

A Compilation of Expert Advice on Water and Sanitation Related Indicators Covering Targets 6.1 to 6.6 and 11.5

Compiled by UN-Water for the UN inter-agency Technical Support Team between January – February 2015, and in support of the draft indicators document provided by the UN Statistics Division to the 3rd session of intergovernmental negotiations on the Post-2015 Development Agenda (23 – 27 March 2015)

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UN-Water is the United Nations (UN) inter-agency coordination mechanism for all freshwater and sanitation-related matters. It provides the platform to maximize system-wide coordinated action and coherence and serves UN Member States in their efforts towards achieving development goals related to fresh water and sanitation.

This paper contains a summary of expert inputs on water and sanitation related targets and indicators, compiled and submitted by UN-Water to the UN inter-agency Technical Support Team in February 2015, to inform the ongoing intergovernmental process of adopting a set of SDGs and associated indicators. The paper was updated in June 2015, based on submissions to the UN Statistics Division to inform the 1st Meeting of the Inter-Agency and Expert Group on Sustainable Development Goal Indicators.

The expert advice is derived from a broad technical consultation process among UN-Water's UN Members and Partners, as well as a range of other stakeholders, and comprises a set of core indicators as well as a number of supplemental indicators. The core indicators can be seen as the minimum number of indicators needed for monitoring the targets, whereas the supplemental indicators are needed to ensure a more comprehensive coverage.

It is important to note the work presented in this paper is a work in progress. The SDG process is evolving rapidly, and will not be finalized until September 2015, and the work on defining the core indicators is likely to continue until March 2016. The development of supplementary indicators will continue throughout the SDG period in response to emerging issues, information needs from Member States, and the application of new observation technologies.

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Executive Summary

As part of the process of the preparations for the Post-2015 Development Agenda, the Open Working Group (OWG) on Sustainable Development Goals (SDGs) proposed in its July 2014 report to the United Nations (UN) General Assembly a framework of 17 SDGs covering a wide range of drivers across the three pillars of sustainable development: social, environmental and economic. The OWG proposal includes Goal 6, a dedicated goal on water and sanitation with six targets, in addition to mentioning water-related issues in five other goals (e.g. target 11.5, which specifically mentions water-related disasters). Targets 6.1 and 6.2 represent a clear continuation and improvement of the Millennium Development Goals (MDGs) commitment with a clear focus on finishing the unfinished MDG agenda on sanitation, hygiene and water supply. Targets 6.3 to 6.6 expand the vision to cover the whole water cycle, with the inclusion of issues such as water quality, wastewater management, water-use efficiency, integrated water resources management and water-related ecosystems.

The first part of this report contains the UN-Water technical assessment of the water and sanitation-related targets proposed by the Open Working Group (limited to targets 6.1 to 6.6 and 11.5). This assessment was made on request by the UN inter-agency Technical Support Team (TST), which asked its members specifically for comments on the linkage of the targets to existing agreements and international law; linkage to other proposed SDG targets; specificity, measurability and action orientation; as well as formulation. The assessment, submitted to the TST in February 2015, found that the targets are generally specific, measurable and action-oriented, almost all of them building upon decades of previous work and existing international agreements touching upon various water and sanitation issues. They are also generally highly consistent and complementary, not only with each other, but also with other proposed goals and targets, such as those on poverty, nutrition, health, education, gender, infrastructure, inequalities, ecosystems and human settlements.

The second part contains the UN-Water technical advice on indicators, reporting on progress towards water and sanitation-related targets in the SDGs (targets 6.1-6.6 and 11.5). The proposal was prepared in response to a call from the UN Statistics Division (UNSD), and submitted to the TST also in February 2015, with the purpose of informing the UN Statistical Commission, and eventually the intergovernmental negotiations in the UN General Assembly. Given the inherently complex and inter-related nature of water issues and the composite nature of the current proposed targets, monitoring them through a single indicator per target would not be ideal. UN-Water therefore has proposed a set of **core indicators** (10 indicators for Goal 6 and 1 for 11.5) that could be seen as the minimum number of indicators needed for monitoring the targets. In addition, UN-Water proposes a number of **supplemental indicators** to ensure a more comprehensive coverage (17 indicators for Goal 6 and 2 for 11.5). The suggested indicators have the ability not only to provide the most impact for those water and sanitation targets, but will also support and impact many of the other goals and targets in the proposed SDG framework.

Table 1 Water and sanitation related targets and indicators in the Sustainable Development Goals

Goal 6 Ensure availability and sustainable management of water and sanitation for all		
6.1	Target wording	<i>“By 2030, achieve universal and equitable access to safe and affordable drinking water for all”</i>
	Target assessment	Target 6.1 is more ambitious than the MDG target but consistent with resolutions on HRTWS and SDG ambition of ending extreme poverty by 2030. The target is specific, measurable and action-oriented and supports several other targets without duplicating them. Note that experts consider universal access to a basic water service achievable by 2030, but universal access to ‘safe and affordable’ unlikely to be achieved in all countries.
	Core indicators, definition and measurability	<p>1. Percentage of population using safely managed drinking water services</p> <p>Percentage of population using a basic drinking water source [MDG ‘improved’ indicator] which is located on premises and available when needed, free of fecal (and priority chemical) contamination and/or regulated by a competent authority.</p> <p>JMP (WHO/UNICEF), already in place. Household surveys can provide data on basic water on premises as well as availability when needed and free from contamination via direct water quality testing. Administrative sources can provide data on regulation of water safety and risk management.</p>
6.2	Target wording	<i>“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”</i>
	Target assessment	Target 6.2 is more ambitious than the MDG target but consistent with resolutions on HRTWS and SDG ambition of ending extreme poverty by 2030. The target is specific, measurable and action-oriented and supports several other targets without duplicating them. A revised target wording is proposed, to achieve consistency with 6.1. Note that experts consider ending open defecation and ensuring universal access to a basic water service achievable by 2030, but universal access to ‘adequate’ is unlikely to be achieved in all countries.
	Core indicators, definition and measurability	<p>1. Percentage of population using safely managed sanitation services</p> <p>Percentage of population using a basic sanitation facility [MDG ‘improved’ indicator] which is not shared with other households and where excreta is safely disposed in situ or transported to a designated place for safe disposal or treatment plant</p> <p>JMP (WHO/UNICEF), already in place. Household surveys can provide info on types of sanitation facilities and disposal in situ. Administrative, population and environmental data can be used to estimate safe disposal/transport of excreta, when no country data are available.</p> <p>2. Percentage of population with a hand washing facility with soap and water in the household</p> <p>Percentage of population with a handwashing facility with soap and water in the household</p> <p>JMP (WHO/UNICEF), already in place. Data collected through household surveys.</p>
6.3	Target wording	<i>“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”</i>
	Target assessment	Target 6.3 is consistent with the outcomes of recent high-level summits such as Rio+20 and UNEP Manila declaration. It supports but does not duplicate other targets and components of the target are specific, measurable and action-oriented and strongly support the implementation of the Basel, Rotterdam and Stockholm conventions. A revised target wording is proposed, to reflect the fact that water scarcity as a driver for reuse is not relevant for countries and regions where water resources are abundant.
	Core indicators, definition and measurability	<p>1. Percentage of wastewater safely treated</p> <p>Proportion of wastewater generated both through domestic and industrial sources safely managed compared to total wastewater generated both through domestic and industrial sources.</p> <p>Partial monitoring framework in place, a wastewater monitoring protocol is proposed to</p>

		<p>aggregate best national available data. Existing data is available from JMP, AQUASAT, IBNET, GLAAS etc., as well as population density, and land-use/land-cover data from earth observations. Data will come from a variety of sources combining utility and regulator data for off-site and potentially household surveys and measured data for onsite supplemented by modeled estimates where no reliable national data exist. In the absence of verified national data modeled estimates can be generated using JMP data combined with treatment performance in different population density and income settings.</p> <p>1. Percentage of receiving water bodies with ambient water quality not presenting risk to the environment or human health</p> <p>Percentage of receiving water bodies with ambient water quality not presenting risk to the environment or human health. Water quality is estimated through a water quality index, compiling a core set of parameters: total dissolved solids (TDS); percentage dissolved oxygen (%DO); dissolved inorganic nitrogen (DIN); dissolved inorganic phosphorus (PIN); and Escherichia coli (E. coli).</p> <p>A new monitoring framework is needed building on existing monitoring and data resources such as GEMS Water, GEMStat (UNEP), OECD. Measurements would be completed at local laboratories and/or achieved using field measurements on appropriate protocols for sample collection and analysis.</p>
6.4	Target wording	<i>“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”</i>
	Target assessment	Target 6.4 builds on existing international agreements and is consistent with the outcome of recent high-level summits such as Rio+20. The target is specific, measurable and action-oriented and supports several other targets without duplicating them. The words “to address water scarcity” may be redundant and the terms “suffering” and “substantially (increase/reduce)” may need to be defined.
	Core indicators, definition and measurability	<p>1. Level of water stress: freshwater withdrawal in percentage of available freshwater resources</p> <p>Level of water stress: freshwater withdrawal in percentage of available freshwater resources (water withdrawal intensity) is the ratio of total water withdrawals to available water, taking environmental water requirements (EWR) into account. It is measured at the scale of the river basin and aggregated to the country and region. The target for the indicator could be country specific, to reflect differences in climate and national water management goals. Alternatively, uniform targets could be set using existing literature on water stress and water scarcity (e.g. >80% indicates very high stress).</p> <p>The indicator builds on MDG indicator 7.5 by accounting for environmental water requirements and including both groundwater and surface water withdrawals. It can be calculated directly from AQUASTAT data, available for 160 countries out of the 200 in the database, with a track record starting in 1992. EWR data is presently not collected by AQUASTAT, but many countries are likely to have good institutional arrangements for such collection. Modeled data could be used to fill in gaps while capacity is being developed, so that the indicator could be calculated for all countries immediately.</p> <p>2. Percentage of change in water use efficiency over time</p> <p>Percentage of change in water use efficiency over time tracks change in water-use efficiency over time for major sectors, including energy, domestic, industrial, and agricultural. Value defined for each sector is divided by water withdrawn or consumed. The indicator can be aggregated to reflect overall change in productivity across sectors or disaggregated to the sector level.</p> <p>The indicator can be calculated using existing datasets from Aquastat (FAO), National Accounts Main Aggregates (UNSD), World Energy Outlook (International Energy Agency), World Bank demographic datasets, and WaterStat Database (Water Footprint Network). Further development of the monitoring framework is needed to integrate these datasets and to fill existing data gaps.</p>
6.5	Target wording	<i>“By 2030 implement integrated water resources management at all levels, including through</i>

		<i>transboundary cooperation as appropriate</i>
	Target assessment	Target 6.5 builds on agreements such as <i>Agenda 21</i> (1992) and the <i>Johannesburg Plan of Implementation</i> (2002) by moving forwards from plans to implementation. The target is specific, measurable and action-oriented. It is a foundation for all other water targets, including 6a and 6b, as well as many targets of the other goals. The target as presently written is short, simple and precise and does not warrant any further modification.
	Core indicators, definition and measurability	<p>1. Degree of integrated water resources management (IWRM) implementation (0-100)</p> <p>This indicator describes (1) the extent to which an enabling environment for IWRM (policy, strategic planning, legal framework and financing) has been established, (2) the structure and performance of an institutional framework to support IWRM processes, and (3) the degree to which management instruments/tools are applied. Issues relating to gender, governance, ecosystems, capacity, and transboundary aspects of water management are included. Results can be easily disaggregated to give a more nuanced picture of status both at national and regional (transboundary) levels.</p> <p>National IWRM questionnaires measure both qualitative and quantitative aspects of IWRM. The indicator builds on the approach that was successfully applied to measure the status of IWRM for the Commission on Sustainable Development in both 2008 and 2012 (Rio+20), including 133 countries, which can provide a baseline for measurement.</p> <p>2. Percentage of transboundary basin area with an operational arrangement for water cooperation</p> <p>The indicator is defined as the percentage of surface area of those transboundary basins' that have an operational agreement/arrangement or institution for transboundary water cooperation over the total surface area of transboundary basins. For the cooperation framework to be considered as "operational", it requires that there are regular meetings of the riparian countries to discuss the management of the water resource and to exchange information.</p> <p>A global database exists of freshwater treaties and international river basin organizations and as well as several regional ones, e.g., for the Pan-European region the second Assessment under the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes. A global baseline comparative assessment of transboundary waters, including river basins (286) and aquifers, has been undertaken by the Transboundary Waters Assessment Project (TWAP; completed in 2014), involving generation of geo-referenced datasets.</p>
6.6	Target wording	<i>"By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes"</i>
	Target assessment	Target 6.6 is not less ambitious than, builds on and is consistent with among others the <i>Aichi Biodiversity Targets</i> of the <i>Strategic Plan for Biodiversity 2011-2020</i> , the <i>Convention on Wetlands, Rio+20</i> and the <i>UN Convention to Combat Desertification</i> . The target is specific, action-oriented and measurable using existing monitoring frameworks for specific ecosystem types. It reinforces other targets in that functioning ecosystems underpin sustainability of other targets, but does not duplicate. It is suggested that the target date is reworded to 2030, to align it to the other target dates in Goal 6.
	Core indicators, definition and measurability	<p>1. Percentage of change in wetlands extent over time</p> <p>Percentage of change in wetlands extent over time. The Ramsar broad definition of "wetland" is used which includes rivers and lakes (enabling three of the biome types mentioned in the target to be assessed - wetlands, rivers, lakes - plus other wetland types). Universal coverage. The Change in Wetland Extent uses an existing methodology for data collection and analysis to calculate a global average of change in wetland extent and can be disaggregated geographically and by wetland type.</p> <p>Ramsar Convention through its regular State of the World's Wetlands and their Services reports and is also a sub-indicator for Aichi Biodiversity Target 14 (with reporting mechanism in place for that). The proposed indicator is intelligible, sensitive to drivers and protection and restoration measures, comparable over time, and universally applicable. Loss of wetland is commonly estimated through manual digitalization of aerial or satellite images, a methodology that in the</p>

		coming years will be advanced by remote sensing. Heterogeneous datasets are considered to be acceptable: change in extent will still be captured.
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable		
11.5	Target wording	<i>“By 2030, significantly reduce the number of deaths and the number of people affected and decrease by [x] per cent the economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations”</i>
	Target assessment	11.5 does not fall below existing agreements or international law but it is closely linked to other main international negotiation mechanisms such those related to Disaster Risk Reduction and the UN Framework Convention on Climate Change. The target is specific, measurable and action-oriented and supports several other targets without duplicating them. Given that the target falls under Goal 11 on “Making cities and human settlements inclusive, safe, resilient and sustainable” it should be noted that water-related disasters also have large impacts on rural areas and the natural environment.
	Core indicators, definition and measurability	<p>1. Number of deaths per year resulting from each disaster type</p> <p>At the global level, the core indicator should be able to be disaggregated by disaster type (floods, droughts, tsunamis, earthquakes, landslides etc.) and could be disaggregated by income, gender, and age of victims; further disaggregation at national level to include frequency of event and its magnitude.</p> <p>A new monitoring framework is needed drawing on the existing monitoring programmes/databases such as EM-DAT (CRED) and Desinventar.</p>

List of Abbreviations

GEMI	Integrated monitoring of water and sanitation related SDG targets, initiative by UNEP, UN-Habitat, WHO, UNESCO, UNICEF, FAO, WMO under the UN-Water umbrella
GLAAS	UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water
GWP	Global Water Partnership
HRTWS	Human Rights to Safe Drinking Water and Sanitation
IWRM	Integrated Water Resources Management
JMP	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation
MDGs	Millennium Development Goals
OWG	Open Working Group on Sustainable Development Goals
SDGs	Sustainable Development Goals
TST	UN inter-agency Technical Support Team
WASH	Water, Sanitation and Hygiene
UN	United Nations
UNEP	United Nations Environment Programme
UN-Habitat	United Nations Human Settlements Programme
UNICEF	United Nations Children's Fund
UNSD	UN Statistics Division
FAO	Food and Agriculture Organization of the United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	UN Framework Convention on Climate Change
WHO	World Health Organization
WMO	World Meteorological Organization

1. Water and Sanitation in the Sustainable Development Agenda

The process of formulating goals, targets and indicators for the proposed framework of SDGs has been formally on-going since the Rio+20 Conference in June 2012. A Member State-led Open Working Group (OWG) was created in January 2013, to guide this process and to propose a set of SDGs.

In 2013, UN-Water undertook a consultation process on the Post-2015 agenda, including its UN system Members and other international Partners, resulting in the report "[A Post-2015 Global Goal for Water – Synthesis of key findings and recommendations from UN-Water](#)". The report promotes a holistic water and sanitation goal with targets on drinking water, sanitation and hygiene; water resources; water governance; water-related disasters; and wastewater pollution and water quality. The report fed into the OWG process, into which UN-Water also provided continuous support during 2014.

In July 2014, the OWG presented their SDG proposal, with "Securing Sustainable Water and Sanitation for All" as one of the proposed goals, containing six substantive targets that capture much of the UN-Water recommendations. In addition, water-related issues are mentioned in five other goals, with target 11.5 specifically on water-related disasters. Targets 6.1 and 6.2 represent a clear continuation and improvement of the Millennium Development Goals (MDGs) discourse, with a clear focus on finishing the unfinished MDG agenda on sanitation, hygiene and water supply. Targets 6.3 to 6.6 expand the water agenda to cover the whole water cycle, with the inclusion of issues such as ambient water quality, wastewater management, water-use efficiency, integrated water resources management and water-related ecosystems.

On 10 September 2014 the UN General Assembly adopted a resolution deciding that the OWG proposal shall be the main basis for integrating sustainable development goals into the Post-2015 Development Agenda. During the first months of 2015, there will be monthly intergovernmental negotiations on the SDG agenda and its adoption and implementation, culminating at the United Nations Summit on 25-27 September 2015, where Member States are expected to adopt a final set of SDGs.

In terms of indicators, there is an ongoing process in which UN-Water is actively partaking. As with the MDGs, the UN Statistics Division (UNSD) will coordinate the progress of monitoring and reporting to the SDGs, through an inter-agency expert group on SDG Indicators (IEAG-SDGs). This was decided at the 46th session of the Statistical Commission in March 2015, which also indicated that a final indicator framework would be endorsed at its 47th session in early 2016.

The current and future monitoring mechanism for targets 6.1 and 6.2 is the WHO/UNICEF [Joint Monitoring Programme for Water Supply and Sanitation](#) (JMP), with the additional analysis provided by the UN-Water [Global Analysis and Assessment of Sanitation and Drinking-Water](#) (GLAAS). As for targets 6.3 to 6.6 and 11.5, for the past decades several initiatives, mechanisms or programmes have been collecting information and monitoring data on these components of the water cycle. It is therefore evident that knowledge and expertise is available to monitor targets 6.3 to 6.6. However it is also true that a global method and monitoring mechanisms need to be refined to adapt them to the emerging needs of the SDG framework.

To respond to the emerging needs to regularly and globally monitor targets 6.3 to 6.6, a number of UN agencies (i.e. UNEP, UN-Habitat, WHO, UNESCO, UNICEF, FAO, WMO) and partners (i.e. Aquafed, GWP) with the support of the Swiss Agency for Development and Cooperation are currently developing [*GEMI – Integrated monitoring of water and sanitation related SDG targets*](#), operating under the UN-Water umbrella and complementing the WHO/UNICEF JMP. The proposed indicators are the result of the work of GEMI, which in 2014 explored the opportunities for monitoring domestic wastewater treatment and reuse, industrial wastewater treatment and reuse, water quality, water withdrawals and productivity, water withdrawals and ecosystems, integrated water resources management, and the potential for using earth observations and data integration. A first stakeholder consultation was held in January 2015, with representatives from Member States and civil society providing input to the proposal. GEMI is preparing a proof-of-concept phase, where monitoring frameworks are tested in a handful of pilot countries over a 6 month period in 2015, to inform the final indicator framework.

2. UN-Water Technical Assessment of the Water and Sanitation Targets

In January 2015, the UN inter-agency Technical Support Team (TST) requested all its members to assess the proposed SDG targets from the OWG. UN-Water, represented by UN DESA and UNDP, led inclusive consultations around Goal 6. The requested assessment was to specifically consider whether the proposed targets (1) fall below already existing agreements and international law, (2) are inconsistent or duplicate any other target, and (3) are specific, measurable and action-oriented. In addition, comments and possible refinements of the target formulations were asked for. In February 2015, UN-Water, through its Working Group on the SDGs, submitted its response covering targets 6.1-6.6 as well as 11.5. The response is summarized below.

In addition to being mentioned in the text below, linkages to other SDG goals and targets are also depicted in Annex 1.

Target 6.1 Safe and affordable drinking water

“By 2030, achieve universal and equitable access to safe and affordable drinking water for all”

Linkage to existing agreements and international law

Universal access to safe water, sanitation and hygiene is a long-standing development goal – enshrined in the *New Delhi Statement* of 1990 (adopted by 115 Member States at the Global Consultation on Safe Water and Sanitation) and the *UN General Assembly and Human Rights Council resolutions on the Human Rights to Safe Drinking Water and Sanitation (HRTWS)* – and is widely referenced in existing agreements on poverty reduction (MDGs) and sustainable development (Agenda 21 1992, Earth Summit 2002, Rio+20 2012). The target is more ambitious than the MDG-target but consistent with resolutions on HRTWS and the SDG ambition of ending extreme poverty by 2030.

Linkage to other SDG targets

The target does not duplicate and is consistent with the other SDG targets. Universal and equitable access to safe and affordable drinking water is essential for the achievement of other targets proposed on poverty (1.2), nutrition (2.2), health (3.2, 3.3, 3.8 and 3.9), education (4.1), gender (5.2), infrastructure (9.1), inequalities (10.2) and human settlements (11.1).

Specificity, measurability and action orientation

The target is specific and action-oriented. Universal implies all settings including households, schools and health facilities. Equitable implies progressive elimination of inequalities. Safe implies free from contamination. Affordable implies that payment for services does not present a barrier to access or prevent people meeting other basic human needs. Each element is measurable. Note that experts

consider universal access to a basic water service achievable by 2030, but universal access to ‘safe and affordable’ unlikely to be achieved in all countries by 2030¹.

Target formulation comments and possible refinements

The target as presently written is short, simple and precise and does not warrant any further modification.

Target 6.2 Adequate and equitable sanitation

“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”

Linkage to existing agreements and international law

Universal access to safe water, sanitation and hygiene is a long standing development goal – enshrined in the *New Delhi Statement* of 1990 (adopted by 115 Member States at the Global Consultation on Safe Water and Sanitation) and the *UN General Assembly and Human Rights Council resolutions on the Human Rights to Safe Drinking Water and Sanitation (HRTWS)* – and is widely referenced in existing agreements on poverty reduction (MDGs) and sustainable development (Agenda 21 1992, Earth Summit 2002, Rio+20 2012). The target is more ambitious than the MDG-target but consistent with resolutions on HRTWS and the SDG ambition of ending extreme poverty by 2030.

Linkage to other SDG targets

The target is consistent with others and does not duplicate. Universal and equitable access to adequate sanitation and hygiene is essential for the achievement of other targets proposed on poverty (1.2), nutrition (2.2), health (3.2, 3.3, 3.8 and 3.9), education (4.1), gender (5.2), infrastructure (9.1), inequalities (10.2) and human settlements (11.1).

Specificity, measurability and action orientation

The target is specific and action-oriented. Adequate sanitation implies both safe separation of excreta from human contact and safe disposal or treatment of excreta. Hygiene implies hand washing. Equitable implies progressive elimination of inequalities. Needs of women and girls implies provision of facilities for menstrual management. Each element is measurable. Note that experts consider ending open defecation and ensuring universal access to a basic water service achievable by 2030, but universal access to ‘adequate’ is unlikely to be achieved in all countries².

Target formulation comments and possible refinements

We suggest making the target language consistent with 6.1 and start with open defecation:

¹ See http://www.wssinfo.org/fileadmin/user_upload/resources/post-2015-WASH-targets-factsheet-12pp.pdf

² See http://www.wssinfo.org/fileadmin/user_upload/resources/post-2015-WASH-targets-factsheet-12pp.pdf

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

Target 6.3 Reduced water pollution

“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”

Linkage to existing agreements and international law

Wastewater management is covered in Chapter 21.3 of *Agenda 21* (Earth Summit, 1992), and Articles 25 and 40 of *Report of the World Summit on Sustainable Development* (Johannesburg, 2002), the *UNEP Manila Declaration* (2012) and in the Rio +20 *The Future We Want* (2012). Elements of the target strongly support the implementation of the Basel, Rotterdam and Stockholm conventions on minimizing release of hazardous chemicals. The target does not fall below existing agreements or international law.

Linkage to other SDG targets

The target is consistent with and does not duplicate other SDG targets. Wastewater management contributes to the achievement of health targets (3.3 and 3.9). Elements on hazardous chemicals, recycling and reuse also support proposed targets on consumption and production (12.4 and 12.5).

Specificity, measurability and action orientation

The target contains three separate, measurable and actionable items on water quality/pollution reduction, wastewater treatment, and wastewater recycling and safe reuse.

Target formulation comments and possible refinements

Since water scarcity as a driver for reuse is not relevant for all countries and regions, a revised target wording is suggested:

“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 meeting half of the potential for recycling and safe reuse in water-scarce regions”

The term “safe reuse” may be defined using a proxy from the WHO *Guidelines for the safe use of wastewater* (2006). Ladders for progressive improvement can be developed to define “minimization” and “treatment”.

Target 6.4 Sustainable water use

“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”

Linkage to existing agreements and international law

Target 6.4 builds on existing international agreements. Chapter 18 of *Agenda 21* (Earth Summit, 1992) recognized the promotion of improved water efficiency in countries as a key action for addressing water resource challenges. The *Johannesburg Plan of Implementation* (World Summit on Sustainable Development, 2002) called for the development of national water efficiency (and integrated water resource management (IWRM)) plans. Addressing water scarcity underpins the goal of the *Convention to Combat Desertification* (UNCCD, 1994). The target does not fall below existing agreements or international law.

Linkage to other SDG targets

The target supports several other SDG targets without duplicating them. Increasing the productive efficiency of water, while ensuring the environmental sustainability of supplies and addressing water scarcity, is essential for achieving targets on nutrition (2.3 and 2.4), water and sanitation (6.1 and 6.2), energy (7.3), economic growth (8.4) and infrastructure (9.4).

Specificity, measurability and action orientation

The target combines three specific, measurable and actionable elements oriented towards addressing, respectively, the economic (*“increase water-use efficiency across all sectors”*), environmental (*“ensure sustainable withdrawals and supply of freshwater”*) and social (*“substantially reduce the number of people suffering from water scarcity”*) aspects of water scarcity.

Target formulation comments and possible refinements

The words *“to address water scarcity”* may be redundant and may be deleted if a shortened target is desired. The terms *“suffering”* and *“substantially (increase/reduce)”* may need to be defined to avoid ambiguous interpretations.

Target 6.5 Integrated water resources management

“By 2030 implement integrated water resources management at all levels, including through transboundary cooperation as appropriate”

Linkage to existing agreements and international law

The target does not fall below existing agreements and international laws. It builds on agreements such as Chapter 18 of *Agenda 21* (Earth Summit, 1992) and Article 26 in the *Johannesburg Plan of*

Implementation (World Summit on Sustainable Development, 2002) by moving forwards from plans to implementation.

Linkage to other SDG targets

This target does not duplicate any other SDG target and is consistent with other targets. Indeed it is a foundation for all other water targets, including 6a and 6b. It links to many other goals/targets, for example: nutrition (2.4), health (3.3 and 3.9), education (4.2), economic growth (8.4), infrastructure (9.4), human settlements (11.1 and 11.5), consumption and production (12.2 and 12.4), climate change (13) and terrestrial ecosystems (15), society (16.3) and implementation and partnership (17.16-17.18).

Specificity, measurability and action orientation

The target is specific as it relates to the essential enabling conditions (such as institutions, laws, capacity, participation, finance etc.) that facilitate implementation and sustainability. The target is measurable using a survey method with quantitative and qualitative elements to address a complex environment in a simple way.

Target formulation comments and possible refinements

The target as presently written is short, simple and precise and does not warrant any further modification.

Target 6.6 Protection of water-related ecosystems

“By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes”

Linkage to existing agreements and international law

The target is not less ambitious than, builds on and is consistent with the *Aichi Biodiversity Targets* of the *Strategic Plan for Biodiversity 2011-2020* (decision X/2 of the CBD); the preambular text of the *Convention on Wetlands* (Ramsar, Iran, 1971); Paragraph 122 in the Rio+20 *The Future We Want* (2012); the objectives and programmes of action of the United Nations Convention to Combat Desertification, including the target to achieve Land Degradation Neutrality agreed upon at Rio+20 in 2012.

Linkage to other SDG targets

There is no duplication or inconsistency regarding the objective of the target. The target reinforces other targets in that functioning ecosystems underpin the sustainability of all of the other targets. More specifically the linkage to targets on terrestrial ecosystems (15.1 and 15.2) should be noted.

Specificity, measurability and action orientation

The target is specific, relating to maintaining the role of ecosystems in underpinning the sustainability of water, and thus a requirement to achieve Goal 6. The list of ecosystem types referred to (mountains, forests, wetlands, rivers, aquifers and lakes) is non-exhaustive, enabling member states to include other relevant ecosystems according to national priority. The target is action-oriented (“*protect and restore*”) and measurable using existing monitoring frameworks for specific ecosystem types.

Target formulation comments and possible refinements

The target date (2020) is inconsistent with other target dates in Goal 6 and we suggest rewording it to align the date to 2030.

Target 11.5 Resilience to water-related disasters

“By 2030, significantly reduce the number of deaths and the number of people affected and decrease by [x] per cent the economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations”

Linkage to existing agreements and international law

The target does not fall below existing agreements or international law, but it is closely related to the upcoming negotiations for a Post-2015 Framework for Disaster Risk Reduction at the Sendai Conference in March 2015. It is also linked to the ongoing negotiations to the UN Framework Convention on Climate Change (UNFCCC), on reaching an ambitious legally binding agreement applicable to all Parties in Paris in December 2015.

Linkage to other SDG targets

The target does not duplicate any other SDG targets, while it is consistent and supportive of other targets under other goals, such as water and sanitation (6.5), human settlements (11.3) and climate change (13.1).

Specificity, measurability and action orientation

The target is composed of three specific, measurable and action-oriented elements: reducing the number of deaths (1) and people affected (2), as well as the economic losses, following water-related disasters.

Target formulation comments and possible refinements

Given that 11.5 falls under Goal 11, which is about “*Making cities and human settlements inclusive, safe, resilient and sustainable*”, it should be noted that water-related disasters also have large impacts on rural areas and the natural environment.

3. UN-Water Technical Advice on Water and Sanitation Indicators

In response to a call from the UN Statistics Division (UNSD) to the TST in February 2015, UN-Water prepared a technical advice on indicators reporting on progress towards water and sanitation related targets in the SDGs, with the purpose of informing the UN Statistical Commission, and eventually the intergovernmental negotiations in the UN General Assembly. The proposal, covering targets 6.1 to 6.6 and 11.5, was submitted to the TST in February 2015. The aim has been to keep the SDG monitoring indicator framework as manageable as possible, with an eye towards measurability and existing monitoring frameworks.

Given the inherent complex and inter-related nature of water issues and the composite nature of the current proposed targets under Goal 6, monitoring them through a single indicator per target would not be ideal. UN-Water therefore proposes a set of core indicators for the water targets for consideration at the SDG level. Where possible we have ranked them in order of priority. This set of indicators could be seen as the minimum number of indicators needed for monitoring the targets.

In addition, UN-Water proposes supplemental indicators to ensure more comprehensive coverage. Note that for the supplemental indicators related to targets 6.1 and 6.2 reflect a proposed ladder concept supporting the progressive achievement of the target elements. The development of supplementary indicators will continue throughout the SDG period in response to emerging issues, information needs from Member States, and the application of new observation technologies.

The suggested water related indicators have the ability not only to provide the most impact for that target in question, but will also support and impact many of the other goals and targets in the proposed SDG framework. Specifically, addressing water-related aspects of disasters is essential, since water-related disasters, such as floods, tsunamis and droughts represent the highest proportion of disasters (including loss of human life and economic aspects) worldwide.

Target 6.1 Safe and affordable drinking water

“By 2030, achieve universal and equitable access to safe and affordable drinking water for all”

Safely managed drinking water is a composite indicator building on the MDG concept of a basic 'improved' water source and integrating additional information on accessibility and safety. Universal implies all exposures in all settings and priority settings beyond the household include schools and health care facilities. Equitable implies progressive reduction and elimination of inequalities between population sub-groups. Affordability is an important cross-cutting concern.

Access to basic water services is already monitored by WHO/UNICEF JMP. Methodologies have been identified to collect the additional information required to monitor safely managed from a combination of household surveys and administrative records. Monitoring packages for water, sanitation and hygiene

(WASH) in schools and health care facilities have also been developed. JMP plans to further develop its reporting of progressive reduction of inequalities. Some stratifies can be reported immediately while others will be developed during the SDG period. JMP also plans to use available data on household expenditure/tariffs and income/poverty to start benchmarking affordability across countries and reporting national, regional and global trends.

Note that experts consider universal access to a basic water service achievable by 2030, but universal access to 'safe and affordable' unlikely to be achieved in all countries by 2030³.

Core indicator

The proposed core indicator is:

1. Percentage of population using safely managed drinking water services [progressive elimination of inequalities in access]

Definition: Percentage of population using a basic drinking water source [MDG 'improved' indicator] which is located on premises and available when needed, free of fecal (and priority chemical) contamination and/or regulated by a competent authority.

Data source, measurability and monitoring framework: JMP (WHO/UNICEF), already in place. Household surveys can provide data on basic water on premises as well as availability when needed and free from contamination via direct water quality testing. Administrative sources can provide data on regulation of water safety and risk management.

Supplemental indicators

The proposed supplemental indicators are:

Percentage of population using basic drinking water services [progressive elimination of inequalities in access]

Definition: Percentage of population using a basic drinking water sources [MDG 'improved' indicator] with a total collection time of no more than 30 minutes for a roundtrip including queuing.

Data source, measurability and monitoring framework: JMP (WHO/UNICEF), already in place.

Percentage of pupils enrolled in schools providing basic water services

³ See http://www.wssinfo.org/fileadmin/user_upload/resources/post-2015-WASH-targets-factsheet-12pp.pdf

Definition: Percentage of pupils enrolled in primary and secondary schools with a functional basic drinking water source on or near premises and water points accessible to all users during school hours

Percentage of beneficiaries using health care facilities providing basic water service

Definition: Percentage of beneficiaries using health care facilities with a functional basic water source on premises and water points accessible to all users at all times.

Target 6.2 Adequate and equitable sanitation

“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”

Safely managed sanitation is a composite indicator building on the MDG concept of a basic 'improved' sanitation facility and integrating additional information on safe reuse and treatment of excreta. Hand washing is a top priority for health and menstrual hygiene management is critically important for women's health, safety and dignity. Universal implies all exposures in all settings and priority settings beyond the household include schools and health care facilities. Equitable implies progressive reduction and elimination of inequalities between population sub-groups. Affordability is an important cross-cutting concern.

Access to basic sanitation services is already monitored by WHO/UNICEF JMP. Methodologies are under development to collect the additional information required to monitor safely managed from a combination of household surveys, administrative records and other data sources. Monitoring packages for WASH in schools and health care facilities have also been developed. JMP plans to further develop its reporting of progressive reduction of inequalities. Some stratifies can be reported immediately while others will be developed during the SDG period. JMP also plans to use available data on household expenditure/tariffs and income/poverty to start benchmarking affordability across countries and reporting national, regional and global trends.

Note that experts consider ending open defecation and ensuring universal access to a basic water service achievable by 2030, but universal access to 'adequate' is unlikely to be achieved in all countries⁴.

Core indicators

The proposed core indicators, numbered in order of priority, are:

- 1. Percentage of population using safely managed sanitation services [progressive elimination of inequalities in access]**

⁴ See http://www.wssinfo.org/fileadmin/user_upload/resources/post-2015-WASH-targets-factsheet-12pp.pdf

Definition: Percentage of population using a basic sanitation facility [MDG 'improved' indicator] which is not shared with other households and where excreta is safely disposed in situ or transported to a designated place for safe disposal or treatment plant

Data source, measurability and monitoring framework: JMP (WHO/UNICEF), already in place. Household surveys can provide info on types of sanitation facilities and disposal in situ. Administrative, population and environmental data can be used to estimate safe disposal/transport of excreta, when no country data are available.

2. Percentage of population with a hand washing facility with soap and water in the household [progressive elimination of inequalities in access]

Definition: Percentage of population with a handwashing facility with soap and water in the household

Data source, measurability and monitoring framework: JMP (WHO/UNICEF), already in place. Data collected through household surveys.

Supplemental indicators

The proposed supplemental indicators, numbered in order of priority, are:

Percentage of population using a basic sanitation service [progressive elimination of inequalities in access]

Definition: Percentage of population using a basic sanitation facility (shared and not shared with other household)

Data source, measurability and monitoring framework: JMP (WHO/UNICEF), already in place. Data collected through household surveys.

Percentage of population practicing open defecation

Definition: Percentage of population practicing open defecation (defecating in bushes, fields, open water bodies or other open spaces)

Percentage of pupils enrolled in schools that provide basic sanitation services

Definition: Percentage of pupils enrolled in primary and secondary schools with functional basic sanitation facilities for males and females on or near premises

Percentage of pupils enrolled in schools with basic hand washing facilities

Definition: Percentage of pupils enrolled in schools with functional hand washing facilities

Percentage of pupils enrolled in schools with basic menstrual management facilities

Definition: Percentage of pupils enrolled in schools with adequate and appropriate sanitary facilities for washing and change management and disposal of menstrual waste

Percentage of beneficiaries using health care facilities providing basic sanitation services

Definition: Percentage of beneficiaries using health care facilities with functional basic separated sanitation facilities for males and females

Percentage of beneficiaries using health care facilities with basic hand washing facilities

Definition: Percentage of beneficiaries using health care facilities with adequate hand hygiene supplies available at key locations

Percentage of beneficiaries using health care facilities with basic menstrual management facilities

Definition: Percentage of beneficiaries using health facilities with adequate and appropriate sanitary facilities for washing and change management and disposal of menstrual waste

Target 6.3 Reduced water pollution

"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"

The target contains three distinct elements on water quality/pollution reduction, wastewater treatment, and wastewater recycling and safe reuse. Wastewater represents one of the main water pollutants, is relatively easy to monitor and clearly actionable. Water quality represents the actual outcome of all pollution and pollution reduction activities, which is needed to fully report on target 6.3, and feed into

other water-related targets. However, progress is more difficult to detect between reporting periods and does not indicate sectors responsibilities for action. Both are thus proposed as core indicators. Safe reuse, which poses the greatest measurability challenges, is proposed as a supplemental indicator.

Core indicators

Two equally important indicators are proposed as core indicators for target 6.3:

1. Percentage of wastewater safely treated

Definition: Proportion of wastewater generated both through domestic and industrial sources safely treated compared to total wastewater generated both through domestic and industrial sources. Ladders for progressive improvement can be developed to define safe treatment.

Data source, measurability and monitoring framework: Partial monitoring framework in place, a waste water monitoring protocol is proposed to aggregate best national available data. Existing data is available from JMP, AQUASAT, IBNET and GLAAS, as well as population density, and land-use/land-cover data from earth observations. Data will come from a variety of sources combining utility and regulator data for off-site systems and potentially household surveys and measured data for onsite systems, supplemented by modeled estimates where no reliable national data exist. Modeled estimates can be generated using JMP data combined with treatment performance in different population density and income settings.

1. Percentage of receiving water bodies with ambient water quality not presenting risk to the environment or human health

Definition: Percentage of receiving water bodies with ambient water quality not presenting risk to the environment or human health. Water quality is estimated through a water quality index, compiling a core set of parameters: total dissolved solids (TDS); percentage dissolved oxygen (%DO); dissolved inorganic nitrogen (DIN); dissolved inorganic phosphorus (PIN); and Escherichia coli (E. coli).

Data source, measurability and monitoring framework: A new monitoring framework is needed building on existing monitoring and data resources such as GEMS Water, GEMStat (UNEP) and OECD. Measurements would be completed at local laboratories and/or achieved using field measurements on appropriate protocols for sample collection and analysis.

Supplemental indicators

Wastewater reuse and recycling is one of the three target elements, but since it is not relevant to all countries (driven by water scarcity) and challenging in measurability, it is proposed as a supplemental indicator:

Percentage of wastewater safely reused and recycled

Definition: Proportion of municipal wastewater safely reused compared to total municipal wastewater discharged. Safety is defined by treatment level and use type as a proxy for implementation of 2006 Guidelines on safe use of wastewater. Data collection for safe reuse can be included in the protocol proposed for wastewater safely treated above.

Data source, measurability and monitoring framework: Data sources are limited. AQUASTAT contains data on the direct use for irrigation for a limited number of countries.

Target 6.4 Sustainable water use

“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

The target contains three elements oriented towards addressing the environmental, economic, and social aspects of water scarcity. As core indicators, “level of water stress: freshwater withdrawal in percentage of available freshwater resources” and “percentage of change in water use efficiency over time” are proposed, the former building on the existing MDG indicator on proportion of total water resources used. For the latter, data is already available in a number of datasets that needs to be integrated. The number of people affected by water scarcity is proposed as a supplemental indicator, to report on the social dimension of water scarcity.

Core indicator

The proposed core indicators, numbered in order of priority, are:

1. Level of water stress: freshwater withdrawal in percentage of available freshwater resources

Definition: Level of water stress: freshwater withdrawal in percentage of available freshwater resources (water withdrawal intensity) is the ratio of total water withdrawals to available water, taking environmental water requirements (EWR) into account. It is measured at the scale of the river basin and aggregated to the country and region. The target for the indicator could be country specific, to reflect differences in climate and national water management goals. Alternatively, uniform targets could be set using existing literature on water stress and water scarcity (e.g. >80% indicates very high stress).

Monitoring Framework/Data source and measurability: The indicator builds on MDG indicator 7.5 by accounting for environmental water requirements and including both groundwater and surface water withdrawals. It can be calculated directly from AQUASTAT data, available for 160 countries out of the 200 in the database, with a track record starting in 1992. EWR data is presently not collected by AQUASTAT, but many countries are likely to have good institutional arrangements for such collection.

Modeled data could be used to fill in gaps while capacity is being developed, so that the indicator could be calculated for all countries immediately.

2. Percentage of change in water use efficiency over time

Definition: Percentage of change in water use efficiency over time tracks change in water-use efficiency over time for major sectors, including energy, domestic, industrial, and agricultural. Value defined for each sector is divided by water withdrawn or consumed. The indicator can be aggregated to reflect overall change in productivity across sectors or disaggregated to the sector level.

Monitoring framework/Data source and measurability: The indicator can be calculated using existing datasets from Aquastat (FAO), National Accounts Main Aggregates (UNSD), World Energy Outlook (International Energy Agency), World Bank demographic datasets, and WaterStat Database (Water Footprint Network). Further development of the monitoring framework is needed to integrate these datasets and to fill existing data gaps.

Supplemental indicators

The proposed supplemental indicator is:

Number of people affected by water scarcity

Definition: The indicator on “Number of people affected by water scarcity” accounts for the number of people affected by insufficient water supply including such effects as the effort required to obtain water for domestic needs, reduced crop yields, and disruptions in electrical supply.

Monitoring framework/Data source and measurability: The indicator would be measured using existing survey mechanisms such as JMP. Several questions already used in the JMP survey can be used as proxies. Additional questions could also be added to the survey to incorporate detailed information about specific water scarcity effects.

Target 6.5 Integrated water resources management

Target 6.5 “By 2030 implement integrated water resources management at all levels, including through transboundary cooperation as appropriate”

This target and its indicators directly underpin all the other water and sanitation goal targets. The priority 1, which deals with measuring the status of integrated water resources management (IWRM) implementation, meets all specified criteria and has already received widespread support from countries.

The indicator on transboundary cooperation, where applicable, is crucial for ensuring sustainable management of shared water resources. The fundamental elements for effective cooperation are agreements on transboundary waters that are actually observed and related functioning institutions like river basin organizations. The transboundary indicator can be defined at different scales, and the national reporting could be appropriately reviewed at the global level. Agreements and institutions are commonly either bilateral (covering several basins) or multilateral, specific to a river basin, and consequently progress needs to be monitored down to the basin level.

Core indicator

The proposed core indicators, numbered in order of priority, are:

1. Degree of integrated water resources management (IWRM) implementation (0-100)

Definition: This indicator describes (1) the extent to which an enabling environment for IWRM (policy, strategic planning, legal framework and financing) has been established, (2) the structure and performance of an institutional framework to support IWRM processes, and (3) the degree to which management instruments/tools are applied. Issues relating to gender, governance, ecosystems, capacity, and transboundary aspects of water management are included. Results can be easily disaggregated to give a more nuanced picture of status both at national and regional (transboundary) levels.

Data source, measurability and monitoring framework: National IWRM questionnaires measure both qualitative and quantitative aspects of IWRM. The indicator builds on the approach that was successfully applied to measure the status of IWRM for the Commission on Sustainable Development in both 2008 and 2012 (Rio+20), including 133 countries, which can provide a baseline for measurement.

2. Percentage of transboundary basin area with an operational arrangement for water cooperation

Definition: The indicator is defined as the percentage of surface area of those transboundary basins' that have an operational agreement/arrangement or institution for transboundary water cooperation over the total surface area of transboundary basins. For the cooperation framework to be considered as "operational", it requires that there are regular meetings of the riparian countries to discuss the management of the water resource and to exchange information.

Data source, measurability and monitoring framework: A global database exists of freshwater treaties and international river basin organizations and as well as several regional ones, e.g., for the Pan-European region the second Assessment under the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes. A global baseline comparative assessment of transboundary waters, including river basins (286) and aquifers, has been undertaken by the

Transboundary Waters Assessment Project (TWAP; completed in 2014), involving generation of geo-referenced datasets.

Supplemental indicators

No supplemental indicators proposed.

Target 6.6 Protection of water-related ecosystems

Target 6.6 “By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes”

The list of ecosystem types referred to in the target (mountains, forests, wetlands, rivers, aquifers and lakes) is non-exhaustive, enabling member states to include other relevant ecosystems according to national priority. Loss of wetlands is proposed to be the core indicators, since it equates to loss of biodiversity and associated ecosystem services, as well as loss of potential water resources. Countries without wetlands may use one or more of the supplemental indicators.

Core indicator

The proposed core indicator is:

1. Percentage of change in wetlands extent over time

Definition: Percentage of change in wetlands extent over time. The Ramsar broad definition of "wetland" is used which includes rivers and lakes (enabling three of the biome types mentioned in the target to be assessed - wetlands, rivers, lakes - plus other wetland types). Universal coverage. The Change in Wetland Extent uses an existing methodology for data collection and analysis to calculate a global average of change in wetland extent and can be disaggregated geographically and by wetland type.

Data source, measurability and monitoring framework: Ramsar Convention through its regular State of the World's Wetlands and their Services reports and is also a sub-indicator for Aichi Biodiversity Target 14 (with reporting mechanism in place for that). The proposed indicator is intelligible, sensitive to drivers and protection and restoration measures, comparable over time, and universally applicable. Loss of wetland is commonly estimated through manual digitalization of aerial or satellite images, a methodology that in the coming years will be advanced by remote sensing. Heterogeneous datasets are considered to be acceptable: change in extent will still be captured.

Supplemental indicators

The proposed supplemental indicators, numbered in order of priority, are:

Forest Area providing Water-Related Ecosystem Services (change in total area over time)

Includes measurements based on: Change in the area of forests designated primarily for the protection of soil and water resources (Data source: FAO Global Forest Resources Assessment; Change in the area of forests within protected areas within formally established protected areas independently of the purpose for which the protected areas were established (Data source: FAO Global Forest Resources Assessment)).

The existing monitoring frameworks include: i) FAO Global Forest Resources Assessment and ii) UN Forum on Forests National Reporting on the progress towards the achievement of the global objectives on forests and the implementation of the non-legally binding instrument on all types of forests. A new forest-related monitoring and accountability framework will be decided at UNFF11 in May 2015 as part of overall post-2015 international arrangement on forests. The proposed indicator is intelligible, sensitive to drivers and protection and restoration measures, comparable over time, and universally applicable. The indicator would also cover forested areas in mountains.

Land affected by desertification (% change over time)

Excellent Monitoring and Reporting Framework in place (UNCCD and FAO LADA). Excellent credibility. A direct measure of the loss of the ability of an ecosystem (land/soil) to store water. The indicator would include mountains (that are subject to desertification) and aquifers (with regards to their prominent role in dryland areas). Not mentioned explicitly in target but nevertheless highly relevant. Not universal - limited primarily to dryland areas - but this would include at least 100+ Member States.

Change in the extent of water-related ecosystems over time (% change over time)

This indicator is proposed as a solution to capture most elements of target 6.6 (which can only be achieved through a composite index). It measures the trend in the status of water-related ecosystems. It combines datasets and monitoring and reporting frameworks as listed above for forests, wetlands, and drylands (and is flexible for the inclusion of other ecosystem types where data are or might become available). The index is to be weighted for each ecosystem. Measurability and universality are as per the sub-indicators (as listed).

Natural Water Capital Index

Essentially a combination of measurements of total water withdrawn compared to total water available but factoring in ecosystem requirements. Monitoring Framework currently not in place but indicator can be calculated under other monitoring frameworks once ecosystem requirements are quantified. This indicator essentially recognizes that "total water available" should include consideration of that required

by ecosystems. Requires additional monitoring efforts with regards to ecosystem requirement parameter. Capacity building required to obtain a global dataset.

Target 11.5 Resilience to water-related disasters

Target 11.5 “By 2030, significantly reduce the number of deaths and the number of people affected and decrease by [x] per cent the economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations”

The input to this target is meant to focus on water-related disasters such as floods, drought and tsunamis – together, all water-related disasters form the costliest component of total disasters worldwide in terms of both cost of human life and economic. For the core indicator, data should be used to establish trends and not as an evaluation of annual performance.

Core indicator

The proposed core indicator is:

1. Number of deaths per year resulting from each disaster type

Definition: At the global level, the core indicator should be able to be disaggregated by disaster type (floods, droughts, tsunamis, earthquakes, landslides etc.) and could be disaggregated by income, gender, and age of victims; further disaggregation at national level to include frequency of event and its magnitude.

Data source, measurability and monitoring framework: A new monitoring framework is needed drawing on the existing monitoring programmes/databases such as EM-DAT (CRED) and Desinventar.

Supplemental indicators

The proposed supplemental indicators, numbered in order of priority, are:

Disaster damages to critical infrastructure of health and educational facilities (water-related)

A new monitoring framework is needed drawing on the existing monitoring programmes/databases such as Desinventar. It is suggested that the specified critical infrastructure represents a surrogate reflecting how society is coping with advances in prevention, preparedness, etc. (overall disaster risk management), rather than using a supplemental indicator of direct disaster economic losses.

Population with access to early warnings of disasters (water-related)

A new monitoring framework is needed drawing on the existing monitoring programmes/databases as reported by the UNISDR national platforms.

Annex 1 Water and Sanitation in other SDG Goals and Targets

Linkage to water and sanitation in other SDG goals and targets, with reference to relevant UN-Water proposed indicators

OWG Proposed Goal	OWG Proposed SDG Targets	Most relevant UN-Water proposed indicators (priority)	Other water indicators (supplemental)
1. End poverty in all forms everywhere	1.5 by 2030 build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	6.1 Percentage of population using safely managed drinking water services 6.2 Percentage of population using safely managed sanitation services All target 6.6 indicators (role of ecosystem services in building resilience) Also 11.5 Number of deaths per year resulting from water-related disasters	Degree of integrated water resources management (IWRM) implementation (0-100) Number of deaths per year resulting from water-related disasters
	1.b create sound policy frameworks, at national, regional and international levels, based on pro-poor and gender-sensitive development strategies to support accelerated investments in poverty eradication actions		Percentage of transboundary basin area with an operational arrangement for water cooperation
2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	2.2 by 2030 end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons	6.1 Percentage of population using safely managed drinking water services 6.2 Percentage of population using safely managed sanitation services	
	2.4 by 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change,	All target 6.6 indicators (role of water-related ecosystem services in achieving sustainable food production)	Percentage of change in water use efficiency over time Number of people affected by water scarcity

OWG Proposed Goal	OWG Proposed SDG Targets	Most relevant UN-Water proposed indicators (priority)	Other water indicators (supplemental)
	extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality		
3. Ensure healthy lives and promote well-being for all at all ages	3.3 by 2030 end the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases	6.1.1 Percentage of population using safely managed drinking water services 6.2.1 Percentage of population using safely managed sanitation services 6.2.2 Percentage of population with hand washing facilities with soap and water at home 6.3.1 %-age of wastewater safely treated	Degree of integrated water resources management (IWRM) implementation (0-100) Number of people affected by water scarcity
	3.9 by 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination	6.1 Percentage of population using safely managed drinking water services 6.3.1 %-age of wastewater safely treated	Degree of integrated water resources management (IWRM) implementation (0-100) Number of people affected by water scarcity
4. Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	4.1 by 2030 ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	6.1 Percentage of population using safely managed drinking water services 6.2 Percentage of population using safely managed sanitation services	
5. Achieve gender equality and empower all women and girls	5.1 Eliminate all forms of violence against all women and girls in the public and private spheres	6.1 Percentage of population using safely managed drinking water services 6.2 Percentage of population using safely managed sanitation services	
6. Ensure availability and sustainable management of water and sanitation for all			
7. Ensure access to affordable, reliable, sustainable, and	7.2 increase substantially the share of renewable energy in the		Percentage of change in water

OWG Proposed Goal	OWG Proposed SDG Targets	Most relevant UN-Water proposed indicators (priority)	Other water indicators (supplemental)
modern energy for all	global energy mix by 2030		use efficiency over time
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	8.4 improve progressively through 2030 global resource efficiency in consumption and production, and endeavor to decouple economic growth from environmental degradation in accordance with the 10-year framework of programmes on sustainable consumption and production with developed countries taking the lead		Percentage of change in water use efficiency over time
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	All target 6.6 indicators are relevant for 9.1 and 9.2 (water-related ecosystems are natural/green infrastructure and therefore implicitly included in this goal. Green infrastructure can perform similar functions to built infrastructure and either replace built infrastructure or in most cases significantly enhance the sustainability, resilience and performance of built infrastructure.)	Percentage of transboundary basin area with an operational arrangement for water cooperation
	9.2 by 2030 upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, all countries taking action in accordance with their respective capabilities		
	9.4 by 2030 upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, all countries taking action in accordance with their respective capabilities		Percentage of change in water use efficiency over time
10. Reduce inequality within and among countries	10.2 By 2030, empower and promote the social, economic and political inclusion of all,	6.1 Percentage of population using safely managed drinking	

OWG Proposed Goal	OWG Proposed SDG Targets	Most relevant UN-Water proposed indicators (priority)	Other water indicators (supplemental)
	irrespective of age, sex, disability, race, ethnicity, origin, religion	water services 6.2 Percentage of population using safely managed sanitation services 6.3 Percentage of population with hand washing facilities with soap and water at home	
11. Make cities and human settlements inclusive, safe, resilient and sustainable	11.5 by 2030 significantly reduce the number of deaths and the number of affected people and decrease by y% the economic losses relative to GDP caused by disasters, including water-related disasters, with the focus on protecting the poor and people in vulnerable situations	All target 6.6 indicators are relevant (rationale: water-related ecosystem services are directly relevant to these targets for sustainable/resilient cities; water-related ecosystems are green infrastructure to support cities, and reduce their impacts, including wetlands and forests in urban, peri-urban environments and at catchment scale. Most indicators can be disaggregated to indicate trends relevant to urban areas).	Degree of integrated water resources management (IWRM) implementation (0-100) Number of people affected by water scarcity Number of deaths per year resulting from water-related disasters
	11.6 by 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management		
	11.7 by 2030, provide universal access to safe, inclusive and accessible, green and public spaces, particularly for women and children, older persons and persons with disabilities		
	11. a. support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning		
	11. b by 2020, increase by x% the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, develop and implement in line		Percentage of transboundary basin area with an operational arrangement for water cooperation

OWG Proposed Goal	OWG Proposed SDG Targets	Most relevant UN-Water proposed indicators (priority)	Other water indicators (supplemental)
	with the forthcoming Hyogo Framework holistic disaster risk management at all levels		
12. Ensure sustainable consumption and production patterns	12.2 by 2030 achieve sustainable management and efficient use of natural resources	All target 6.6 indicators relevant (water-related ecosystem services underpin sustainability and efficient use of water (natural) resources).	Percentage of change in water use efficiency over time
	12.3 by 2030 halve per capita global food waste at the retail and consumer level, and reduce food losses along production and supply chains including post-harvest losses		Percentage of change in water use efficiency over time Number of people affected by water scarcity
	12.4 by 2020 achieve environmentally sound management of chemicals and all wastes throughout their life cycle in accordance with agreed international frameworks and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment	All target 6.6 indicators relevant 6.3.1 %-age of wastewater safely treated 6.3.1 %-age of receiving water bodies with ambient water quality not presenting risk to the environment or human health 6.3.3 %-age of wastewater safely reused and recycled (Water-related ecosystem services related to nutrient/chemical/waste regulation and recycling – including managed use of ecosystems, including man-made ecosystems, to process waste prior to release into the environment)	Degree of integrated water resources management (IWRM) implementation (0-100)
13. Take urgent action to combat climate change and its impacts	13.1 strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries	All target 6.6 indicators relevant (role of water-related ecosystem services in climate change adaptation as already recognized and prioritized by UNFCCC and CBD)	
14. Conserve and sustainably	14.1 by 2025, prevent and	Strongly linked to target 6.3 on	All target 6.6 indicators relevant

OWG Proposed Goal	OWG Proposed SDG Targets	Most relevant UN-Water proposed indicators (priority)	Other water indicators (supplemental)
<p>use the oceans, seas and marine resources for sustainable development</p>	<p>significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution</p>	<p>wastewater</p>	<p>(role of water-related ecosystem services, on land, to reduce nutrient run-off into the marine environment)</p>
	<p>14.2 by 2020, sustainably manage, and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration, to achieve healthy and productive oceans</p>		<p>All target 6.6 indicators relevant (wetland and forest ecosystems are sub-components of coastal ecosystems including those that are freshwater or influenced by freshwater; wetlands and/or forest indicators can be disaggregated to provide information for coastal ecosystems)</p>
	<p>14.5 by 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on best available scientific information</p>		<p>Target 6.6 indicators for wetlands and forests (wetland and forest ecosystems are sub-components of coastal ecosystems including those that are freshwater or influenced by freshwater; wetlands and/or forest indicators can be disaggregated to provide information for coastal ecosystems)</p>
<p>15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</p>	<p>15.1 by 2020 ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements</p>	<p>6.2 Percentage of population using safely managed sanitation services</p> <p>All target 6.6 indicators relevant</p>	<p>6.2 Percentage of population using safely managed sanitation services</p> <p>All target 6.6 indicators relevant</p> <p>Degree of integrated water resources management (IWRM) implementation (0-100)</p> <p>Level of water stress: freshwater withdrawal in percentage of available freshwater resources</p> <p>Percentage of change in water use efficiency over time</p>
	<p>15.2 by 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and</p>	<p>All target 6.6 indicators relevant</p>	

OWG Proposed Goal	OWG Proposed SDG Targets	Most relevant UN-Water proposed indicators (priority)	Other water indicators (supplemental)
	increase afforestation and reforestation by x% globally		
	15.3 by 2020, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world	Target 6.6 indicator "Land affected by desertification"	Degree of integrated water resources management (IWRM) implementation (0-100)
	15.8 by 2020 introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems, and control or eradicate the priority species		Degree of integrated water resources management (IWRM) implementation (0-100)