Water Europe
Technology & Innovation

United Nations Educational, Scientific and Cultural Organization

World Water Assessment Programme

WATER IN THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT:

HOW CAN EUROPE ACT?

Water Europe Publication,
in collaboration with UNESCO WWAP

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Acronyms

CBO • *Community Based Organization*
CSO • *Civil Society Organization*
EC • *European Commission*
EU • *European Union*
G-STIC • *Global Sustainable Technology & Innovation Conference*
GWP • *Global Water Partnership*
HLPF • *High Level Political Forum*
HLPW • *High Level Panel on Water*
IWD • *International Water Dialogue*
IWRM • *Integrated Water Resources Management*
NGO • *Non-Governmental Organization*
O&M • *Operations and Maintenance*
RDI • *Research, Development and Innovation*
SBTI • *Science-Based Targets Initiative*
SDG • *Sustainable Development Goals*
SIRA • *Strategic Research and Innovation Agenda*
SME • *Small and Medium-sized Enterprise*
STI • *Science, Technology and Innovation*
TCFD • *Task Force on Climate-Related Financial Disclosures*
TRL • *Technology Readiness Level*
WWAP • *UNESCO World Water Assessment Programme*
WWDR • *UN World Water Development Report*
WWF • *World Wildlife Fund*
VNR • *Voluntary National Review*
WASH • *Water, Sanitation and Hygiene*
WEF • *World Economic Forum*

Preface

In September 2015, world leaders endorsed the largest and most comprehensive agenda looking forward to a sustainable future for the World: 2030 Agenda, including 17 specific Sustainable Development Goals (SDGs). This unprecedented commitment is strongly focused on our Planet, our People, and our Prosperity.

2030 Agenda is very ambitious, and looks at the future, but also at our present and our past, trying as much as possible to benefit from experience, lessons, ideas generated, and using them to project us into a better future.
Water has an immense role to play. If one looks at the SDGs, water has a dedicated goal (SDG 6), however, if we have a close look, it appears almost everywhere. It is fair to conclude that without proper attention to water sector development at large, it will be impossible to reach most of the SDGs.

The experience accumulated during centuries in Europe should be a catalyst for future water sector development. There is a broad range of examples on how, during the course of the past decades, Europe has contributed to advancing knowledge in improved water management. Such examples include developments in purely technological solutions, information management and sharing, novel institutional set-ups to regulate the use of the resources, and improved cooperation within and across the different regions of Europe.

It is very likely that water will be the most critical natural resource in the decades to come. Water can also be turned into an engine of our economies and source of prosperity if properly managed. Countries outside the region could benefit from this vast experience in order to avoid repeating the mistakes made in Europe in the course of the past centuries. For example, over-fertilization of waters, due to irrigation and agricultural intensification, has led to the implementation of policies to reduce the use of fertilizers in the Netherlands and other countries. Another example is the severe pollution of the river Rhine, which was slowly reduced with the concerted actions of many players in all countries in the basin.

At the same time, developments have happened and continue to happen at a tremendous pace in other regions of the world, including but not limited to, rapidly developing countries like India and China. It is very important that all different regions of the world increase their efforts in sharing experiences, lessons, and knowledge in order to help one another solve the global water challenges.

I am looking forward to a future we want, where all regions in the world continue to advance in knowledge and cooperation on all the broad range of issues in the water sector, which, without global commitment, will be very difficult to resolve. I am looking forward to seeing such efforts pay off by 2030 – if not before – when hopefully all water sector organizations are able to contribute to the achievement of the SDGs, for a better future of our precious water resources.

Budapest, Hungary, 23 February 2019
Csaba Kőrösi

Director (Directorate for Environmental Sustainability)
Office of the President of Hungary (Sherpa/ member of the High Level Panel on Water)
(former co-chair Open Working Group 2030 Agenda and permanent representative of Hungary to the UN - 2015)

Introduction

This publication is a Water Europe publication, jointly designed and developed with the UNESCO World Water Assessment Programme (WWAP) and is the updated version of the previous publication of Water Europe on the MDGs ("Setting the water Millennium Development Goals Research Agenda for the urban poor", 2012). Building on the experience acquired by coordinating the production of the "UN-Water SDG 6 Synthesis Report 2018 on Water and Sanitation", and complemented with information coming from the latest editions of the United Nations World Water Development Report (WWDR; coordinated by WWAP on behalf of UN-Water), WWAP has presented the challenges related to water sustainability at a global level. The relation to EU priority issues like inequalities, job creation and migration has been considered throughout.

The objective of this publication is to advocate for the role that the European Union, the European Commission and the European Water Sector actors had and should continue to have, to contribute to achieving the 2030 Agenda, in particular to SDG 6 and other water-related targets.

More specifically, this publication is a response to the following needs:

1. *Update Water Europe's strategic document portfolio with a document that highlights the importance of international cooperation to achieve the SDGs.*

2. *Contribute to the Policy Dialogue with relevant institutions, in particular the EU and European actors and in relation to recently published EC policy documents such as the "European Action for Sustainability" (focus on implementation of the SDGs in the EU) and the "New European Consensus for Development" (focus on development cooperation actions of the EU).*

In its Water Vision "The Value of Water", Water Europe has laid down a blueprint for a future Water-Smart Society that recognizes the true value of water for our whole society and all its different uses. We believe that the importance of water is still not widely understood, despite its relevance for sustainable development, as demonstrated in many key publications (e.g. the Global Risk Reports by the World Economic Forum and the UN Water SDG 6 Synthesis Report 2018, to mention just two).

We hope that this publication will provide inspiration and guidance to the EU Water Sector in view of the common future challenges and the need for effective and sustainable solutions.

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1.2030 Agenda Overview

Author: Vanessa de Oliveira (IHE Delft Institute for Water Education)

During a historic UN Summit in 2015, world leaders formally adopted a new set of 17 measurable Sustainable Development Goals (SDGs), and associated 169 targets, to end poverty, protect the planet and ensure prosperity for all (Figure 1). The SDGs build on the conclusions and actions of Rio 1992, Agenda 21 and Rio 2012, as well as the actions under the MDGs and go further, covering the three dimensions of sustainable development: **economic growth, social inclusion and environmental protection**. The SDGs are unique in that they **call for action by all countries**, poor, rich and middle-income to promote inclusive prosperity while protecting the planet. They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, equality, health, social protection, and job opportunities, while tackling climate change and environmental protection[1].

Figure 1: Sustainable Development Goals at a glance

Although the SDGs are not legally binding, they do provide a framework under which all countries are expected to take ownership and establish a national framework for achieving the 17 goals. It is a social pact between governments and their people. Countries have the primary responsibility for follow-up and review of the progress made in implementing the Goals and are encouraged to conduct voluntary national reviews[2] on a regular basis.

In 2017, during the annual gathering of the United Nations' High-Level Political Forum (HLPF) on Sustainable Development, in which the yearly progress on the SDGs is assessed, 43 countries presented their voluntary national reviews (VNR). Inter alia, the independent international organization GRI (Global Reporting Initiative), used the 2017 VNRs to investigate how the private sector in particular had been included, and concluded that countries are increasingly acknowledging the significant role companies can play to help meet the SDGs. The analysis showed that 93% of the countries had consulted the private sector in reviewing their national strategy and progress on the SDGs. In addition, 68% of the reports also recognized private investment as a crucial alternative means to complement public expenditure on the SDGs, and 43% of the reports stated efforts made by the country to develop more public-private partnerships on SDG implementation[3].

1) https://www.un.org/sustainabledevelopment/
2) The voluntary national reviews (VNRs) aim to facilitate the sharing of experiences, including successes, challenges and lessons learned, with a view to accelerating the implementation of the 2030 Agenda. For more info: https://sustainabledevelopment.un.org/vnrs/
3) https://www.globalreporting.org/information/news-and-press-center/Pages/Growing-role-for-the-private-sector-in-the-2030-Agenda.aspx

In 2018, the HLPF performed the first in-depth review of SDG 6, along with SDGs 7, 11, 12, 16 and 17. On this occasion, the main messages of "SDG 6 Synthesis Report 2018 on Water and Sanitation" were presented, including that "the world is not on track to achieve SDG 6 by 2030" and ways to accelerate progress need to be put in place (UN, 2018).

SDG 6 of the 2030 Agenda ("Clean Water and Sanitation"), along with its 8 targets, considers the water cycle as a whole, from the water quality of rivers, to the health of water-related ecosystems, from the efficient use of water to the treatment and use of wastewater, from better water management to better water governance and participation and capacity development. Water-related issues extend beyond the range of SDG 6, supporting the achievement of other goals, highlighting the need for an integrated approach to implementing the 2030 Agenda.

A very special feature of the SDGs is the dedicated Goal 17, in particular 17.16 and 17.17[4], on "Partnerships for the goals" which recognizes multi-stakeholder partnerships as important instruments for mobilizing and sharing knowledge, technologies and resources to support the achievement of the SDGs (Figure 2). This includes the promotion of effective public, public-private and non-state CSO / CBO/ NGOs partnerships across the globe. There is ample evidence that these partnerships are already successfully taking place. Some of this success can be seen under the Partnerships for SDGs online platform[5], a global registry of voluntary commitments and multi-stakeholder partnerships supporting the implementation of the SDGs.

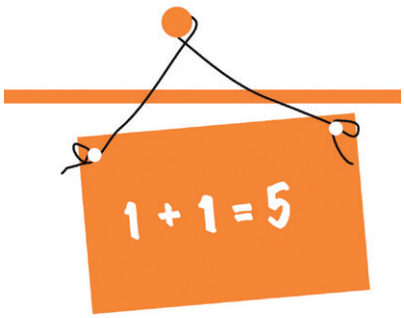
A number of international and high level initiatives in the follow-up of 2030 Agenda have highlighted and reinforced the importance of water in the whole sustainable development agenda.

To mention a few, the High Level Panel on Water & Peace[6], highlighting the strong linkage between lack of water security and conflict generation and migration issues as well as the role of women as providers of water and in decision-making processes in many societies, the High Level Panel on Water[7], highlighting the need, if not the urgency, to start properly valuing water, and the High Level Panel on Water and Disasters[8], highlighting the importance of proper water management for better preparedness and resilience of societies.

These initiatives all support the need to increase the profile of water within ongoing discussions on the world's future challenges.

Figure 2: Partnerships in the SDG Era

Source: "Maximising the Impact of Partnerships for the SDGs; Stibbe, D.T., Reid, S., Gilbert, J.; The Partnering Initiative and UN DESA (2018)"



4) SDG 17 targets and indicators can be found at: https://sustainabledevelopment.un.org/sdg17
5) https://sustainabledevelopment.un.org/partnerships/
6) https://www.genevawaterhub.org/resource/global-high-level-panel-water-and-peace-secretariat-0
7) https://sustainabledevelopment.un.org/HLPWater
8) http://www.wateranddisaster.org/

1.1. 2030 Agenda for Sustainable Development and SDG 6

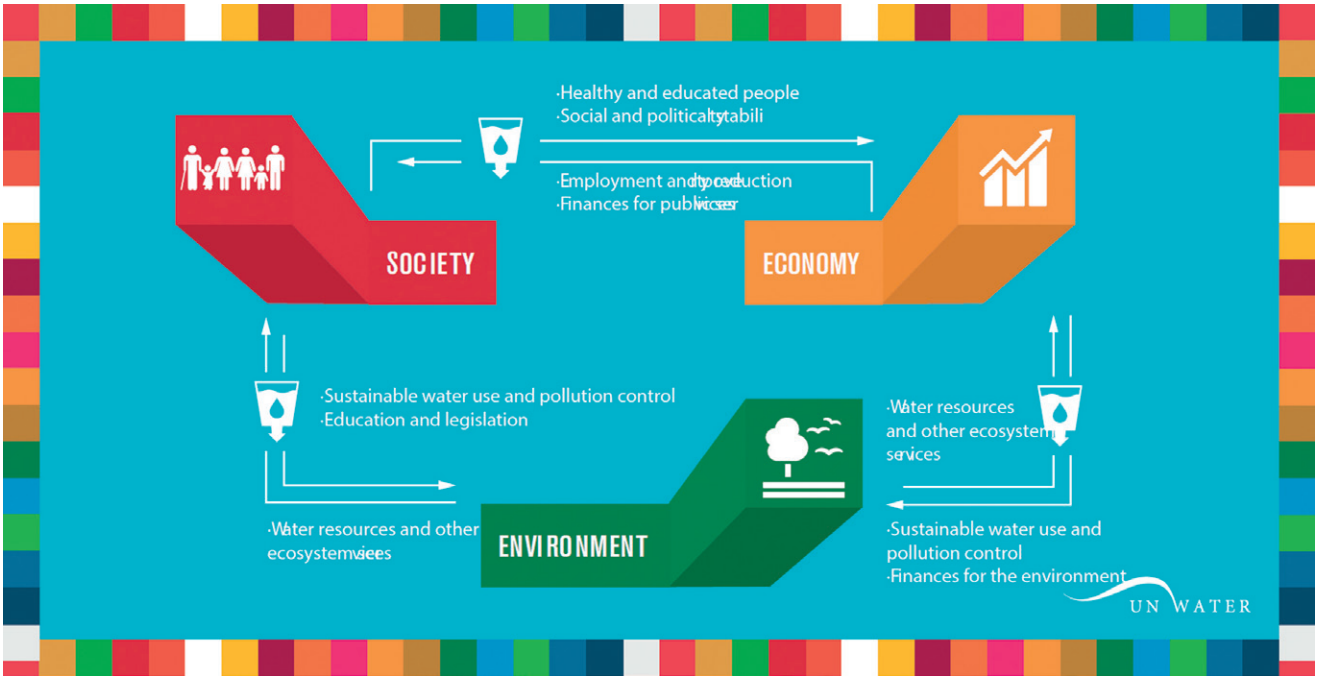
Authors: Angela Renata Cordeiro Ortigara and Stefan Uhlenbrook (WWAP)

The 2030 Agenda is a truly global agenda, which is universal and involves all countries of the world. As such, low, middle and high income countries each have roles to play.

The SDGs were developed to go beyond the ambition of the Millennium Development Goals (MDGs) in order to end all forms of poverty and inequalities. The MDGs comprised eight goals set by 189 UN Member States in 2000 and agreed to be achieved by 2015. Although most of the targets were not achieved by 2015, the MDGs did make substantial progress in focusing on development, and some of the targets were even met before the intended deadline.

The SDGs also have expanded greatly to include new emerging challenges such as climate change, economic and gender inequality, marine pollution, and innovation as cross cutting elements. As such, the SDGs now encompass 17 goals and go beyond issues directly related to poverty reduction, to also include and connect issues of peace and good governance. An important feature of the SDGs is that the goals are interconnected, meaning that the achievement of one goal depends on the success of one or more other goals. In short, the SDGs are integrated and interlinked – by design.
Distinctively from the MDGs, the SDGs were developed and agreed upon through a major process with coordinated open consultations, therefore the 2030 Agenda is the result of a more inclusive process which moves on from largely "development driven" approach. The SDGs have been developed at a time when inequality (as opposed to national poverty indices) is recognized as a major tailback, and thus applies to rich and poor countries alike. The SDGs are therefore referred to as 'universal goals.'

Figure 3: Water and Sanitation Interlinkages across 2030 Agenda



Source: UN-Water, Water and Sanitation Interlinkages across the 2030 Agenda for Sustainable Development

They [the SDGs] recognize that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection."[9]

9) http://www.un.org/sustainabledevelopment/development-agenda/

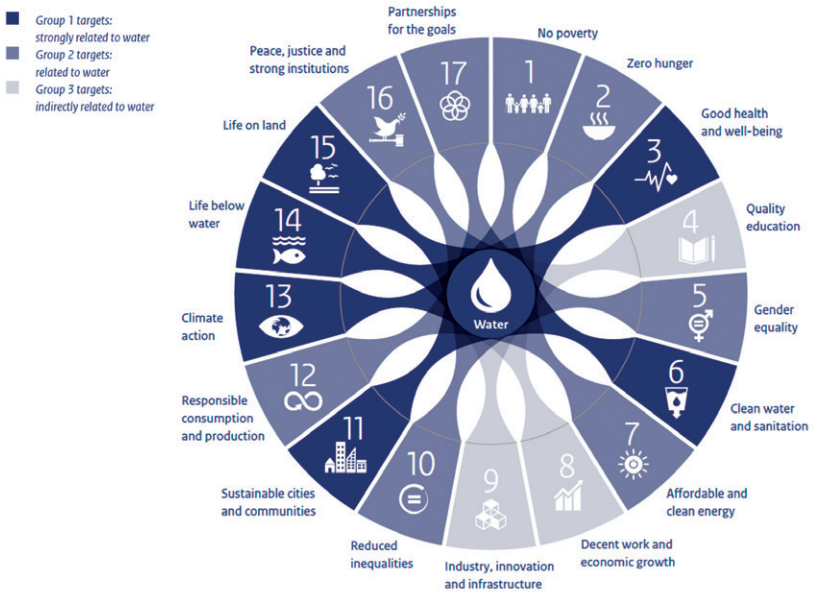
The SDGs incorporate the social and environmental components, with greater attention to integrating environmental issues into the socio and economic dimensions, as compared to the previous MDGs. This is reflected in the inclusion of a dedicated goal for water and sanitation (Goal 6), a goal on gender equality and women empowerment (Goal 5), a goal on reducing inequalities (Goal 10), as well as a goal on marine and terrestrial ecosystems (Goal 14 and 15) and one on climate change (Goal 13). In order to better support the achievement of the 2030 Agenda, it is essential to note the shift from the MDGs, in particular MDG 7 (Ensure environmental sustainability) that included a target for drinking water and sanitation, to a more comprehensive agenda spanning from universal drinking water and sanitation coverage to the inclusion of the whole water cycle, ecosystems protection and integrated water resources management.

Water is fundamental to the achievement of the 2030 Agenda, where policies and actions at the core of sustainable development can be strengthened (or compromised) through water (Figure 3 and 4). The UN-Water report "Water and sanitation interlinkages across the 2030 Agenda for Sustainable Development"[10] intricately describes the target-level linkages with SDG 6 and their interdependencies:

"Examples of synergies include increasing access to water supply, sanitation and hygiene (WASH) [6.1, 6.2] in homes, healthcare facilities, schools and workplaces, complemented by wastewater treatment [6.3], as a way to reduce risk of water-borne disease [3.1–3.3, 3.9] and malnutrition [2.2]; support education [4.1–4.5] and a productive workforce [8.5, 8.8]; and address poverty [1.1, 1.2, 1.4], gender inequality [5.1, 5.2, 5.4, 5.5] and other inequality [10.1–10.3]." Therefore, achieving SDG 6 is essential for progress on all other SDGs and vice versa, and the achievement of SDG 6 depends on the overall progress of the entire 2030 Agenda (UN, 2018).

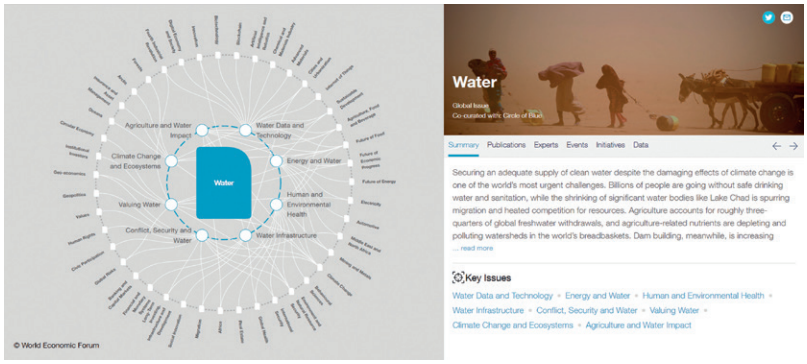
The interlinkages between water and a multitude of global challenges is evident, not only throughout 2030 Agenda, but also in other global challenges analyses. The World Economic Forum's effort entitled "Mapping Global Transformations" illustrates cross linkages between complex global issues and their respective driving forces[11]. According to the WEF analysis, "Water presents some of the world's most pressing social, political and economic challenges" (Figure 5).

Figure 4: Importance of Water in 2030 Agenda



Source: Ligtvoet W. et al. (2018), The Geography of Future Water Challenges: PBL Netherlands

Figure 5: Water as a Global Challenge



10) http://www.unwater.org/publications/water-sanitation-interlinkages-across-2030-agenda-sustainable-development/
11) https://toplink.weforum.org/knowledge/explore

1.2. The Importance of Science, Technology and Innovation

Authors: Inge Genné and Paul Campling (VITO)

The rapid development of the science and technology solutions for water will have a profound impact on the delivery of the SDGs related to water. The wise management of water resources and services not only benefits public health and environmental quality, but is also a true driver of socio-economic development and political stability. Within 2030 Agenda, a multi-stakeholder Forum on Science, Technology and Innovation for the SDGs (STI Forum) was created, to facilitate interaction and establish partnerships in order to identify and examine technology needs and gaps, including with regard to scientific cooperation, innovation and capacity-building[12]. At the same time, existing innovation platforms, albeit not specifically linked to the 2030 Agenda, play an essential role in identifying solutions to contribute to societal challenges in Europe and beyond. For example, the Water Europe Water Vision and Strategic Innovation and Research Agenda (SIRA)[13] identifies the key challenges and building blocks to establish a Water-Smart Society.

These building blocks are built on the basis of the acknowledgement of the real Value of Water. The Value of Water has different dimensions, among which pricing is only one aspect. The concept of Value of Water is elaborated further in Water Europe SIRA and in the report from the High Level Panel on Water (HLPW) "Making Every Drop Count" (Box 1).

Box 1: The Value of Water concept according to different perspectives (Water Europe and HLPW)

THE VALUE OF WATER: the "Multiple Waters" concept (Water Europe)

There is a growing consensus that the Circular Economy presents a new restorative and regenerative paradigm to achieve sustainability with system-wide societal, economic and environmental innovations.

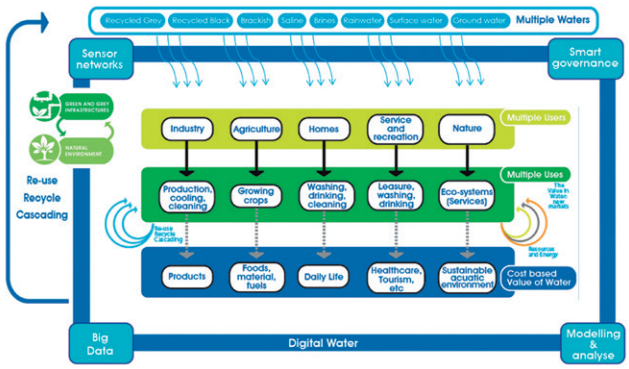
The technologies to do so are becoming increasingly more available, affordable, accepted and applied in cities and industries alike.

In the future society will manage the "multiple water resources", from clean rivers, surface and ground water to rainwater, brackish water, saline water, and used water, as a holistically integrated system (the right water for the right purpose to the right user).

THE VALUE OF WATER: benefits and risks associated to Water (HLPW)[14]

Society as a whole has a duty to:

- Recognise and embrace water's multiple values (socio-economic, cultural, and spiritual) to different groups and interests.
- Reconcile values in ways that are equitable, transparent and inclusive.
- Protect all water sources for current and future generations.
- Promote education and awareness about the value of water and its essential role in our society.
- Invest in institutions, infrastructure, information and innovation to realise the benefits of proper use and to reduce risks of misuse.



12) https://sustainabledevelopment.un.org/tfm
13) http://Water Europe.eu/publications/
14) https://sustainabledevelopment.un.org/HLPWater

Among the building blocks identified in the Water Europe SIRA, one example of key technological innovation that is worth highlighting is the digital water concept (Box 2).

Box 2: The Digital Water concept

DIGITAL WATER: from data management to water system innovation

The rapidly developing approaches for handling "Big Data" (data retrieval, storage, analysis and communication) is creating an increased ability to share and exchange data at various scales: local / urban, regional and river basin, but also to engage with and inform stakeholders. This rapidly evolving digital environment provides a huge potential to manage water resources and services more intelligently and efficiently. Data-driven and process-based models as well as advances in artificial intelligence are offering more precise water monitoring, forecasting and visualization capabilities for water managers and policy makers. At the urban level, water service providers now use a wide range of IT tools for monitoring, surveillance and analysis. Examples include: utility data management as a service hosted "in the cloud", water savings on-line trading, water service inventories and data management through new on-line data platforms and innovative customer relations using data and social media. The monitoring and management of large water resources systems is equally being transformed. There are new remote sensing techniques for tracking water levels and flows from surface and groundwater bodies. High precision flood modelling and forecasting is being used to introduce timely measures to mitigate the impact of flooding events and reduce losses and costs.

Other aspects of innovation have been identified as essential for the achievement of 2030 Agenda. In 2017, the Global Sustainable Technology & Innovation Conference (G-STIC), organized every year by VITO, discussed with a very large international audience the importance of STI for the achievement of SDGs. Outcomes of participatory sessions delivered the following key messages[15]:

- Many technologies needed to achieve many SDG-related targets are readily available. Following demonstration to show effectiveness under real-life conditions, we need to develop strategies for deployment at scale to a level necessary to achieve the SDGs.

- There is the need to stimulate governments, industry and researchers to openly share data. Citizen engagement on active data collection should be reinforced. This is an important step to changing human behaviour and move to a water resilient digital future.

- Treating wastewater to safeguard public and environmental health, is increasingly combined with turning wastewater into new resources. The wastewater transformation forms a major opportunity to change the way we manage water resources and water and sanitation services.

- Governance structures and multi-stakeholder partnerships are needed to embrace the true value of water.

- Circular economy is an essential element of the new narrative, with Industry 4.0[16] as key enabler to achieve it and resource recovery and use from waste streams, such as waste water and CO_2, the new normal.

15) https://2017.gstic.org/

16) Industry 4.0 is a name given to the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things, cloud computing and cognitive computing. Industry 4.0 is commonly referred to as the fourth industrial revolution.

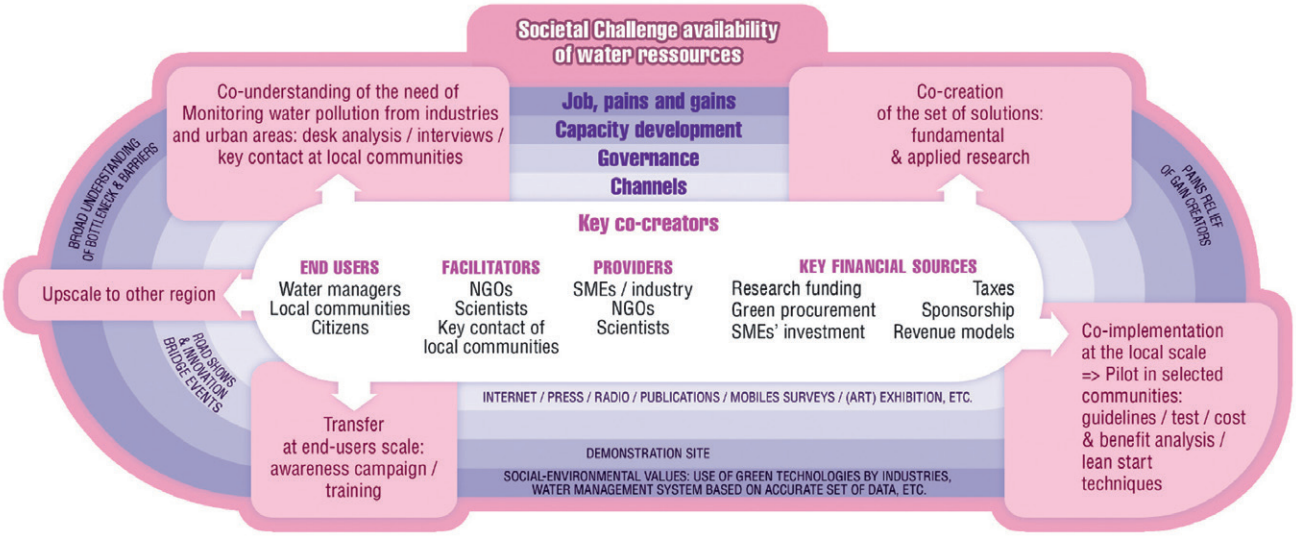
1.3. The Importance of Social Innovation

Authors: Uta Wehn (IHE Delft) and Natacha Amorsi (OIEau)

Social innovation is seen as innovation driven by national needs and aims at addressing social needs and ad hoc challenges in a different way than previously. For the water sector, social innovation means tackling societal, water-related challenges, by combining the technological and non-technological dimensions of innovation. Specifically, social innovation refers to the processes and outcomes focused on addressing societal goals, unsatisfied collective needs or societal - as opposed to mere economic - returns.

Social Innovation is particularly salient in the context of the complex and cross-cutting challenges that need to be addressed in order to achieve SDG 6 – and which will not be met by relying on market signals alone.
Many aspects of the hydrological cycle, the water supply system, water resources as well as climate, have to be monitored in order to be managed, particularly in the context of achieving the SDG 6 targets. However, the involved tasks and responsibilities often cut across different organizations and even national boundaries. From a social innovation perspective, monitoring and forecasting solutions based on European technologies and practices need to be adapted and paralleled by tailored efforts on capacity development and related governance structures in order to be locally achievable, sustainable and fit-for-purpose elsewhere, particularly in developing countries.

To succeed, social innovation efforts need to consider four technological and non-technological dimensions of the social innovation process: 1) technological solutions, 2) capacity development, 3) governance structures and 4) multi-stakeholder co-creation of solutions. These dimensions cut across organizational, sectoral and disciplinary boundaries and imply new patterns of stakeholder involvement and learning, as illustrated in Box 3. The success of social innovation processes is reliant on accountability of diverse stakeholders and across all government levels.



Source: AfriAlliance Social Innovation Factsheet #1.1: Monitoring drinking water quality for improved health in Africa

Box 3 Example of Social Innovation: Monitoring drinking water quality for improved health in Africa[17]

Access to safe and clean drinking water is a basic human right, as declared during the United Nations (UN) General Assembly in 2010 and has been firmly embedded in the SDGs (SDG 6.1). Access to safe and affordable drinking water to ensure health security implies a well-planned and implemented water quality monitoring scheme as well as technical solutions to test water quality in the field. Social innovation efforts to ensure safe access to drinking water should address the following.

Technological solutions:
Ensuring safe access to drinking water relies on technologies for monitoring and testing water quality. In developing countries, these need to be low-cost, portable and adapted to urban as well as remote areas, for use in laboratories or in-situ. In fact, where there is no accessible laboratory or because of the high costs of transport and analysis, water quality monitoring should be done using on-site testing methods, relying on tablet reagents and portable equipment.

Governance structures:
Water quality monitoring is a public health-focused activity and will only be effective and efficient if it promotes equality and is properly planned and implemented, i.e. by being embedded in appropriate governance structures. Technological innovations for water quality monitoring need to be considered within the context of such governance structures and to be aligned with the decision making processes:

- Plan water quality monitoring: institutions to be involved (roles and responsibilities), number and location of samples (depending on the number of people served), location of a laboratory for analysis, in-situ testing, costs of sampling, transport and analysis, adaptation of this plan in case of an epidemic, etc.

- Develop quality check indicators for water quality monitoring.

- Set official detailed guidelines for undertaking sanitary inspections and provide examples of inspection forms.

Capacity development:
In order to strengthen the capacity to monitor drinking water, key aspects are:

a) Health education and communication e.g. developing a Code of Good Hygiene Practices in each country, communicated to national and local authorities and explained to communities by NGOs.

b) Train observers from local communities (both male and females) who based on standardized rules can monitor water quality of springs and wells in remote areas. Results will thus be available immediately on the day of the test and will allow for prompt reaction in case of infection. Moreover, by carrying out some analyses themselves, local communities can become more involved and hygiene education messages will be reinforced.

c) In its guidelines, the WHO insists that people must be trained to do analyses themselves but also to understand the data and to maintain the technologies implemented in their community.

Multi-stakeholder process to co-create solutions:
Stakeholders from both sides (solution providers and potential users of water quality monitoring technologies) need to interact during the different stages of the innovation process to create a common ground for the co-production of the required knowledge: from the comprehension of the need to the design, implementation and use of innovative solutions.

17) Based on Amorsi, N., Soave, S., and Wehn, U. (2017) Monitoring drinking water quality for improved health in Africa, AfriAlliance Social Innovation Factsheet #1.1, AfriAlliance.

1.4. The Importance of Business

Author: David Smith (WE&B)

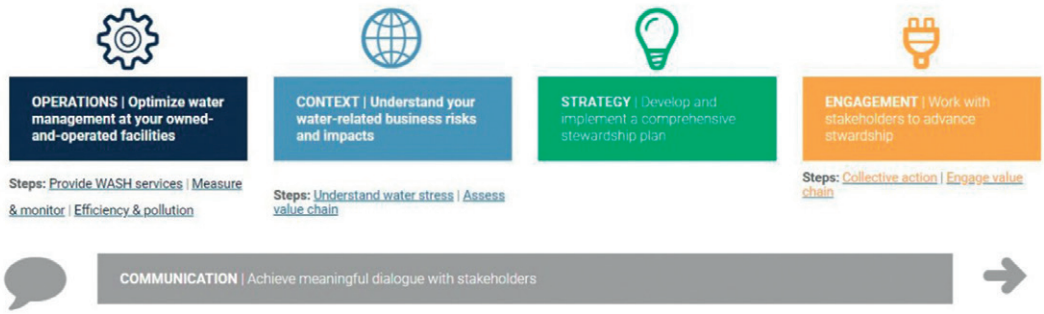
"Business" is an evolving word in the international development agenda. From being somehow considered antagonistic to sustainability, nowadays those working in the development sector recognize the importance of sustainable business practices and business innovation to achieve and ensure robust water resource management, which is desperately required in this sector.

Business innovation can be defined as: "The process of creating, adapting or translating an idea, technology, tool, model or methodology into a good or service that creates economic value and for which customers are willing to pay."[18]
Innovation and implementation in business practices will allow the SDGs related to water to be sustainably achieved. According to the principles of Integrated Water Resource Management (IWRM), water has an economic value in all its competing uses and should be recognized as an economic good[19]. Further to that, not only does water need to be recognized as an economic good, but at the same time organizations need to bring innovations to all business levels, for example by using sustainability principles in their own strategies, including a sustainable and responsible use of water and incorporating water stewardship into their businesses.

Water Stewardship is "the use of water that is socially equitable, environmentally sustainable and economically beneficial, achieved through a stakeholder-inclusive process that involves site and catchment-based actions"[20]. By following the water stewardship concept, businesses will mitigate water-related risks, while simultaneously enhancing social and economic development and protecting the environment. Notably, water stewardship invites companies to go beyond internal action and scale up collective action - through engagement with the government, communities, other companies and especially the financial sector[21].

Box 4: Water Stewardship in the textile industry

From cotton farming through manufacturing processes, water is extremely important for the clothing and textile industry. Therefore, the textile and apparel industry should be at the forefront on water stewardship due to its high impact on rivers and freshwater ecosystems, and high dependence on clean sustainable water supplies. H&M is one of the largest fashion brands globally and one of the biggest users of the water demanding crop cotton. Since 2011, H&M is working in partnership with WWF in building internal awareness of water risks and in proposing ways of mitigating these in their operations globally. Internally, H&M provided water awareness training for 75,000 members of staff, ranging from production office employees as well as those assigned sales and design functions. In 2017, the partnership expanded from water challenges to combating climate change and engaging in a wide-ranging strategy dialogue: H&M has launched the very ambitious goal of becoming climate positive in the entire value chain by 2040.



The Water Stewardship Journey (Source: CEO Water Mandate – HYPERLINK "http://www.ceowatermandate.org" www.ceowatermandate.org)

18) www.weandb.org
19) The Dublin principles: https://www.gwp.org/en/gwp-SAS/ABOUT-GWP-SAS/WHY/About-IWRM/
20) https://a4ws.org/about/
21) Morgan, A.J. (2018) Water stewardship revisited: shifting the narrative from risk to value creation, WWF-Germany. More publications can be found at: https://wwf.panda.org/our_work/water/water_management/

It is no longer sufficient to manage each component of water resources separately, in isolation and without any connection to the economic, social and biophysical components. Green Growth is a concept that attempts to take into account a number of these aspects, while ensuring "green" sustainable economic development. Sound water management makes a fundamental contribution to green growth, therefore green growth and sustainable water management are intrinsically connected. However, there are some aspects of water management that are critical from a green growth perspective and are linked with some SDG 6 targets:

- Investment and innovation focused on areas which lower costs and enhance water efficiency, like water recycling, reusing or exploring alternative sources (SDG 6.3 and 6.4);

- Investment in water storage technologies and practices (including grey and green solutions), to secure access in the face of uncertainty (SDG 6.4) and improved access to water supply and sanitation, results in huge economic, social and environmental benefits (SDG 6.1, 6.2 and 6.6);

- Investing in water supply, sanitation and wastewater infrastructure brings important dividends, in particular in urban slums where unsafe water and lack of sanitation generates huge health costs and lost economic opportunities (SDG 6.3), which can be minimized through innovative solutions and business models with private sector involvement (SDG 6.5, 6a, 6b);

- Investing in the expansion of international cooperation as well as in capacity-building support to developing countries in the field of water and sanitation (SDG 6.a).

Sustainable financing including pricing and tariff structures of water and water related services, is also an essential component of sound business management and could signal the scarcity of the resource, promote efficiency and manage water demand.

Box 5: Example of sustainable f nàncing from Drarga Wastewater Treatment Plant, Agadir, Morocco

An example taken from the business model of the Drarga wastewater treatment plant (WWTP) in Agadir Morocco indicates how sustainable financing can be achieved[22]. As this WWTP was unable to cover the costs of operation and maintenance (O&M) from tariff income alone, other avenues to cover these costs were found. The WWTP sells the following products: treated wastewater to farmers, reed grass from the constructed wetlands, and sludge compost and methane gas from energy recovery. They took the innovative step to deposit all the sales revenue streams into a designated separate account, which solely serves the wastewater treatment plant's O&M.

Box 6: Example of how to move towards economic sustainability through installing micrometers, La Paz, Mexico

Targeted social support is more effective than low tariffs (or the absence of tariffs) to combine investment in water supply and sanitation systems and affordability for poor households. The project WaterClima LAC[23] undertook a study on tariff structures and future social actions in La Paz (Mexico) required to overcome the local challenges related to water scarcity and to improve water resource management in the area. The cost-benefit analysis showed that the local water operator would benefit from implementing a programme of micrometer installations and thus to charge for water consumption in a block tariff structure thereby recovering their operating costs. This structure also ensures that the users will be charged correctly for what they use and will allow identification of water leaks in the water scarce area of La Paz.

22) Dodds, F. and Bartram, J. eds., 2016. The water, food, energy and climate Nexus: Challenges and an Agenda for action. Routledge
23) http://www.waterlac.eu

Water is fundamental to business development and to any sector that is a water user, as it can have a direct impact on achieving SDG 6. Businesses have the social responsibility to adapt their practices to help achieve the ambitious vision of the 2030 Agenda (Oxfam, 2017). This means that business should adapt their practices to:

- Map and subsequently focus on those areas where their business has the greatest potential impact on water resources, either positive or negative[24];

- Businesses should integrate sustainable development and water concerns into their core operation;

- Businesses should also look beyond their immediate area of impact and realize that their activities affect and influence the political, social, biophysical and economic aspects of integrated water resource management. Thus new business models that align business agendas with societal aims represent an avenue to achieve sustainability (SDG 9, 13, 14, 15).

There is a lot still to be achieved, especially related to the connotation of the word "business" in relation to the water sector, however Europe can play a large and essential part in bringing paradigm shifts in business operations, innovations and best practices to the global development agenda and specifically SDG 6, by stimulating the use of existing tools and make them widely available.

Source: SDG Compass - www.sdgcompass.org

24) WWF and the German Development Finance Institution DEG have developed and online tool called "Water Risk Filter 5.0" which aims to support business to explore, identify and assess the water risk of their facilities. The tool is also being upgraded to support companies in valuing and responding to water risks in their geographical areas of operation. For more information check: http://waterriskfilter.panda.org

1.5. How Linkages between Private Sector, Government, and Society can help attain SDGs

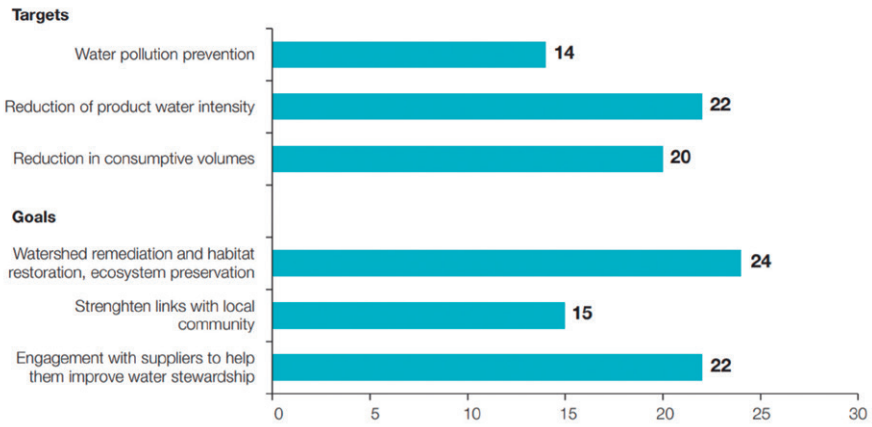
Author: Orlaith Delargy (CDP)

SDG 6 provides an excellent rallying call and framework for action for the scientific community, private sector, government, and society. The goal can only be achieved if national and local governments, companies, cities and citizens come together to address shared water challenges.

In this effort, data is a critical tool. Measurement, transparency and accountability are progress-enablers for the global community to track and inspire action towards a water-secure world. CDP's water security programme collects data from companies on their environmental impacts by using the power of investors and customers. The data CDP collects helps influential decision makers to reduce risk, capitalize on opportunities and drive action towards a more sustainable world. For example, a growing number of investors and customers expect companies to respond and adapt to water-related risks. Encouragingly, between 2016 and 2017 the number of companies disclosing water-related information to CDP increased by 41%, rising to 2,025 globally. But in Europe, a majority of companies (53%) declined to respond to the disclosure request from their investors. Just 106 of the largest publicly listed companies disclosed data about their efforts to realize a water-secure world, up from 86 in 2016. Companies must recognize that inadequate water infrastructure, deteriorating water quality and worsening water scarcity in river basins across Europe, together pose a significant risk to their production and supply chain. The next step is assessing, disclosing and managing those risks.

On the other hand, European respondents are ahead of the global average with regards to bringing water issues into the boardroom: 77% of respondents have board-level oversight of water-related issues, compared to a 70% global average. Furthermore, some are setting ambitious targets that support the achievement of SDG 6 (Figure 6 and 7).

Figure 6: Top 3 water targets & goals for European respondents 2017[25]



Cities, states and regions are also major stakeholders in the effort to achieve SDG 6. Since the Paris Agreement, CDP has seen an 81% increase in the number of cities disclosing their climate change and water risks, impacts and activities. 145 European cities disclosed to CDP in 2017, with 49 reporting that they foresee a risk to their water supply in the short or long term. The top three water risks reported were:

- Increased water stress or scarcity
- Declining water quality
- Flooding

As cities and companies face many of the same water risks, they can combine their efforts to address the specific needs of each basin, from investments in water infrastructure, education on water-related issues and diversifying their water supply. Such actions would contribute to the achievement of SDGs 6 and 11.

25) https://www.cdp.net/en/water

Figure 7: Corporate action in the pursuit of SDG 6 in Europe

SDG 6.1 and 6.2: WASH

To deliver on SDG 6, European companies must step up their efforts to integrate WASH considerations into their practices and strategies.

Just 20% of respondents have set goals to provide access to WASH in the workplace and/or local communities. In addition, only 40% of European respondents have a water policy that acknowledges the human right to water, sanitation and hygiene.

SDG 6.3 and 6.4: Water quality and efficiency

Water- use efficiency has clear benefits: 61% of European companies are setting water related targets or goals, of which 20% are aimed at reducing water consumption. Leading companies are driving ambition beyond their direct operations.

33% and 34% of respondents reported, respectively, that their withdrawal and consumption of freshwater has decreased this year.

Source: CDP, 2017. Learning from the leaders

Box 7: Case Study – Danone and the SDGs

Danone, a food and beverage company based in Paris with sales of over €24.7 billion in 2017, values sustainability in line with their vision: "Danone, One Planet. One Health". In their 2017 sustainability report, Danone acknowledges the importance of partnerships among business, governments, NGOs, and civil society in order to achieve the 2030 Agenda. Danone has partnered with various other stakeholders to make more meaningful impact on sustainable development and the company tracks its commitments and contributions to the 17 Sustainable Development Goals. SDG 6 features prominently in their reporting as one of Danone's "Major Focus" SDGs, but Danone recognizes that it impacts all of the SDGs, to varying degrees. One example of a collective action project with multiple beneficial impacts takes place in the Evian spring watershed. Danone worked with local stakeholders, including upstream farmers and the downstream municipality, to develop sustainable agricultural practices around composting and biogas production that prevent water quality degradation from manure and fertilizers. The project protects the quality of the water bottled for the Evian mineral water brand while creating healthier ecosystems and local economies. By 2025, Evian will also make all of its plastic bottles from 100% recycled plastic. This collaboration impacts SDG targets such as 6.3 water quality, 2.4 sustainable agriculture, and 12.5 waste generation.

National governments also have a role to play: if government agencies were to leverage their purchasing power to encourage – and eventually mandate – their suppliers to manage water resources efficiently and implement SDG 6 measures, a new paradigm of water governance could be defined.

From a policy perspective, water governance must be supported by both the public and private sector. In Europe, investors and companies are called to act on imminent climate-related risks in the Action Plan on Financing Sustainable Financial Growth[27] and the regulations on Non-Financial Reporting[26]. These regulations seek to harness the power of the private sector through transparency, a long-term outlook and disclosure. Governments must now build on the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) and the work of the Science-Based Targets Initiative (SBTI)[28], to ensure that water issues take their place at the top of the sustainable development agenda.

26) https://ec.europa.eu/info/publications/180308-action-plan-sustainable-growth_en
27) https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/non-financial-reporting_en
28) https://sciencebasedtargets.org/

2. Actions in EU for mainstreaming water in policies and projects

2.1. Structure, Policy Environment and SDG Commitment: EU and Member States

Author: Dominique Darmendrail (ANR, Water JPI)

As for international treaties, the implementation of the 2030 Agenda and the UN SDGs remains with the individual Member States. Nevertheless, the European Union and EU institutions, in particular the European Commission, still play an important role for this policy implementation. The EC, in relation to its role of executive branch of the EU, has the unique legislative initiative power for the EU, and is responsible for the legislation's implementation, when accepted by the European Parliament and the European Council composed by the EU Member States.

The EU has been a major player in the UN discussions and now is committed to be a frontrunner in implementing the 2030 agenda, through a joint effort of the EU and the Member States. The main way forward, outlined in a European Commission communication[29] in November 2016, is to mainstream UN SDGs into all EU policies and initiatives, guided by the three pillars of sustainable development, which are anchored in the European Treaties (Articles 3 and 21) and mainstreamed in sectoral policies and key projects. This process, involving both internal and external policies, requires a reshaping of the EU's financial instruments for the implementation of the 2030 Agenda and therefore it is an important part of the negotiations on the next Multiannual Financial Framework (for 2021 – 2027).

The European Commission also provides regular reporting of the EU's progress, while exchanging best practices across sectors at national and EU levels with a high-level multi-stakeholder platform and developing a long-term vision for a post 2020 perspective.

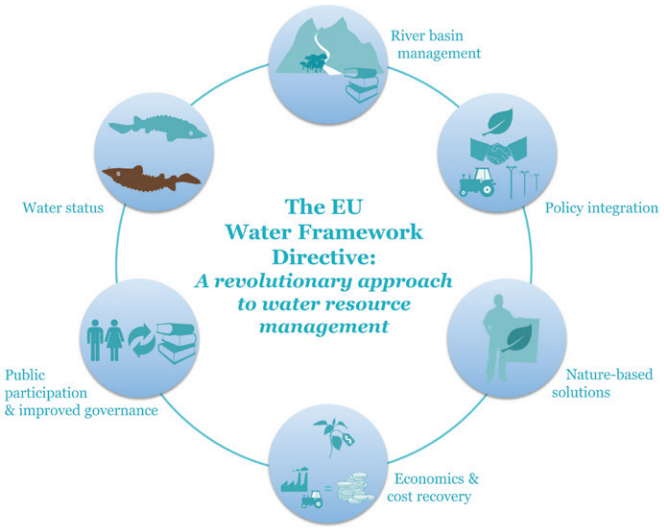
For the water related SDGs and targets, the EU Water policy[30], one of the oldest environment policies in the EU, provided the required framework for the protection of the water resources and the water ecosystems. It comprises regulations dealing with drinking water, bathing water, urban wastewater management or prevention of pollutions by different economic sectors (agriculture, industries). The EU Strategy on Adaptation to Climate Change recognizes sustainable water management as critical for addressing climate change challenges in Europe and beyond.

More recently, the EU action for sustainability highlighted the three areas in which EU should make further progress: i) use wastewater as an important element of a water sustainable circular economy, ii) promote safe re-use of treated wastewater in different sectors, and iii) protect water ecosystems as a key element for the quality of life.

To implement these policies, the EU also has several funding programmes to support the Member States in implementing concrete actions. The EU Cohesion Policy has a thematic objective dedicated to preserving and protecting the Environment and promoting resource efficiency: in the period 2014 – 2020, the EU will invest almost 15 Billion euros in the water programme, with a focus on improving infrastructure for drinking water supply and wastewater treatment in the least developed regions of the EU. These programmes have a funding pre-condition related to the correct implementation of the EU Water legislation, which ensures effective and efficient EU investments.

29) https://ec.europa.eu/europeaid/commission-communication-next-steps-sustainable-european-future_en
30) Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy

Figure 8 – EU Water Policy



Source: WWF

The LIFE programme is contributing to sustainable development and to the achievement of the defined objectives and targets. The 2014 – 2020 'Environment' programme covers three priority areas: environment and resource efficiency; nature and biodiversity; and environmental governance and information. Within this programme, LIFE projects support the management of water resources in the EU and the implementation of water policy, notably the EU Water Framework Directive, by addressing a wide range of issues including river basin management, water scarcity, water/ wastewater management (households and industry) and improving groundwater quality (Box 8).

Box 8 – Best Practice Project under LIFE programme

The WSTORE2 LIFE project improved water management in coastal areas through an innovative automated system that optimizes the use of groundwater (mainly collected rainwater) for different interacting sub-systems. The new water management system allows rainwater to be efficiently collected and used to thus reduce the high salinity of the soil water in this coastal area. The system also improves crop yields and natural habitats. The project also set up a wireless system that connects the in-field sensors to a central station that can manage the whole system automatically. In particular, the system can operate weirs, pumps and other equipment automatically to collect water from the canals into the basin when the salinity is below a threshold.

The EU Neighbourhood Policy and the EU Enlargement Policy support third countries in the achievement of the UN SDGs, through bilateral assistance programmes (the Development Cooperation instrument, the European Development Fund, the Humanitarian Aid funds – box 9) or regional initiatives (such as the Neighbourhood or Pre-Accession Assistance programmes).

EU Support focuses on access to safe drinking water and sanitation, wastewater and pollution, transboundary water management, flood prevention and cross-sectoral coordination, within an integrated water resources management framework. Given the water – food – energy nexus, water supply and sanitation are essential in actions supporting other sectors like food production, energy production, climate adaptation and mitigation measures, regional integration and peace and security.

Box 9 – Water Projects funded by EU Development Cooperation programmes

Over the last 5 years, the EU has provided access to safe drinking water for 1 million Malawians. The latest new water plant improves supply of clean water to 21.000 inhabitants in the Karonga district, in the shores of Lake Malawi.
The Sustainable Water Integrated Management (SWIM) programme is a regional technical assistance programme that contributes to the dissemination and effective implementation of integrated water management policies and sustainable practices in the Southern Mediterranean regions.

At the Member States level, the process has been quite similar (revision of the national Sustainable Development Strategies, mapping actions within each individual SDG, defining the need of action in each associated field), although results are extremely variable. Progress towards the UN SDGs are monitored at the EU level, and recently a new report on the progress of SDG implementation in the EU has been published[31].

Figure 9 – Status of SDG 6 Implementation in Europe

https://ec.europa.eu/eurostat/web/sdi/key-findings

Main highlights of water SDG implementation in the EU can be summarized as follows (Figure 9):

- The share of people without improved sanitation facilities in their households has been steadily decreasing in the EU, with the vast majority of European Member States having universal access to sanitation.

- The overall freshwater quality has also improved according to different quality indicators, even if nitrate concentrations might still pose serious problems at regional or local levels.

- Water exploitation is considered at a sustainable level in 16 of the 20 reporting Member States. However two countries in the Mediterranean region (Cyprus and Malta) are suffering from severe water stress (water exploitation index above 40%) and two others (Belgium and Spain) are above the 20% threshold value.

Within the reinforcement of the European Research Area (ERA), Joint Programming focuses attention on key sustainable development areas, such as water. In 2017 The Water JPI launched a call on water-related UN SDGs, with the financial support of 12 countries, with two focus areas:

- Multiple pressure effects on ecosystems and ecosystem services as well as effective mitigation – adaptation tools and assessments for implementing the water-related targets of the UN SDGs,

- Developing accessible solutions for clean water management to address UN SDG 6 targets and associated SDGs.

31) https://ec.europa.eu/eurostat/web/sdi

2.2. SDG 6 Awareness in Europe

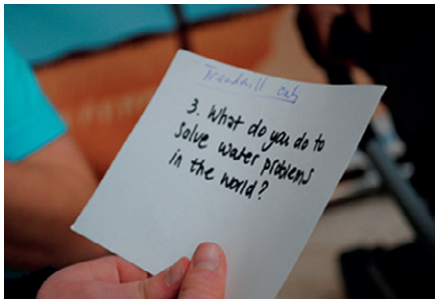
Author: Lesha Witmer on behalf of European Pact for Water; Women for Water Partnership

The EU and its agencies have played an expert and informational role in awareness raising and providing information around water-related issues and was one of the first to talk about citizens / public consultations on the topic (e.g. in the WFD, art 14). For this purpose, national programmes were supported and platforms were created; however, most communication efforts were targeting professionals from ministries, EU and government agencies and river basin authorities, on matters related to compliance with EU directives and communications, as well as organizations (NGOs/ CSOS) already knowledgeable about relevant information[32]. An example of these efforts was the European Water Partnership that in 2010 attempted to start a European wide campaign named "Aquawareness" [33] (Water Dialogues Campaign), aimed at addressing Europe's water challenges by improving awareness of the water and sanitation issues also at local and regional level. It also aimed to facilitate active participation of all stakeholders in finding solutions, believing that motivation for action towards sustainable water management can only arise when easily applicable solutions are provided.

In 2017, Women for Water Partnership and Portugal Water Partnership conducted a survey among approximately 250 key people in wider Europe, in the frame of the regional report[34] for the World Water Forum 8 in Brasilia. A questionnaire amongst European citizens and organizations and amongst young people in Europe and Africa under the UNESCO (NL) youth challenge, revealed that there is not enough awareness of the situation of water and sanitation and its impacts in Europe and beyond.

OECD and the roundtable on financing water also pointed to the need for raised awareness on water-related issues to influence and prioritize investment in water[35].

Figure 10



Most people in Europe don't think a lot about having an ample supply of safe water or having a toilet – it is taken for granted in most countries. Not being sufficiently informed happens at all levels, including citizens and government. Outside Europe, in many countries in the world, regardless of whether water is or is not an acute problem, people do not know a lot about the topic, so they do not motivate their elected representatives to pay attention to this issue. Believing that there is "no problem", means that there is no demand to funders for or too little long term investments for O&M of the water infrastructure or in meeting the quality standards of water, water governance, and management of river basins, amongst others.

There seems to be growing consensus that:

- There is a broad acknowledgement that we need to increase awareness on water-related issues at different levels: politicians, government officials (all levels), citizens, youth, and business.
- Activities need not only be event-based but lead to solid knowledge and behaviour change.
- Activities in the end need to lead to higher stakeholder involvement and adaptation of policies and business practices and financing decisions.

Good examples of initiatives that are already taking place at different levels is shown in Box 10.

32) https://www.ecologic.eu/2446; https://ec.europa.eu/europeaid/projects/raising-awareness-and-partnership-sustainable-water-and-environment-development-uz-bekistan_en; https://cordis.europa.eu/project/rcn/200022_en.html; http://www.semide.net/thematicdirs/news/water-use-europe/generate_pdf?url=thematicdirs/news/water-use-europe&lang=en; http://www.semide.org
33) https://www.ewp.eu/aquawareness.
34) http://www.worldwaterforum8.org/pt-br/file/2774/download?token=t6ZxCELq
35) http://www.oecd.org/water/finance-investment-and-pricing.htm

Box 10: Examples of Awareness Raising Activities

At Global Scale

• UN-Water campaigns around World Water Day (22 March) and World Toilet Day (19 November) and presentations of the World Water Development Report (WWDR)

• "Water does not come from the tap"[36] campaign led by WWF.

• UNESCO WWAP artistic productions like "The Water Rooms" [37]

• "Let's talk about water", an itinerant festival advocating the importance of water in its different aspects (socio-cultural, economic, and environmental) through movies[38].

At Regional Scale:

• A group of NGOs in Europe took the imitative to join hands and establish a network "European Pact for Water" to influence the policy of the EU.

• A referendum campaign in the EU on the right to water and sanitation that was highly successful and showed that a lot can happen if people are informed and mobilized in a structured manner[39].

• "Big Jump": the European River Bathing Day, also known as the Big Jump, whose goal is to raise public awareness of the need for protecting waterways, particularly in the framework of the EU Water Framework Directive .

At National Scale:

• The annual "Walking for Water" event[40] in the Netherlands

• The Blue Schools initiative, Switzerland[41], exposes children to the water supply and sanitation aspects of SDG 6, offering education aimed at promoting future change agents.

As highlighted in the High Level Panel on Water outcome document, important awareness opportunities may be driven by the International Decade for Action: "Water for Sustainable Development" (2018-2028). Events organized under its aegis are supposed, among others, to pursue advocacy and networking, promote partnerships and action, and strengthen communications for reaching the water-related goals.

Source: UNESCO WWAP Water Rooms project

36) http://www.journeyofwater.co.za/journeywithus
37) http://thewaterooms.org/
38) http://letstalkaboutwater.com/
39) http://www.righttowater.info/
40) https://www.bigjump.org/en/about-big-jump/
41) http://www.walkingforwater.eu, and the original Dutch version: https://wandelenvoorwater.nl/
42) https://www.tdh.ch/en/projects/blue-schools

2.3. Example of Key Achievements obtained in Europe and beyond

Author: Gaetano Casale / Water Europe

Although it may not be obvious or prominently highlighted, EU is already contributing to the achievement of water related SDGs. Across the history of research framework programmes funded by the European Commission, many projects have dealt with Water (or topics including water in a cross disciplinary manner); a number of these projects have developed innovative solutions in cooperation and co-creation with a number of partner countries outside Europe, and many of them specifically aiming at addressing innovation gaps which are interesting for EU actors and at the same time addressing one (or more) of the SDGs.

https://ec.europa.eu/programmes/horizon2020/en/news/h2020-fet-projects-related-green-technologies

An analysis of projects funded by the EC over a period of time covering the latest Framework Programmes (FP7 and Horizon 2020), shows that more than one hundred international projects closely related to SDG 6 or other water related SDGs were funded by the EC. Research topics in these projects range from new solutions on Water Supply and Sanitation, Flood Management, Climate Change, Water Resources Management, Water reuse, as well as less "technological" innovations like governance solutions, new modality of collaborations, and new decision making tools, to mention a few.

Given the space limit it is impossible here to report all different innovations co-generated at an international scale by such projects, however a few examples related to different aspects of innovation on water, and their linkages to relevant SDGs are provided in Box 11 and 12.

Box 11 – FP7 projects examples

Adaptive Strategies to Mitigate the Impacts of Climate Change on European Freshwater Ecosystems (REFRESH) - SDG Linkage: SDG Goal 6.6 , SDG Goal 15.1

REFRESH is concerned with generating the scientific understanding that enables measures that need to be taken to restore freshwater ecosystems to be implemented successfully. REFRESH brings together rivers, lakes and wetlands scientists with expertise in hydrology, hydrochemistry and ecology, aquatic modelling and social science.

Water Harvesting Technologies Revisited: Potentials for Innovations, Improvements and Upscaling in Sub-Saharan Africa (WHATER) - SDG Linkage: SDG Goal 2.4 , SDG Goal 6.4

The main objective of WHaTeR is to contribute to the development of water harvesting technologies that are sustainable under dynamic global and regional pressures of current trends and that strengthen rain fed agriculture, rural livelihoods and food security in Sub-Saharan Africa.

Innovation Demonstration for a Competitive and Innovative European Water Reuse Sector (DEMOWARE) - SDG Linkage: SDG Goal 6.4

DEMOWARE is a collaborative programme of demonstration and exploitation, using nine existing and one greenfield site to stimulate innovation within the evolving European water reuse sector. The project has the ambitions to enhance the availability and reliability of innovative water reuse solutions, and to create a unified professional identity for the European Water Reuse sector.

Box 12 – Horizon 2020 projects examples

Sustainable Integrated Management FOR the NEXUS of water-land-food-energy-climate for a resource-efficient Europe (SIM4NEXUS) - SDG Linkage: SDG Goal 6.5

Water, land, food, energy, and climate are interconnected, comprising a coherent and complex system: the 'Nexus'. Management of the Nexus is critical to secure the efficient use of our scarce resources. Through the five nexus themes, SIM4NEXUS aims to predict society-wide impacts of resource use and relevant policies on sectors such as agriculture, water, biodiversity and ecosystem services through a model-based analysis.

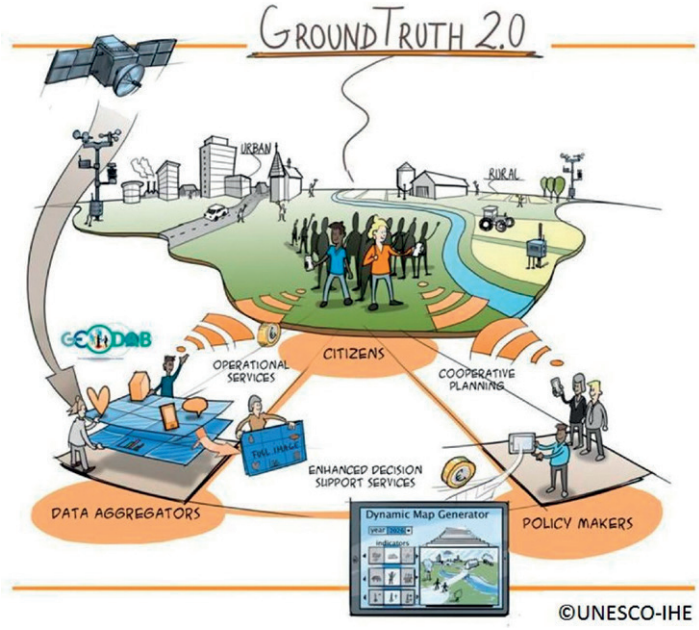
Africa-EU Innovation Alliance for Water and Climate (AFRIALLIANCE) - SDG Linkage: SDG Goals 6.a , SDG Goal 13.1, 13.3

The main objective of AfriAlliance is for African and European stakeholders to work together in the areas of water innovation, research, policy, and capacity development to prepare Africa for future Climate Change challenges. There are already many but fragmented initiatives and networks in place, therefore AfriAlliance will consolidate existing networks of scientists, decision makers, practitioners, citizens and other key stakeholders into a problem-focused knowledge sharing mechanism via an overall coordination platform: the Africa-EU Innovation Alliance for Water and Climate.

Development and application of integrated technological and management solutions for wastewater treatment and efficient reuse in agriculture tailored to the needs of Mediterranean African Countries (MADFORWATER) - SDG Linkage: SDG Goal 2.4 , SDG Goal 6.4

The aim of MADFORWATER is to develop a set of integrated technological and management solutions to enhance wastewater treatment, reuse for irrigation and water efficiency in agriculture in a number of Mediterranean African Countries. MADFORWATER will develop technologies for the production of irrigation-quality water from drainage canals, municipal, agro-industrial and industrial wastewaters, and technologies for water efficiency and reuse in agriculture, initially validated at laboratory scale.

In addition to projects that were funded by the Research programme of the European Commission, there are also other examples of projects, like the ones implemented under other programmes like LIFE (EU's funding instrument for the environment and climate action), the European regional Development Fund (ERDF), and International Development Cooperation programmes, for example the ACP EU Water Facility.



Source: https://gt20.eu/about/about-gt-2-0/

3. Conclusions: A Role to play for Science, Business, and Society

3.1. The Role and Impact of Science and Innovation

Author: Tom Vereijken (EWP), EU Water Alliance

Securing economic development, social stability and being in balance with the environment represents a huge task in Europe and globally in the decades to come.

The European Union has immediately recognized the fact that Science, Technology and Innovation (STI) is a key tool for "moving the world onto a sustainable path". An independent expert group was established by the EC in 2015 with the mandate of providing advice on the role of STI for implementing the 2030 agenda[43]. The expert group recommendations cover:

- The principles for setting the new RDI agenda (universality, integration, sustainable development pillars intertwined);
- The necessity of a focus switch, reorienting mindsets and behaviours towards sustainable development, refocusing from technology transfer to building innovation capacity;
- Strengthened partnerships, by enhancing engagement with developing countries in existing EU instruments, engaging all stakeholders and developing tailor-made international STI initiatives; and
- Better addressing of the causes of the implementation gaps, ensuring a STI policy coherence and setting up monitoring, evaluation and assessment of the STI programme.

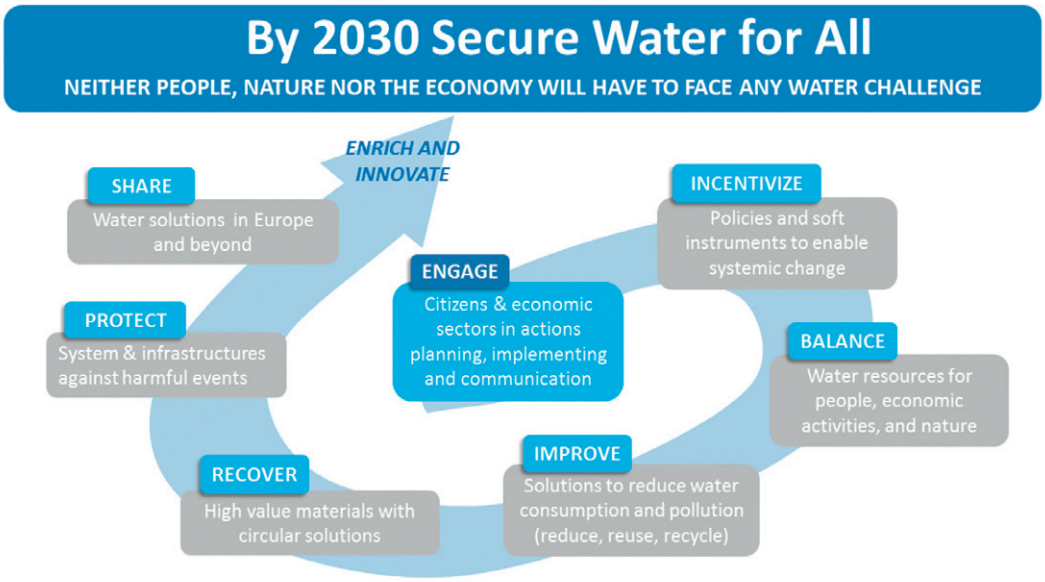
As highlighted in the Water Mission document prepared by the EU Water Alliance[44], European science and innovation has an essential role to scale-up and implement the correct combination of existing and new solutions to secure water for all. Securing water means that all water demands can be satisfied in terms of quantity and quality, and that both economic and natural systems as well as people are protected from water-related hazards, including anthropogenic impacts and extreme weather and climate events such as droughts, heatwaves, storm surges and floods.

A new innovation ecosystem should be aimed at developing a new cooperative and multiscale paradigm and at supporting the related shift at the appropriate watershed scale. This "holistic innovation" approach will integrate solutions for both urban and rural areas as well as economic sectors, thus contributing to the achievement of the water-related Sustainable Development Goals (see Figure 12).

Source: UN ESCWA – "Innovation Policy for Inclusive Sustainable Development in the Arab Region"

43) https://ec.europa.eu/programmes/horizon2020/en/news/role-science-technology-and-innovation-policies-foster-implementation-sustainable-development
44) The EU Water Alliance is a joint effort of the main EU water networks, including Water Europe, EWP, EWA, Aquapublica, Eureau, Euraqua, NetwercH_2O

Figure 12: A Proposed Water Mission[45]



Water insecurity has been identified as an important driver for social unrest and migration globally. Tackling water insecurity will positively impact migration patterns, an issue which today constitutes a major concern of the European Union. If we do not solve water challenges now, the very basis of wellbeing and growth in Europe and the world are at risk.

Technological and social solutions have to be accompanied by political, governance and financial innovations, to break down barriers and facilitate uptake and roll-out, leading to systemic changes. Integrating all this in a shared and cross–sectoral process will nurture Europe's long-term vision and a continuous investment in water policies with supporting research and innovation programs.

Furthermore, innovation is needed to operate in the value chain (instead of end-of-pipe), especially in specific sectors, for example the food sector (and the associated nexus with water). In the next 40 years, more food than that which was produced in the past 6000 years will be needed; this poses huge challenges, as the world population is expected to reach 8.5 billion in 2030, but the area available for agriculture will decrease with 23% in the same period[46].

A behavioural change that is needed (the "social" dimension) is quickly developing. Some market transformations are already visible, and are expected to accelerate.

There is a clear role for Europe's leadership on innovation, to equip the EU water science with adequate resources to reach high Technology Readiness Levels (TRL) faster, attractive for the uptake by small and medium-sized innovators and entrepreneurs. Aligning the EU Cluster Policy[47] with the "Water R&D Agenda" is extremely important (the European Cluster Policy is already providing meaningful results with the current so-called 'Innosup' projects[48], aimed at creating a new ecosystem of innovation in Europe).

45) SECURING WATER FOR ALL: A life changing opportunity for citizens and regions (EU Water Alliance)
46) Lucas Simons "Changing the Food Game: Market Transformation Strategies for Sustainable Agriculture"
47) https://ec.europa.eu/growth/industry/policy/cluster/observatory/cluster-policy_en
48) https://ec.europa.eu/easme/en/horizon-2020-innosup

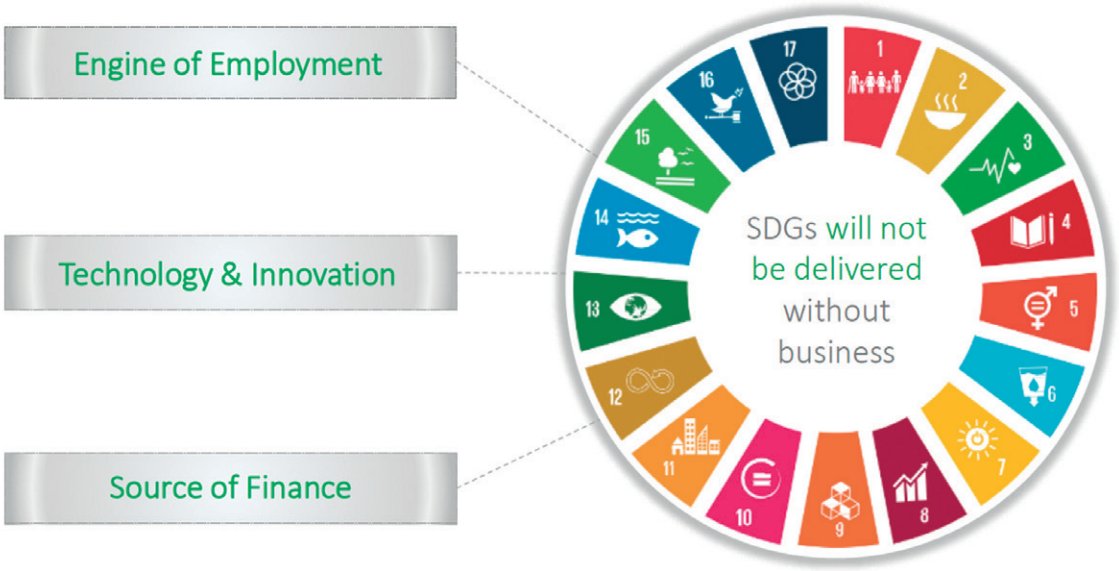
3.2. The Role of Businesses in the Water Sector

Authors: Tien Shao / Abbey Warner (Global Compact/CEO Water Mandate)

As the number and severity of global water crises increase, businesses face increasing water risk. Be it physical, reputational, or regulatory water risk, such as drought, social license to operate, or fines for wastewater disposal, the fact is that water is often a material consideration throughout various stages of the private sector value chain. This is particularly true for sectors that rely heavily on water, such as food and beverage, textiles, and mining, and for any company that operates in water-stressed regions. Corporate water stewardship is the framework by which businesses can understand and manage the water risks that threaten their growth and viability as well as identify potential water-related business opportunities.

The economic case for contributing to the SDGs is clear: according to the Business and Sustainable Development Commission, complete achievement of the 2030 Agenda would create at least US$12 trillion in market opportunities and up to 380 million new jobs by 2030[49]. Corporate water stewardship can be seen as the business contribution to SDG 6 and include SDG 2.4 Sustainable Agriculture, SDG 5.1. on elimination of discrimination on basis of sex, SDG 11.5 Disaster Management, SDG 12.4 Sustainable Production, and SDG 13.1 Climate, although water is indirectly linked to all SDGs.

Figure 13 – The Crucial Role of Business



Source:https://www.slideshare.net/GreenBiz/greenbiz-17-tutorial-slides-how-corporates-are-aligning-with-the-sustainable-development-goals/

Businesses must work together with other stakeholders to achieve these SDGs in an integrated manner. Tackling multiple SDG targets within one project ensures that potential trade-offs between the targets are addressed, and funding needs are less than if the goals are tackled separately. For example, The Nature Conservancy found that land optimization programs in source watersheds of Colombia, addressing sediment and nutrient loads in the water and carbon sequestration, cost on average 63% less than if each outcome had been pursued separately[50].

49) Better Business, Better World, 2017: http://report.businesscommission.org/report
50) Beyond the Source, 2017: https://global.nature.org/content/beyond-the-source-report

Another consideration for businesses is designing their water stewardship work to include multiple stakeholders and taking into account the local watershed context. These stakeholders include public sector officials, NGOs, and other private sector companies. Brands can leverage their relationships with their own facilities and their suppliers, often small and medium enterprises (SMEs), to encourage their involvement in water stewardship, to reduce their water risk and improve basin conditions. Businesses can set targets at the facility and enterprise levels, taking into account context and aligning their targets with water policy such as the Sustainable Development Goals[51]. Local context considers a variety of factors, including water governance.

The "public governance gap," or the lack of good water governance to manage water resources, especially in the face of climate change, is one of the most important water challenges in many parts of the world. It links directly to SDG target 6.5 on implementing integrated water resources management. Businesses can contribute to improving water governance by working through communities and NGOs, helping build capacity, and aligning their water stewardship projects with outcomes the public sector has defined for the basin[52].

Traditionally, it has been difficult for the private sector to measure its contributions to sustainable development at local, state, and international levels in a standardized and comparable way; with the Sustainable Development Goals, the public sector, private sector, and civil society now have a common language around which to discuss and measure global sustainable development. Indeed, achieving the 2030 Agenda will require collaboration and action from all.

3.3. Final Remarks

Authors: Durk Krol (Water Europe), Stefan Uhlenbrook (UNESCO WWAP)

The SDGs are a global commitment by all Member States of the United Nations on 17 interlinked universal goals to end poverty, protect the planet and ensure prosperity for all. The Goals rely on multi-stakeholder instruments and initiatives, like Water Europe, for mobilizing and sharing knowledge, technologies and resources. According to the World Economic Forum, water presents some of the world's most pressing social, political, environmental and economic challenges.

In order to achieve the SDGs, societies need to recognize and realize the Value of Water and build Water-Smart Societies. To do this, we need technological but also non-technological innovations including the involvement of all relevant stakeholders in the governance of our water systems. Sustainable business practices and business innovations are essential to achieve and ensure sustainable water resources management. Monitoring, transparency, inclusiveness and accountability can also serve as important drivers to track and inspire action towards achieving Water-Smart Societies that are critical for achieving the Sustainable Development Goals.

The EU has been a major player in the UN discussions and is committed to be a frontrunner in the implementation of the 2030 Agenda, in close cooperation with its Member States. The EU water policy and related policies, including the Water Framework Directive, Urban Waste Water Treatment Directive, and Drinking Water Directive, are among the most ambitious pieces of water legislation in the world. They provide exemplary regulatory stepping stones to achieve the SDGs within the EU and beyond, through international cooperation. Some elements of this unique body of water policy are currently under evaluation and revision. It is important that enablers such as monitoring, transparency, accountability, research and technology development, and openness to innovation are well integrated into these evaluation processes. Achievement of the SDGs will also depend on the integration and recognition of the value of water across sectors in flanking and enabling policies, including the EU Common Agricultural Policy, the EU Regional and Urban Policy, EU gender equality strategy, the LIFE Programme, the EU Neighbourhood Policy, the EU Enlargement Policy, the EU Development Cooperation Programmes, and Horizon Europe, which is the next EU Research and Innovation Programme.

Water Europe is ready to play its part in achieving the SDGs, which are an integral part of its Water Vision and of building Water-Smart Societies. Therefore, Water Europe is in the process of rolling out its International Water Dialogues (Water Europe IWD) and will facilitate its members' involvement in international research and business collaboration and share with EU partner countries the best water knowledge practices the EU has to offer. UNESCO WWAP will support the development and sharing of knowledge and competencies for the benefits of all members of society.

51) Exploring the Case for Corporate Context-Based Water Targets, 2017: https://ceowatermandate.org/resources/context-based-water-targets-2017/
52) Water Management and Stewardship, 2016: https://ceowatermandate.org/resources/water-management-stewardship-2016/

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Notes

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Water Europe

Technology & Innovation

About Water Europe and UNESCO WWAP

Water Europe is the recognized voice and promotor of water-related RTD and innovation in Europe. Water Europe is a multi-stakeholder platform with over 200 members that strives to increase coordination and collaboration, to enhance the performance of the water service providers, water users, and technology providers, in a sustainable and inclusive way, and to contribute to solving water-related societal challenges. Water Europe has been initiated by the European Commission as a European Technology Platform in line with the ETP2020 Strategy. Water Europe Working Groups are key to the functioning, objectives, and implementation of the Water Europe strategy. This publication is made possible through the effort of the Water Europe Working Group "Water Beyond Europe", led by IHE Delft Institute for Water Education.

The UNESCO World Water Assessment Programme (WWAP) coordinates the work of 31 UN-Water members and 39 partners to produce the UN World Water Development Report (WWDR) since 2002. This key UN-Water report is an annual thematic review providing an authoritative picture of the state, use and management of the world's freshwater resources. In addition, during 2016-2018 UNESCO WWAP coordinated the production of the UN-Water SDG 6 Synthesis Report 2018 on Water and Sanitation, which provides an overview of the status of SDG 6 implementation at the global and regional levels, as well as comprehensive information about how SDG 6 is interlinked to other SDG targets and indicators of the 2030 Agenda.

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