustainabledevelopment.un.org/focussdgs.html

[3] Including but not limited to World Water Council, Second Asia Pacific Water Summit, the Budapest Water Summit 2013, Nexus Declaration 2014 on Water-Energy-Food and Climate, Hashimoto Action Plan III, Stockholm World Water Weeks Statements 2013 and 2014

well as administrative and political boundaries. To that end, this policy brief recommends not only that existing Integrated Water Resources Management (IWRM) approaches be further promoted, but that there is also a need to link water with other sectors, such as health, energy and agriculture, by using integrated approaches. In that sense, integrated approaches, both within and between sectors, should be one of the cornerstones of the SDGs. It argues that implementing water related SDGs targets can yield multiple dividends if synergies are taken into account. It is hoped that the messages in this policy brief will be useful for countries and their development partners as they draw their roadmaps for SDGs implementation.

2 Renewing the call for integrated approaches

The concept of an integrated approach to water resource management has been around for at least 60 years (Biswas 2008). It has been firmly on the international policy agenda for over two decades, from when the First Rio Summit in 1992 expressed the need for IWRM along with its broader call for sustainable development. However, both the concepts of IWRM and sustainable development confront similar challenges in that they lack clear operational roadmaps driving their implementation.

IWRM is a conceptual framework meant to describe the complexity of water decisions, including planning, organising and operating water systems, and to balance views and interests of relevant stakeholders (Grigg 2008). The main rationale for an integrated approach is that water is a shared commodity serving multiple (often competing) purposes, such as direct public use and health (drinking, sanitation, and personal hygiene), food (irrigation, aquaculture, livestock), energy (hydropower, cooling of power plants, bio-fuels production), trade (products with large water footprints), environment (hydrological integrity, habitat function, recreation, assimilation of pollutants), and transport (navigation). In addition, it draws attention to the increased incidence and severity of water related natural disasters and changes in the global climate that have made water availability less predictable and thereby increased the need for more adaptive planning and preparedness. These growing complexities call for integrated approaches that cut across multiple dimensions, sectors, stakeholders and levels.

So far, IWRM has been successful in establishing its "brand" but there is a tendency to regard awareness-raising on the concept as an end in itself rather than as a means to achieving integrated management of water resources (Giordano and Shah 2014). Despite decades of efforts, there are few IWRM success stories and only modest improvements at the national level (Biswas 2008). A UN led survey in 130 countries found that 65% of these have developed IWRM plans, as called for in the JPoI, and 34% of the countries are in the advanced stage of implementation (WWAP 2012). There have been many efforts to promote IWRM at international level, such as by Global Water Partnership (GWP)[4], International Network of Basin Organizations (INBO)[5] or Network of Asian River Basin Organizations (NARBO)[6]. Development banks like Asian Development Bank and African Development Banks have made IWRM the core of their water related activities (Giordano and Shah 2014). Incorporation of IWRM in the national water laws and policies by many countries may be seen as an outcome of international efforts to promote IWRM. The establishment of river basin organisations (RBOs) within many countries can be viewed as a common response to establish an institutional mechanism to implement policies and laws related to IWRM. But implementation of IWRM is difficult because of institutional barriers and confusion over the precise meaning of the concept (Grigg 2008). The processes of implementing IWRM are diverse and looking at the existing policy, legal and institutional mechanisms, it is difficult to understand how the process of IWRM

[4] www.gwp.org/

[5] http://www.inbo-news.org

[6] www.narbo.jp

implementation really works at different levels and how various outcomes can be related to IWRM processes (Giordano and Shah 2014). For instance, a variety of council, public, and corporate models and examples of RBOs are now helping governments and stakeholders across Asia to implement IWRM that is tailored to their local conditions (Isnugroho and Nielsen 2014).

Despite the mixed experience in implementing IWRM, the need for integrated approaches to water resource management has become more pressing than ever. In fact, the OWG Target 6.5 and the alternative water goal proposed by Griggs et al (2013) emphasise implementing IWRM. The need for integrated approaches is also reflected in discussions around a number of other policy concepts. For instance, discussions on climate adaptation have framed water management issues as part of an adaptive process guided by learning (Cap-Net 2009, Mysiak, et al. 2010). The Fifth Assessment Report of the IPCC also stresses the need to adopt integrated water resources management for climate change adaption (IPCC 2014). The Green Economy (GE) agenda with its emphasis on resource efficiency advocates a similar line in seeking to decouple water use from economic growth through more intensive use and water recycling (UNEP 2011). The concepts of "virtual water" and "water footprints" highlight the intense water use in global supply-chains and the role played by a growing trade in increasing water demand. The nexus approach is yet another strand of thinking that points towards the need for enhanced coordination among key sectors, in particular water, food, energy, land use and climate (Hoff 2011, WEF 2011). As a cross-sector solution, the nexus approach aims to minimise trade-offs and maximise synergies in using shared resources. The nexus approach, when viewed from the 'water angle', is a way to put the concept of integrated approaches into practice by prioritising sectors that 'will affect' and 'will be affected by' water issues more than others. Yet, there is no silver bullet solution to how to achieve a sound balancing of competing demand from for example energy, which is mainly led by the private sector, and drinking water supply, which tends to be part of the public sector (SIWI 2014).

IWRM has already made some progress in many countries, but making it fully operational requires actively pursuing policies and practices that leverage synergies between water and other sustainability objectives by using integrated approaches. The SDGs can provide an opportunity to try to operationalise integrated approaches in the real world. The very need for managing trade-offs and maximising synergies will serve as an incentive for embracing an integrated approach to implement SDGs. Whereas an integrated approach to implementing SDGs will allow more cohesive monitoring (including coordination between existing frameworks), maximise available resources for implementation, and ensure that certain goals are not achieved at the detriment of others (Schuster-Wallace and Sandford 2015).

3 Placing water at the core of multiple sustainable development objectives

The significance of water for nearly all aspects of sustainable development makes it a core element of SDGs and a common means, catalyst and enabler to achieve multiple goals (UNU/UNOSD 2013). Figure 1 provides an integrated framework for implementing the water goal, in which the role of this goal is viewed in terms of achieving a sound balance between different domains of water management to meet basic needs, support economic activities, and maintain environmental integrity. Improving access, enhancing efficiency and system transformations are three priorities that a country can ascribe when implementing the SDG goals (further discussed in Section 4). Climate change represents an increasing risk that demands special attention for safeguarding development progress. Many of the impacts of climate change will be felt directly through increased variations in water cycle and resultant extremes of 'too much water' or 'too little water' across global, regional and local scales. While implementing SDGs, care should be taken to predict local and regional climate risks and work out appropriate adaptive measures.

Fulfilment of these conditions would help to achieve water security, which would promote security in multiple areas as well, and thereby help achieve corresponding SDGs. However, sustaining this close inter-dependence between achieving water security and security in other multiple areas necessitates an efficient cross-sectorial coordination mechanism. This policy brief stresses good governance and effective mobilisation of resources (primarily financial, technical and human capacity) as two preconditions for improving coordination within different domains of water management and also between water and other areas.

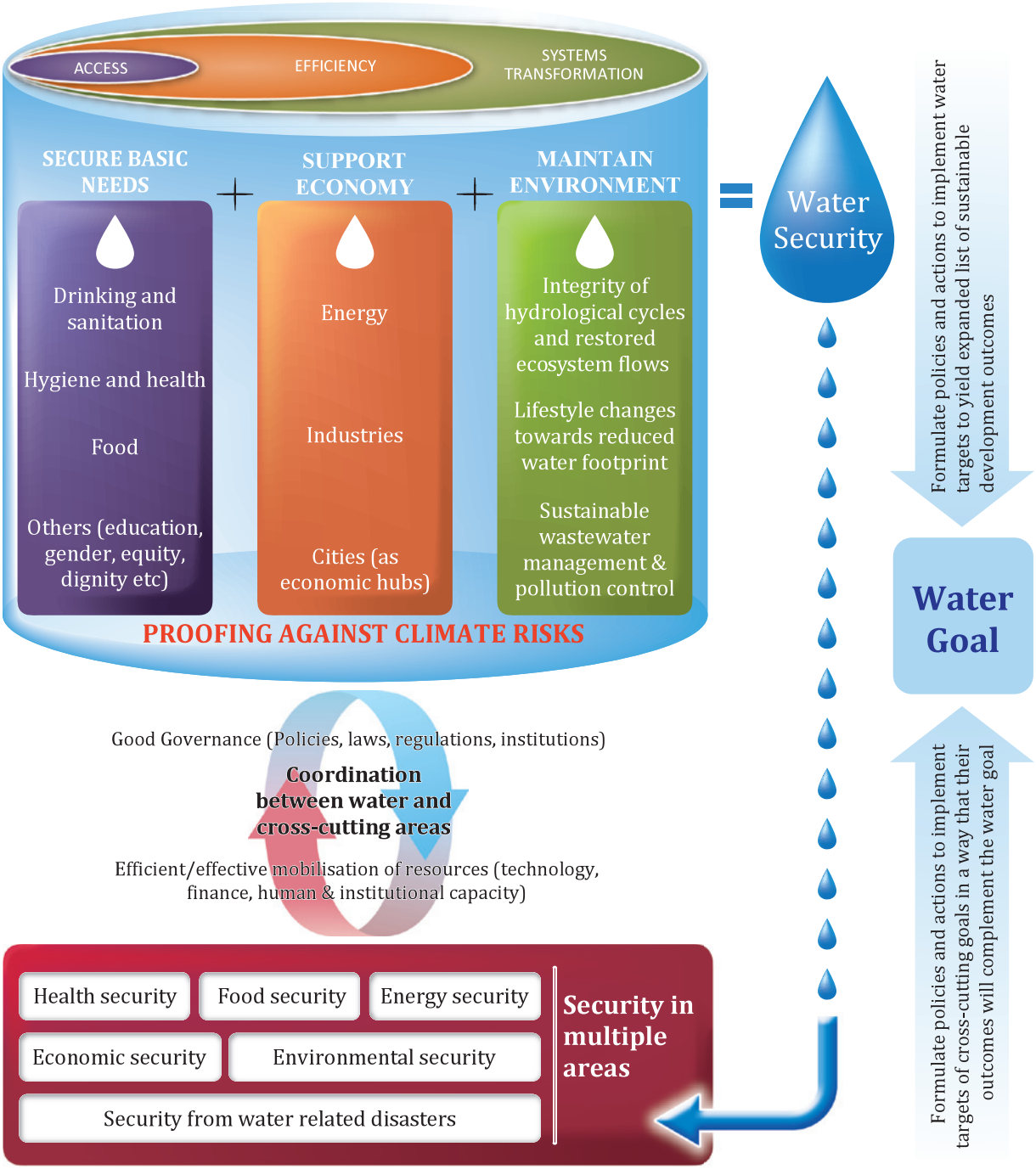

Figure 1 **An integrated framework for implementing the water goal by balancing different domains of water management, enhancing cross-area coordination, and maximising synergy of actions.**

In order to establish better coordination between water and other sectors/areas, it is important to identify the causal linkages between the water targets and other goals and targets. There are two main ways to link water with other goals: a) how water targets can help meet other targets, and b) how efforts to meet other targets affect water management (i.e. improving water management or putting additional stress on water resources) (see right side of Figure 1). These two approaches are not mutually exclusive, and benefits could be achieved from using both in parallel.

The first approach emphasises how improved water management can help promote various aspects of sustainable development. For instance, a target on universal access to safe drinking water and sanitation will have positive spill-over effects on goals related to education and gender (improved toilets in schools lead to lower dropouts of girls), health (reduction in water-borne diseases), and environment (less pollution and reduced risk of eutrophication, if wastewater is managed properly). Similarly, a target to improve water use efficiency can increase the availability of water for drinking, irrigation, industrial uses, for energy generation or reduction in the volume of wastewater. The water goal of the current OWG draft of the SDGs follows this approach.

The second approach takes its starting point outside of the 'water box'. For instance, targets on zero hunger or universal access to energy would, respectively, lead to expansion of irrigated agriculture or the construction of water intensive power plants, which would increase the pressure on available water resources and accentuate the need for good water management. Similarly, improved access to energy can increase water abstraction by providing energy for water pumping. Despite advocacy for improved emphasis on cross-linkages, this approach is not well reflected in the currently proposed SDGs; only the goals on health (G3), cities and settlements (G11), sustainable consumption and production (G12), and ecosystem/environment (G15) mention water in their targets. However, if the negotiation process involves revisiting the proposed targets, there might still be room for establishing clearer connections among water related goals and targets (see Appendix 1 for a simplified demonstration of the inter-linkages).

In order to improve coordination and strengthen synergies, it is useful to examine the issues from the two above perspectives, before setting numerical targets and indicators related to water. Moving ahead in a systematic manner, as opposed to just making a list of important issues, requires a better understanding of the characteristics of the linkages (Weitz, et al. 2014). When examining how water relates to other goals, one also needs to explore the following four aspects: (1) strength of connections (level of dependency), (2) direction of causality (one-way, two-ways), (3) number of outcomes (single vs. multiple), and (4) relationship between actions (independent, overlapping, reinforcing or antagonistic). Here, strength of connection suggests the extent to which the achievement of one target depends on the achievement of another. For example, significant improvements in health are unlikely to be achieved without access to safe drinking water and sanitation. Two-way causality indicates a more complex relationship, including feedback loops. For example, water can be used for energy generation, and energy can be used to supply drinking water and treat wastewater. The relationship concerns how different actions interact when implementing several targets.

If countries take advantage of the synergies between investments in water and progress in other areas (and vice versa) then the benefits can be maximised and the overall costs of implementation can be reduced. However, leveraging these synergies requires a good understanding of the linkages, careful planning and appropriate national or sub-national data. Securing and properly allocating international and national finance will be also imperative to acquiring necessary technology, strengthening capacities, and filling human resources gaps to implement the water targets. National stakeholder consultations by the Global Water Partnership (GWP) in 39 countries found that significant investment will be needed in order to meet water related goals and targets (GWP 2014). While investment, such as in WASH (Water, Sanitation and Hygiene) have been increasing, there remains

a huge financing disconnect between budgets and plans, with 80% of countries indicating insufficient financing (WHO 2014). For the implementation of water related SDGs (for targets similar to those listed in Box 1), one report estimates a need for 1.8-2.5% of the annual global GDP—that would in turn generate over US$3 trillion in overall benefits and about US$730 billion in net revenue (UNU/UNOSD 2013). The cost for implementing all the proposed 17 SDGs would be substantial indeed. According to a report[7] by the Intergovernmental Committee of Experts on Sustainable Development Financing to the General Assembly, a robust US$22 trillion in annual global savings (public and private) will be available for sustainable development in the future but its effective mobilisation and allocation remains a formidable challenge. Access to finance depends to a high extent on the quality of governance, both in general and more specifically in the water sector. In the absence of good governance, countries will neither be able to mobilise resources effectively (including private financing) nor to put the available resources to good use.

4 Operationalising an integrated approach

Operationalising an integrated approach to water management will be very important for the SDGs, although applications are likely to vary from one country to the next. A key consideration will be tailoring integrated approaches to different countries. While each country has unique needs, Figure 2 helps to visualise how these needs may be met for a water goal. The concentric circles on the top of Figure 2 suggest that 1) Least Developed Countries (LDCs) may prioritise improved access; 2) developing and industrialising countries may prioritise enhanced efficiency; and 3) developed countries may prioritise systems transformation. The circles running down the base of Figure 2 correspond with governance mechanisms and means of implementation (MOI) needed to help achieve these three priorities.

Securing access to water is essential for eradicating poverty and achieving dignity for all. For many LDCs, access is thus of paramount importance. The MDGs made this clear by equating sufficient access to water and sanitation to a basic human right—and this was later endorsed by the UN General Assembly in 2010. While the MDGs helped elevate the status of water and sanitation, the SDGs offer scope for a more practical understanding of its application. The SDGs, for instance, could recognise synergies between access for water and sanitation and other water uses. The SDGs also have the potential to frame access in terms of not just quantity but quality of safe water services (UNSGAB 2014). This reframing will help move water policy from counting taps and toilets to improving access to drinking, health, hygiene, food and other essential livelihood needs. To achieve these qualitative improvements, LDCs will require sizable boosts in international technology, finance, and capacity building. The dividends from these investments could be significant: losses are estimated to be US$260 billion annually from inadequate investment in water and sanitation globally (Hulton and WHO. 2012). Improving national and subnational water governance will also help allocate and account for a sharp increase in resource flows.

For developing and industrialising countries, access may feature less prominently on policy agendas than efficiency. Efficiency is pivotal for fast growing countries to sustain energy generation, urban development, industrial production, and agricultural yields. Capturing synergies between and across links in a multi-sector value chain will ensure that economic development does not cause rivers to dry up or bring groundwater below recharge rates. The water-energy-food-climate nexus offers a useful framework to identify synergies. Like LDCs, developing and industrialising countries may also need development

[7] Report on the Intergovernmental Committee of Experts on Sustainable Development Financing, August 2014, http://sustainabledevelopment.un.org/content/documents/4588FINAL REPORT ICESDF.pdf

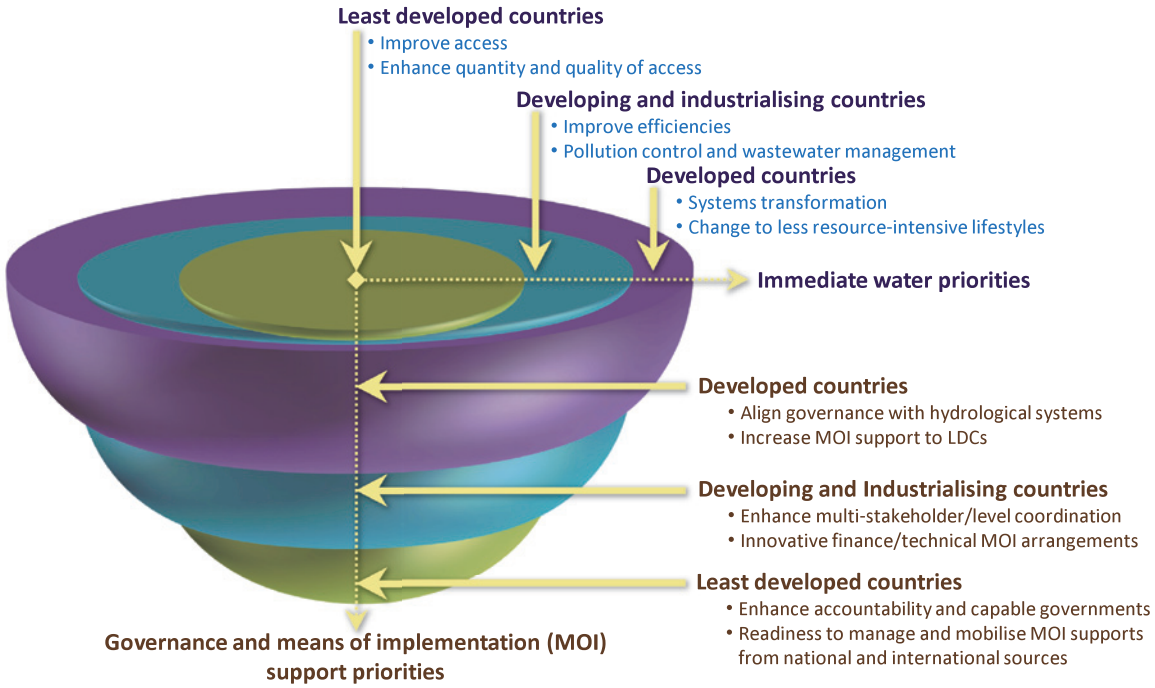

Figure 2 An Illustration of Water Goal Priorities and Supporting Governance Arrangements

assistance and technology transfer to bring actions closer to nexus ideals. But they may also need to look increasingly to private capital, public-private partnerships and other innovative funding schemes to boost within and cross sector efficiencies. Supportive regulatory practices and technologies—including economic instruments, incentives for efficient water distribution, and water recycling programs—will be critical means toward these ends. Domestic institutional arrangements that enable the scaling of sound regulatory practices and technologies promise to be similarly crucial. Perhaps most central is the need for forms of governance that engage multiple stakeholders at multiple levels. More effective forms of multi-level, multi-stakeholder governance will be instrumental to making the most of financial, technological, and human resources.

Access and efficiency are stepping stones to systems transformation. This is important not only for developed countries, but it also helps to show the way for some of the more prepared developing and industrialising countries to "leapfrog" the high pollution stages of old development models. In developing and industrialising countries, transformation may be about introducing cutting edge technologies, while in developed countries it may focus more on breaking inertias in resource-intensive consumer behaviours and lifestyles. This will only become possible when the environmental dimension of sustainability is given equal billing with the other two dimensions. Respecting the environmental dimension will help align water management decisions with not just multiple user or sectors but with hydrological systems themselves. This will help to improve the management of surface and groundwater—a more holistic approach embodied in recent reforms in Japan's Basic Law on the Water Cycle (Box 2)—an idea which is more often advocated than practiced. It is also important to create an enabling environment that raises "consumer consciousness" and "market awareness" in an effort to cut demand for water-intensive products and water itself. These required changes go significantly beyond the water sector. For example, addressing agricultural runoff pollution would necessitate a reconsideration of the food system. Society will need to reconsider what we eat, in what quantities, and where and how that food has been produced.

BOX 2 Summary of the Basic Law on the Water Cycle, Japan (2014 Act No.16, promulgated on April 2, 2014)

This Act aims to maintain or restore the sound water cycle as well as healthy economic development, and the stability and improvement of people's lives so that the policies can be advanced in a coordinated manner. It views "water cycle" as water circulation, either in the form of surface or groundwater, around a river basin in the course of its discharge to the sea through processes such as evaporation, precipitation, flow or infiltration. "Sound water circulation" means any condition in which the water cycle functions for human activities and the environmental preservation is appropriately maintained. Among the important aspects of the Act are to encourage positively to tackle maintenance or restoration of water cycle, including, by ensuring better land use and through education and private/public participation, appropriate use of water as a common property and minimize negative impact on the water cycle, river basin cooperation and maintain/improve river basins' functions to store and conserve water, promotion of technologies, and international cooperation and participation on restoration and maintenance of sound water cycle. It clearly mentions that river basin management and policy should be framed by considering the impacts on water cycle. Education for sound water cycle should be enhanced. National government take appropriate actions to contribute sound water cycle maintenance, recovery, efficient use of water in the form of technical or other forms of international cooperation.

(Source: http://www.shugiin.go.jp/internet/itdb_gian.nsf/html/gian/honbun/houan/g18602003.htm
Accessed in September 2014)

It is important to underline that the above differentiation between countries shown in Figure 2 is very simplified. For some countries, priorities are likely to vary as much within national borders as between them. It is also crucial to recognise that countries need not move in a linear manner from access to efficiency to transformation. More specifically, LDCs should not follow outdated development paths once they succeed in securing access to meet basic needs, but where possible they should leapfrog to more innovative and sustainable solutions. To help countries achieve these leaps, developed countries can play a catalytic role in transferring good water management experiences, including technology transfer, and help to build capacity and institutions for good water governance to developing countries.

5 Driving water goal from ambition to action

In the current draft of the SDGs water is prominently featured as a standalone goal with a number of specific targets. This gives visibility to water issues among other sustainable development objectives, but it may not necessarily prompt governments, donors and other related stakeholders to work on the linkages and potential synergies between water and other SDGs and to improve the coordination of how such related goals are pursued. Resources made available for implementation will be limited and due to the comprehensive character of the SDGs framework it may not be feasible to earmark resources for each and every target. Some goals and targets will by necessity get more attention than others – especially those where there are already established delivery mechanisms. Given this situation, careful design of policies and actions will be necessary to make sure that available resources, to the extent possible, generate multiple dividends. We argue throughout this brief that water is one of the areas where the potential synergies are particularly high, but such synergies will not materialise automatically; well thought-out cross-sectoral actions, based on good understanding of inter-linkages, are required.

Based on the above considerations, countries need to draw up their own SDG roadmaps with an integrated approach for translating the global goals in ways that reflect their own priorities and circumstances. These national planning processes of setting priorities, establishing nationally appropriate numerical targets, and selecting indicators to guide the implementation will be a critical step for moving the Post-2015 Development Agenda from words on paper to real on-the-ground action. An inclusive multi-stakeholder process should be established to mediate the interests of various groups and sectors and take advantage of their capabilities. In particular, the areas

of agriculture, energy, industrial development, urban planning, environment and health need to be linked. Countries that are part of transboundary river basins or aquifers can go one step further by setting up a joint planning and monitoring mechanism of their shared water resources. Ideally, common numerical targets and indicators should be agreed for whole transboundary basins or internationally shared aquifers. Without such joint planning, countries might face setbacks in implementing their SDGs water targets domestically.

Tracking SDG progress will require good indicators, robust data and appropriate monitoring mechanisms. SDGs can provide mechanisms to monitor implementation progress of the water targets in all related areas in a measureable, reportable and verifiable manner, which is not only a matter of accountability but a prerequisite for effective actions. Experiences from the MDGs, both on what has worked well and what has fallen short of expectations, provide lessons in this regard. Gaps in monitoring to track funding to water and sanitation were found to impede the decision-making process (WHO 2014). For access to water services, monitoring needs to cover not only the initial construction of water infrastructure but also maintenance to ensure that installed systems remain functional. Research will be necessary to develop a guiding framework that can assist countries to draw up their SDGs roadmaps, set appropriate targets, and establish a robust monitoring mechanism.

At the end of the day, to what extent the SDGs will be able to catalyse meaningful change depends on a range of factors at the national and local levels, including leadership, participation, shifts in mind-set, ability to create synergies through cross-sectorial planning. It also depends on the ability of different stakeholders to recognise that achieving their goals will increasingly depend on their willingness to cooperate with each other. Right now, we can only hope that governments will see the adoption of the SDGs as an opportunity to strengthen their national water governance and to operationalise integrated water management in practice. Since SDGs are an historic opportunity, countries should set ambitious targets, and the global community needs to allocate adequate resources to infrastructure, capacity strengthening and institutional reforms, and to engage all of the related stakeholders in order to establish a more sustainable direction for how we use water – the lifeblood of the planet.

Appendix 1 Simplified comparison of linkages between water and other SDGs

Proposed Goals (G)	Most direct inter-linkages	
	affecting water goal	affected by the water goal
G1: End poverty	-Increased incomes lead to improved access to water/sanitation services	-Access to water for drinking/sanitation, food, energy, contributes poverty eradication
G2: Food	-Save water for ecosystem flow by reducing food wastages at different stages from field to fork -Contribute water saving by producing more food per drop -Control agriculture runoff pollution	-Water for food production and processing
G3: Health and well-being	-Contributes safe use of water and sanitation	-Access to water/sanitation improves hygiene and health and decrease diarrhoea infestation
G4: Education	-Awareness about safe use of water/ sanitation and sustainable water uses	-Water/sanitation in schools can increase attendance and decrease drop outs
G5: Gender	-Gender empowerment can contribute safe use of water/sanitation and efficient use of water	-Access to water saves time (for work, education) and efforts (for health) to carry water by girls/women -Toilet in school decrease school dropout by girls -Reduce gender inequality
G7: Energy	-Efficient use of water to produce energy; Saving energy saves water	-Energy use to pump, treat and supply water; Saving water saves energy
G8: Economic growth and employment	-Construction of water, sanitation and wastewater infrastructure and services	-Economic water security
G9: Resilient infrastructure and sustainable industries	-Resilient water infrastructure	-Industrial water security
G10: Reduce inequality	-Contributes improve access to water	-Access to water/sanitation for all will help reduce inequality
G11: Cities and human settlements	-Resilient infrastructure to combat water related disasters	-Water for cities and settlements
G12: Sustainable consumption and production	-Contributes efficient use of water by adopting reduce, recycle and resource recovery	-Optimize allocation of water
G13: Climate change	-Use of renewable energy in water (such as desalination) -Finance for water related adaptation	-Water for renewable energy (biogas from wastewater, hydro-electricity) -Adaptive water management
G14: Oceans and seas	-Water cycle/precipitation	-Control of erosion and pollution in coastal areas
G15: Ecosystem, forest, biodiversity, land degradation and desertification	-Healthy water cycle and conservation of water resources	-Control pollution and decreased unsustainable abstraction to ensure adequate flow for healthy ecosystem and biodiversity
G16: Inclusive societies, institutions, justice	-Implementation of human rights to water, minimize water conflicts	-Implementation of IWRM can lead to inclusive society, strong institutions and accountability
G17: Means of Implementation	-Contributes taxes and international transfers (technology, finance, capacity building) for implementing water targets	-Contributes tariffs / revenues from water services (water supply, wastewater, irrigation, hydropower, navigation); -Transfer of experiences (monitoring, institutional innovation, technological advances) -Provides water services for the implementation of SDGs (G1-G5; G7-G16)

For the details of the goals and target, please refer to "Introduction to the proposal of the open working group for sustainable development goals", July 2014, http://sustainabledevelopment.un.org/focussdgs.html

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Acknowledgements

Authors are grateful to Mark Elder for his valuable advice that helped immeasurably in shaping the brief. We would like to acknowledge Simon Hoiberg Olsen, Tetsuro Yoshida, Tetsuo Kuyama, Bijon Kumer Mitra, Ngoc Bao Pham, and other members of IGES' SDGs Flagship Team for their suggestions on the paper at various stages of completion. This brief has also benefitted from several rounds of discussions inside IGES, including at a SDGs Retreat in August 2014. This research acknowledges support from the "Project on Sustainability Transformation 2015 (S-11)" from the Environment Research and Technology Development Fund of the Ministry of the Environment, Japan.

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