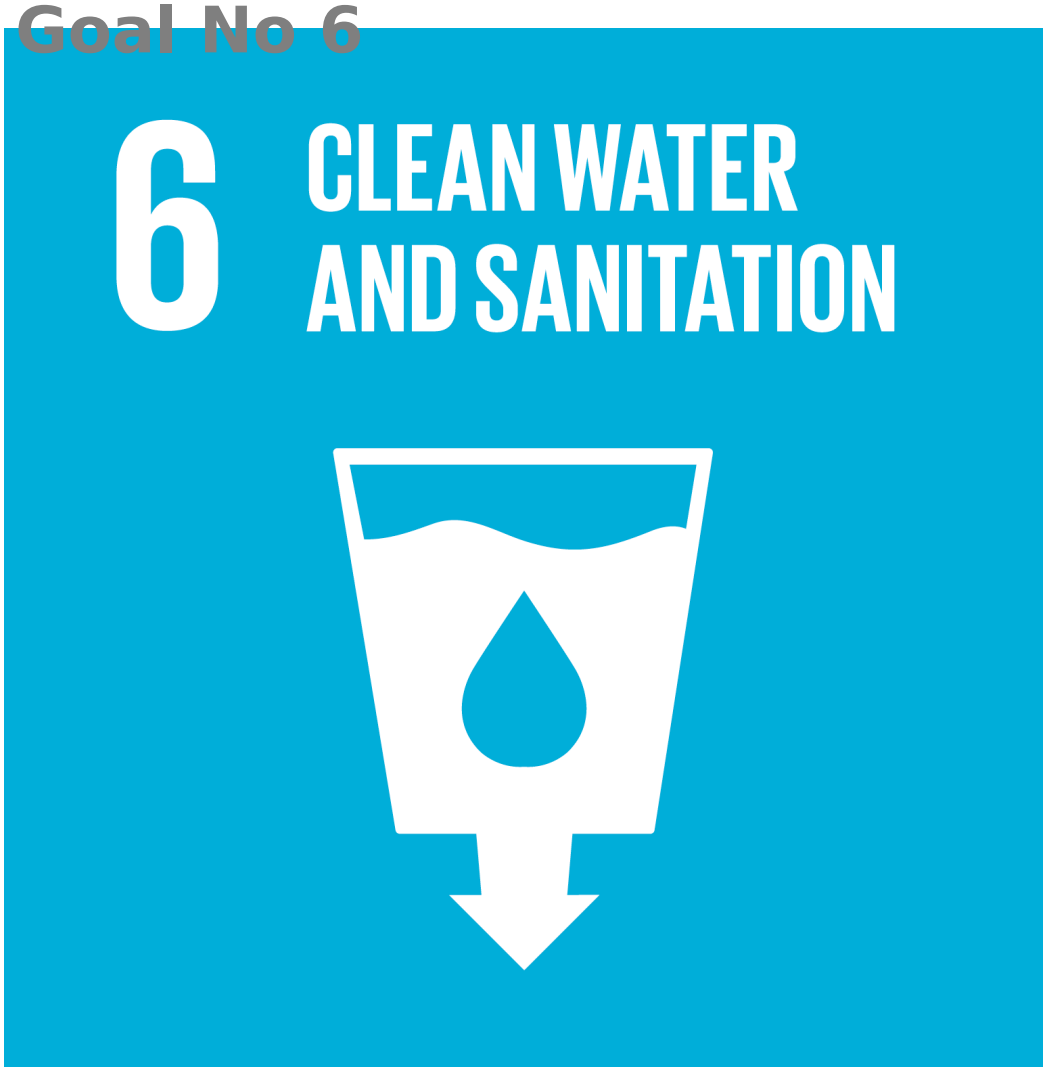
Module 6
Sustainable Development Goal No 6



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The Research + Transfer Centre „Sustainability & Climate Change Management“ supports the Sustainable Development Goals.

Agenda

List of abbreviations

Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)

Integrated Water Resources Management (IWRM)

Sustainable Development Goals (SDGs)

Millennium Development Goals (MDGs)

United Nations Environment Programme (UNEP)

United Nations Development Programme (UNDP)

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1. Introduction to SDGs

In 2015, the United Nations general assembly adopted the Sustainable Development Goals (SDGs) as the Development Agenda to be achieved by 2030. These are a set of global goals that provide a framework for shared action to be implemented by all countries and all stakeholders. The SDGs are built upon the expired Millennium Development Goals (MDGs): eight targets, which guide global action with a new partnership to reduce extreme poverty from 2000-2015. The SDGs seek to promote human dignity and prosperity while safeguarding the earth's vital biophysical processes and ecosystem services. The SDGs further seek to realize the human rights of all, and to achieve gender equality and empowerment of all women and girls. At the core of the 2030 Agenda are 17 SDGs.

The sustainability dimensions of the SDGs incorporate the three main pillars of sustainable development: **environmental** sustainability consisting of 5 goals (SDGs 6, 7, 13, 14, 15); **social** sustainability consisting of 7 goals (SDGs 1, 2, 3, 4, 5, 10, 11) and **economic** sustainability consisting of 4 goals (8, 9, 12, 17). SDG 16 on governance is the only goal not under a specific pillar, but cuts across the different pillars. The 17 Sustainable Development Goals (SDGs) are divided into 169 targets, which set out quantitative and qualitative objectives to be achieved by the end of 2030. In addition, the goals are accompanied by a set of indicators and a monitoring framework defined by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs/I).

The key feature of the 2030 Agenda for Sustainable Development lies in its universality and systemic approach. The goals address global challenges that are crucial for human survival and set critical thresholds for the use of natural resources now and in the future. The goals recognise the interlinkage between them and foster strategies that build economic development and address social needs such as education, health, social protection and job opportunities while tackling climate change and environmental protection. To achieve the Sustainable Development Goals (SDGs) will require the participation of everyone (governments, the private sector, civil society and every human being across the world) and a profound transformation how we think and act.

It is expected for governments to take ownership of their developmental agenda and design national frameworks, policies and measures to implement the SDGs in their respective countries. However, to create a more sustainable world as prescribed by the SDGs requires individuals to become sustainable change-makers. To this effect, specialised education focus on sustainable development is necessary to empower change-makers and learners to make informed decisions and take responsible action for present and future generations.

Therefore, education to the required knowledge, skills, values and attitudes is a critical transformation to met on a path of sustainable development and to achieve the Sustainable Development Goals. Module 6 focuses on the Sustainable Development Goal 6 (SDG 6). According to Ortigara et al. (2018), the acceptance of a dedicated water goal (SDG 6) was a major 'game-changer' for water and water-using sectors. The UN 2030 Agenda recognizes that social development and economic prosperity depend on the sustainable management of freshwater resources and ecosystems.

1.1: Defining SDG 6

The establishment of SDG 6, "Ensure availability and sustainable management of water and sanitation for all", depicts the growing importance of water and sanitation in the international political agenda. SDG 6 is built upon the Millenium Development Goal (MDG) water access target, but goes beyond by encompassing all aspects of the water cycle: water quantity (scarcity) and quality, water-use efficiency, and water-related ecosystems. In addition, SDG 6 promotes a basin approach to water management and the need for Integrated Water Resources Management (IWRM), which goes beyond national administrative boundaries and embraces transboundary water management that affects almost half the Earth's land surface (Ortigara et al. 2018). Water and sanitation are critical for poverty eradication and for achieving sustainable development.

The United Nations has defined 8 Targets and 11 Indicators for monitoring SDG 6. Targets specify the goals to be achieved, whereas indicators represent the metrics by which the world aims at assessing whether the targets are achieved. Table 1 below quotes the original text of all targets and the corresponding agreed indicators – and also includes the custodian agency responsible for monitoring and collecting data to track whether a target has been achieved. Table 1 and its targets reflect the importance of water and sanitation, and can be seen as a sign that there is no doubt about the links to other drivers of development. The challenge is to take the actions, which will deliver the goals set out in SDG 6.

Table 1 - SDG 6 Targets and Indicators (custodian agencies)

Targets	Indicators (Custodian Agencies)
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.	6.1.1 Proportion of population using safely managed drinking water services (World Health Organization (WHO)/United Nations Children's Fund (UNICEF))
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.	6.2.1.a Proportion of population using safely managed sanitation services (WHO/UNICEF) 6.2.1.b Proportion of population using a handwashing facility with soap and water available (WHO/UNICEF)

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.	6.3.1 Proportion of wastewater safely treated (WHO/United Nations Human Settlements Program UN-Habitat)/United Nations Statistics Division (UNSD)) 6.3.2 Proportion of bodies of water with good ambient water quality (United Nations Environment Program /UNSD)
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.	6.4.1 Change in water-use efficiency over time (Food and Agriculture Organization of the United Nations (FAO)) 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources (FAO)
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary co-operation as appropriate.	6.5.1 Degree of integrated water resources management implementation (0–100) (United Nations Environment Program) 6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation (United Nations Educational, Scientific, and Cultural Organization (UNESCO)/United Nations Economic Commission for Europe (UNECE))
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.	6.6.1 Change in the extent of water-related ecosystems over time (United Nations Environment Program/Ramsar Convention)
6.A By 2030, expand international co-operation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.	6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan (WHO / United Nations Environment Program / Organization for Economic Cooperation and Development (OECD))
6.B Support and strengthen the participation of local communities in improving water and sanitation management.	6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management (WHO/United Nations Environment Program/OECD)

Source: Adapted from Ortigara et al. (2018).

1.1.1: Significance of SDG 6

The UN Water (2019) has estimated that about 2.1 billion people lack access to safe drinking water services and about 4.5 billion people lack safely managed sanitation services. These challenges are likely to increase in the future due to population growth and the need to share the already inadequate and often badly managed resources. Access to clean drinking water and sanitation is critical in achieving sustainable development at the national, regional and global levels by 2030, mainly because water and sanitation are basic human rights. The water and sanitation crisis around the world has resulted in serious negative implications on the public health, food and energy security, economic development and environmental sustainability. For example:

- Inadequate water and sanitation results in poor health, lower school enrolments, and greater gender disparities, which has a wide economic and social impact.
- Lack of adequate sanitation facilities have forced girls not to attend school, thus missing out on education.
- Women spending long hours fetching water have less time for income-generating work and other important activities.
- Water-related illnesses disproportionately affect poor people – and particularly poor children. The impacts are devastating when considering child mortality. It is estimated that about 297 000 children under the age of five die annually from diarrhoea diseases that are associated to poor sanitation, poor hygiene and unsafe drinking water (UN Water/I).
- Unsustainable exploitation of water resources threaten the sustainability of ecosystems to secure food and livelihoods for many communities – particularly poor communities. In addition, untreated wastewater poses serious risks to public health and the environment.
- "In 60% of European cities with more than 100 000 people, groundwater is being used at a faster rate than it can be replenished" (UNEP/I).
- "Floods and other water-related disasters account for 70 per cent of all deaths related to natural disasters" (UNEP/I).
- "Meat production requires 8-10 times more water than cereal production Part of the current pressure on water resources comes from increasing demands for animal feed" (UNEP/I).

Table 2 below summarises some of the significance of achieving SDG6 while considering the three pillars of sustainable development.

Table 2 - Significance of realizing SDG 6

Ecological	Social	Economic
• Genetic resources and biodiversity	• Good Health	• Food security
• Nutrient recycling	• Poverty alleviation	• Irrigation water
• Climate moderation	• Gender equality	• Recreation
• Flood recycling	• Education	• Hydro-electricity
• Habitats		• Transport corridors and employment

Water resources are important to life as they have always been significant as natural sites for transportation, natural purification, irrigation, flood protection, habitats for biodiversity and

human settlements. Better sanitation and quality of water are also important in reducing water pollution and diseases in any community. In addition, the 2030 Agenda highlights that achieving SDG 6 will improve the sustainable management of freshwater resources and ecosystems and reduce the child and adult mortality rate around the world. In many developing countries the availability and abundance of clean water in many sections of the community reduces conflict, violence and instability. This also reduces the risk and vulnerability to climate change, poverty and water scarcity.

UNDP (United Nations Development Programm) analysed a range of important 'development drivers' e.g. access to energy, spending on education and health care, and access to water and sanitation. The latter was found to be the most important driver in the UNDP Human Development Index (UNDP-HDI/I). This demonstrates the very important relationship between water, sanitation, and development. There is therefore a critical need to mainstream and put water and sanitation at the centre of developmental policy in order to achieve SDG 6. The most important aspect of significance of SDG 6 is that it can bring a balance in the socio-economic and environmental dimensions of sustainable development.

1.1.2: Advantages

SDG 6 is essential for unlocking economic growth and productivity, and provides significant leverage for existing investments in health and education. One of the biggest advantage of SDG 6 is it importance in achieving the other SDGs. In achieving SDG 6 comes with additional benefits, which are not directly link to Targets of the goal. Identified benefits are outline as follows:

- Connecting the efforts through global common goals
- Identifying and creating business opportunities
- Improving on Communications, Co-operation, Co-ordination and Collaborations
- Positive ripple effect on all organizations and institutions
- Enhance co-benefits accrual in mitigating and adaptation of climate change
- Enhancing a country's own contribution to SDGs
- Fostering stakeholder relations

At the end, achieving SDG 6 creates a more connected and sustainable environment.

1.1.3: Interdependencies of SDG 6

SDG 6 is closely linked with other Sustainable Development Goals (SDGs). Table 3 shows facts and figures of the interdependencies of SDG 6 and other SDGs. "Water resources are embedded in all forms of development (e.g. food security, health promotion and poverty reduction), in sustaining economic growth in agriculture, industry and energy generation, and

in maintaining healthy ecosystems" (United Nations, 2018, p. 10). The interdependencies of SDG 6 and the other SDGs have been analysed by UN Water and other agencies and this has been highlighted in many published documents. This section summarises selected examples of interdependencies of SDG 6 with the other SDGs.

Table 3 - Facts and Figures on linkages between SDG 6 and other SDGs

Other SDGs	Linkages to SDG 6
SDG 2	In Africa and Asia, > 80% of all water withdrawals are used for agriculture
SDG 3	In LMIC, 20% of healthcare facilities lack basic sanitation, 33% lack access to safe drinking water
SDG 7	Water is essential for cooling thermal power plants, grow biofuel, and hydropower.
SDG 8	1, 4 billion livelihoods directly depend on water.
SDG 9	Water quantity and quality is fundamental for industry.
SDG 10	159 million people need to collect drinking water from distant sources. 892 million still practise open defecation.
SDG 11	By 2030, investments of US$ 7.5 trillion are required in water infrastructure.
SDG 13	Water-related hazards like floods and storms are likely to increase in a changing climate.
SDG 14	Excess nutrient loads lead to low oxygen in coastal waters killing marine life.
SDG 12	1/3 of produced food is wasted, so is its water footprint.
SDG 15	Global ecosystems purify and supply freshwater needs.
SDG 17	Joint action for Transboundary Rivers, lakes, and aquifers.

Source: (Weber et al. 2018)

SDG 1 looks at a global solution to end poverty in all its forms. This means, in alleviating poverty, water sources should be protected and the number of persons using unsafe water reduced. Reducing poverty also means improving proper and adequate housing with the collection of waste and higher sanitation levels. **SDG 2** focusses on ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture. It is one of the main targets of SDG-6, for countries to provide their citizens with adequate clean water (see Table 3). Consequently, sustainable water utilization means efficient and reduced water wastages in the agriculture sector. The use of proper irrigation systems will conserve and protect water from unwanted over use. This reduces the countries risk or vulnerability to droughts or climate change impacts.

The promotion of healthy lives and well-being (**SDG 3**) will ensure that drinking water is supplied to the general public safely and cleaner. Water is needed for life and the utilization must be adapted to promote water conservation and protection. A cleaner and healthier environment will reduce water pollution and adequacy, thus improving on sanitation. Better

water quality and sanitation will reduce child mortality and water-borne diseases such as diarrhoea and cholera. Furthermore, water management, which includes treatment and planning, requires affordable and clean energy.

The maintenance of clean water and treatment requires infrastructure and a sustainable industry that fosters innovation as highlighted in **SDG 9**. Water is kept in tanks, treated in different chemicals or machines of various shapes, sizes and materials in different countries. To achieve Goal-6, there is a need for a country to have proper infrastructure and always improve its technology and innovations. For adequate safe water and sanitation, a major infrastructure development has to take place in a given country.

In achieving SDG 6, there is also a need to improve on urban development and planning (**SDG 11**) to protect and manage water resources. Urban sprawl towns must be reduced by providing adequate proper housing, as this might affect the conservation and quality of water resources; and the sanitation in a given community. Cities play a key role in the management of water ecosystems. Many of these towns do not have adequate water pumps and toilets. Nearby water resources are used to deposit waste from the toilets. Furthermore, sustainable consumption and production patterns (**SDG 12**) reduce pollution into water resources. An over production increases pollution, thus negatively affecting sanitation and the quality of water. In addition, climate change mitigation and adaptation measures (**SDG 13**) need to be taken to reduce water resource vulnerability and risks to the impacts of climate change.

SDG 17 is also very important for the achievement of the 2030 Agenda. The goal's targets consist of finance, partnerships, technology, data acquisition, capacity building, monitoring and governance, which in all is essential for the achievement of SDG 6. In conclusion, all SDGs mutually depend on one another. This therefore requires actions that integrate and ensure that all SDGs advance together.

1.1.4: Challenges in the Implementation

The world is not on track to reach Sustainable Development Goal 6 (SDG 6) on Water and Sanitation by the deadline set for 2030 (United Nations, 2018). The SDG 6 Synthesis Report 2018 and other documents have identified many challenges, which need to be addressed for the successful implementation of SDG 6. Identified challenges can be summarised as follows:

a) Data availability: most countries do not have sufficient data (at least since 2000 when MDGs were adopted) to monitor progress of the different targets in SDG 6. The extent of industrial pollution is not known, as discharges are poorly monitored and

there is no distinction between industrialised and non-industrialised countries in terms of industrial pollution monitoring and data gathering.

b) Competing or conflicting targets of different SDGs: the interdependence among SDG 6 targets and that of other SDGs are still not well understood. This makes monitoring difficult and in most cases lacks there necessary indicators.

c) Deficiency in the indicators: some of the indicators for measuring SDG 6 do not sufficiently represent the outlined goals, their conceptualisation is not clear, not measurable or lack adequate data. All indicators are new and most of them only have a limited time series. In addition, groundwater as an important water resource for water supply is currently not adequately represented in SDG 6.

d) Inadequate governance structures: governance structures are either inadequate or are not well developed to implement or connect SDG 6 across different scales and levels. The water sector lacks strong, formal and informal institutions and human resources to underpin good water governance in its different facets.

e) Inadequate engagement of stakeholders: Without participation of relevant stakeholders in a co-design process, the developed solutions that are implemented on the ground are unsustainable and have high chances not to succeed.

f) Lack of awareness: In this case, mostly industrialized countries who are sometimes not aware that implementation of SDG 6 also poses a challenge for them.

g) Lack of sustainable finance: substantial investment is required, particularly because of the rapid urbanisation, installation of sewage networks and sanitation systems as well as to strengthen the capacity of stakeholders and the enabling environment.

h) Climate change: Climate change will have a significant impact on the implementation of SDG 6 since it will affect the overall water availability, water quality and the frequency of extreme weather events (e.g. floods and droughts).

So far, the presented challenges do not factor in additional challenges such as future natural disasters, conflicts, and economic crises, which also have considerable negative consequences in the achievement of the SDG 6 targets.

1.2: Good Practices

Despite the challenges, many governments, UN entities, international and regional organizations, major groups and other stakeholders have success stories and lessons learned in their respective processes of implementing SDG 6. This section discusses case studies and good practices in the implementation of SDG 6. Table 4 summarises good practices to consider in achieving SDG 6.

Table 4 - Good practices to achieve SDG-6

• Development of policies and strengthening institutional reforms
• Management and Development of water resources
• Monitoring, reporting and evaluation
• Co-operation and co-ordination
• Funding for programs
• Supporting technology innovation
• Public awareness and empowerment
• Capacity development
• Acquisition and monitoring
• Cultural changes within the utilizes
• Good governance
• Public participation and mobilization
• Investment reforms for donor funding
• Improving infrastructure
• Transparency and accountability
• Planning and Commitment
• Maintenance and expansion of services
• Multi-disciplinary activity

Case Studies

The below mentioned case studies are a collection of stories cited from the SDG 6 Synthesis Report 2018 and other platforms. The case studies present practical examples of success stories and lessons learned in the implementation of SDG 6 and their results.

1.2.1 Co-operation and co-ordination

“Many countries recognize the importance of adopting basin-wide agreements. For example, an agreement between the Ukraine and the Republic of Moldova, on co-operation in the field of protection and sustainable development of the Dniester River Basin, was adopted in 2012 and entered into force on 28 July 2017” (UNECE, 2017a, apud United Nations, 2018, p. 76). “Similarly, Mozambique and Zimbabwe are currently negotiating operational arrangements for the Pungwe, Save and Buzi Rivers” (IUCN, n.d., apud United Nations, 2018, p. 76). “The 1944 Treaty between Mexico and the United States for the Utilization of the Waters of the Colorado and Tijuana Rivers and of the Rio Grande has evolved to better account for transboundary groundwater, restoration in the Colorado Delta and drought management” (IBWC, n.d., apud United Nations, 2018, p. 76). “The 1995 Mekong Agreement and Commission has proven to be an important platform for the countries of the lower Mekong region to exchange data and information and to develop joint plans and programs. This has led to a better collective understanding of the social, economic and environmental dynamics

of the basin and brought countries together to consider the benefits and potential impacts of existing and planned infrastructure projects" (MRC, n.d., apud United Nations, 2018, p. 76).

1.2.2 Public participation and awareness

"Countries recognize that different forms of participation occur for national processes (e.g. development of laws, regulations and national strategies) versus operational- or community-level processes (e.g. user committees, citizen complaints and tariff reviews). The framework for local participation can be set at the national level, through defining public dissemination, hearing procedures and deadlines for government units, or, where appropriate, by transboundary institutions. Albania, Costa Rica and Peru define public hearing procedures as part of a formal process of tariff regulation. Mexico defines user participation in the National Water Law, specifically through bodies such as basin councils, groundwater technical committees and irrigation units, as well as federalized programmes. Local participation can take many forms, such as WASH committees at village level, as in Lao People's Democratic Republic, Rwanda, United Republic of Tanzania and Zimbabwe, or in national workshops as part of developing national WASH policies and strategies as in Costa Rica and Senegal. One recurring aspect of local participation is gender inclusion, where some countries, such as Fiji, Mozambique, Nepal, Peru and Rwanda, define a minimum percentage of female participation in user committees and encourage active female participation in all phases of the project cycle" (United Nations, 2018, p. 102).

1.2.3 Public participation in decision-making in Brazil

"The Municipal Department of Water and Sewerage in Porto Alegre supplies water and sanitation services and is supported through a progressive tariff that generates a surplus of 5–15 per cent annually. Citizens use participatory mechanisms to propose and vote on how to use this surplus to make new investments. They are also represented on a citizens board that oversees the public utility and its contractors, thus promoting accountability. The Municipal Department of Water and Sewerage has kept up with population growth and expanded services significantly since citizen participation has increased. The percentage of dwellings with access to treated water rose from 94.7 per cent in 1989 to 99.5 per cent in 2002, and the proportion with access to the municipal sewer network grew from 46 per cent in 1989 to 84 per cent in 2002" (TNI and CEO (2005), apud United Nations, 2018, p. 120).

1.2.4 Accountability

"An example of the power of accountability comes from the Johannesburg Water Customer Care Programme. The water utility faced customer payment problems when services and service levels did not meet community expectations. Johannesburg Water responded by

offering customers two call-in centres, two walk-in contact centres and contact by mail and email, to address the issue. The utility has benefited enormously from maintaining good customer care and relations. Customers are more likely to inform service failures that can be rectified quickly when the utility responds swiftly and provides feedback. Customers are therefore satisfied and more willing to pay for services. This increases cost recovery and the ability of Johannesburg Water to further invest in services" (UNDP WGF and UNICEF (2015b) apud United Nations, 2018b, p. 119).

1.2.5 Collaboration of efforts and partnerships for water and sanitation in Pakistan

"The Karachi Water Partnership was established as a neutral, multi-stakeholder group unified by a common aim to promote government–citizen collaboration for improved water resources management in the city. The multiple water management issues confronting the 18 million inhabitants of Karachi were unlikely to be solved without active contribution from all concerned.

The partnership has proven to be key for developing change in the management of water and sanitation in Karachi. It has the mandate to act through signing seven memorandums of understanding with city-based institutions, including the City District Government of Karachi and the Karachi Water and Sewerage Board. More than 300 partners have joined the partnership since its launch, with each one signing a pledge to conserve and better manage water and sewage in homes, in places of work and study, and in public spaces. Water supply and sanitation facilities were provided for over 400 teachers and 8,500 school children in 55 schools, and US$70,000 were raised to create and support the partnership.

At the neighbourhood level, the Orangi Pilot Project provided a model for communities to organize themselves around sewer lanes, as part of work on low-cost sanitation, housing, health, education and credit for micro enterprise. Extensive mapping was used to disentangle land ownership, which can cause personal risks in situations of high demand for land.

The achievements of Local Women and Water Networks has highlighted the role that women play in catalysing change within communities. Establishment of such networks were recognized as a prerequisite for advancing work at the district level" (Global Water Partnership; Orangi Pilot Project apud United Nations, 2018, p. 120).

1.2.6 Monitoring, evaluation and reporting in Brazil

"The National Water Resources Information System is a large database on water in Brazil. It consists of a set of processes for collecting, organizing and transmitting data and

information. The system consolidates water status data from all over Brazil, including reservoir levels, river stream-flows and water quality, as well as information on water users, including urban supply systems, irrigation networks and industries. This means that the quantity of available water is known, together with its quality and the purposes for which it is used. This information is vital for efficient water management.

The Brazilian National Water Agency is responsible for co-ordinating the system and complying with the principles of decentralized data and information uptake and production, unified system co-ordination and guaranteed access by society.

Information is stored in a database and disclosed in the form of interactive maps. All data in the system are publicly available[1] and may be accessed free of charge by anyone. There is a metadata portal linked to the system that was set up to organize and systematize geospatial information produced and used by the Brazilian National Water Agency, to ensure it is disseminated and accessible via the Internet[2].

Thirty-eight interactive maps were available in 2016, produced from 144 geo-service layers and associated with 200 different metadata. The system provides input for actions and studies in Brazil, including preparing for environmental economic water accounts and SDGs, especially SDG-6" (ANA (n.d.) apud United Nations, 2018, p. 126).

1.3: Exercises

In this section, the module rolls out a proposed set of exercises that teachers can conduct among their students to eventually produce knowledge manifested in written articles, videos and the like of presentations that help disseminate ideas and solutions regarding SDG 6. Each exercise is presented with an example (in bold) accompanied by some material from which the lecturer can commence the exercise.

1.3.1: Exercises

CleanWaterMakingSense: This exercise tackles teachers' and students' perceptions. For example: **as SDGs are finalized and in process of execution, how do you see yourself, as teacher, and your students, making sense of SDG 6?** Sub-questions that you can pose include: To what extent is SDG 6 feasible?; Which are the difficulties in implementing and tracking clean water and sanitation in your community?. This exercise is in the PPT (1.3 Excercises on SDG 6: ClimateChangeMakingSense slide 21)

[1] See website here, https://www.servicos.gov.br/. Accessed on 16 July 2019.
[2] See website here, https://www.servicos.gov.br/?pk_campaign=barrabrasil. Accessed on 16 July 2019.

Climate Change and surroundings: Map SDG 6 in relation to all other SDGs. You can use Venn diagrams and radar chart on this activity. Questions to be raised in this activity could be, for example: How strong is the link between SDG4 and SDG6? Or: How can SDG6 on clean water support the completion of SDG7? Or: How does SDG6 foster healthy lives and promote well-being for all at all ages (SDG3)? The overarching question in this activity is: **How can an integrative approach be adopted to tackle SDG6 in tandem with other SDGs?**. This exercise is in the PPT (1.3 Exercises on SDG 6: Describing links with other SDGs, slide 22)

Data4CleanWater: Gather and analyze global, regional, national and local data on SDG6. Begin for example with data from the UN Sustainable Development Knowledge Platform[3], then go to other analytical platforms such as Eurostat[4]. You can also inspect the website SDG Indicators[5] and SDG Tracker[6]. Another options to collect data on clean water are the Our World in Data[7], the UNICEF[8], the Aquastat from FAO[9], the SUSANA project[10], the WASH project[11], or even data from the World Bank[12]. Analysing the data under the following question is one example: Which are the positive and negative effects of improving the SDG6? Also, students could gather data in their community (classroom / university / school / neighborhood / house) and analyze the trends in both a qualitative and quantitative manner to find out major narratives, frequencies, correlations and causalities, and see how well the data is situated in comparison to the local (if available) or otherwise national data from the other platforms. Another purpose of this exercise is to see the extent to which the data collected can converge with the timeframe and expectations set by SDG 6. This exercise is in the PPT (1.3 Exercises on SDG 6: Gather and analyse data on SDG 6, slide 23)

In case, however, you decide doing the comparison between your locally gathered data and institutional data, decide first on a baseline from the data collected from the other institutions and platforms since 2015. Thereafter you can compare this baseline with your local data in terms of rates of change, i.e. frequency of progress in the SDG targets according to the SDG

[3] Data on SDG13 from the UN Knowledge Platform: https://sustainabledevelopment.un.org/sdg6
[4] See here: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Category:Water
[5] See here: https://unstats.un.org/sdgs/indicators/database/
[6] See here: https://sdg-tracker.org/water-and-sanitation
[7] See here: https://ourworldindata.org/water-use-sanitation
[8] See here: https://data.unicef.org/topic/water-and-sanitation/drinking-water/
[9] See here: http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en
[10] See here: https://www.susana.org/en/knowledge-hub/projects/database
[11] See here: https://washdata.org/data
[12] See here: https://data.worldbank.org/indicator/SH.STA.SMSS.ZS

indicators. Noteworthy: present the data in a visually appealing way.[13] The baseline data from both venues (institutional and local) would be useful for a future monitoring and evaluation assignment you could do with the students to see how far there is progress or retraction.

Localizing4Development: How can you identify the benefits of SDG 6 at your community (classroom/university/school/neighborhood/house) and at individual level? Localizing SDG 6 comes with challenges. Thoughts to reflect on, for example, include: What are the benefits of countries promoting climate change compared to countries with no such view in developing SDG 6? Discuss pros and cons of such approach. Picking specific countries/states as examples when comparing – and then setting them into context with your respective local system will help in providing an understanding for where changes can be lobbied for. Taken altogether, contextualizing the SDGs in its local context is an important assignment prior and along the road of implementing SDG 6. This exercise is in the PPT (1.3 Exercises for SDG 6 – Localizing4Development on SDG 6, slide 24)

Policy Briefs: In this activity, the teacher will **encourage writing policy briefs on any topic pertinent to clean water and sanitation as identified by SDG 6**. Students will follow a similar structure as stipulated in policy briefs by international organizations and national agencies (see example by the Knowledge Platform – Clean Water[14] or the United Nations – Water[15]. This will serve elevating the students' policy-related writing skills in addition to directing them towards formulating their own manuscript of briefs on clean water and sanitation issues of their primary concern. They also develop grounded realization of the challenges of implementing SDG 6 at all levels, from the international all the way to the local level. This exercise is in the PPT (1.3 Exercises for SDG 6 – Policy Briefs on SDG 6, slide 25)

@CleanWater: **Drive your social media platforms in ways that promote clean water and sanitation awareness in your community** (classroom / university / school / neighbourhood / house). For example: that can be through simple daily/weekly photo campaigns as well as conversations that bring the default behaviors of students that gravitate towards constantly viewing social media together with the purpose of the exercise; that is, bringing their awareness closer to what they can do to promote clean water and sanitation awareness for all in their community. You may firstly check for already existing campaigns on

[13] You can see example of data visualization for interlinkages (and the respective SDG per country) on this platform: https://sdginterlinkages.iges.jp/visualisationtool.html.
[14] See https://sustainabledevelopment.un.org/topics/water/decisions
[15] See https://www.unwater.org/app/uploads/2015/08/UN-Water_Publications_Policy_v.18Aug2015_rev3Apr18.pdf

clean water and sanitation awareness and discuss about them. This exercise is in the PPT (1.3 Exercises for SDG 6 – @CleanWater, slide 26)

CleanWaterPreneurs: Finding stories and instilling a sense of belonging by bringing together those working on clean water quests can be motivating to those doing the work, inspiring to the community and the entire world. For example, you can use **vlogs, blogs** and **journals** such as fairs and expos to promote this exercise on **promoting SDG 6**. It will also allow those good ambassadors of clean water from the business community to network and widen their perspective with each other and the broader communities. This exercise is in the PPT (1.3 Exercises for SDG 6 – CleanWaterPreneurs, slide 27)

BreakingSilos: Taking its name from the silo-effect, this activity promotes **actively thinking and writing on SDG 6 from the wide variety of sciences and arts** out there. As a lecturer, you could be interested or expert in literature, hence approaching SDG 6 from a more philosophical perspective; another could be interested in addressing education issues in SDG 6 from a managerial perspective. For example, a question you could pose is: Using a cost-benefit analysis, what benefits are there for implementing SDG 6? Another example could be: If you are a natural scientist, what indicators might there be missing to better include sciences in clean water? This exercise intends to break through silos of each discipline and stimulate cross-disciplinary discussions on climate energy. This exercise is in the PPT (1.3 Exercises for SDG 6 – BreakingSilos, slide 28)

1.3.2: Assessment questions

Below is an outline of several different questions related to the SDGs in general, and to SDG 13 in particular, that help assess your understanding of the topic and the interlinkages and challenges. These questions are also designed to act as questions for your students to discuss the topic further and/or prepare presentations on them.

Questions:

1. Discuss the pros and cons of the term “sustainability”. Do you believe that sustainability is a new philosophy? Or is it actually a very old one well known to our ancestors?
2. Define the SDGs and the environment they derived from, i.e. what are the main advancements (positive or negative) compared to the Millennium Development Goals (MDGs)?
3. Discuss four main difficulties you see in implementing the SDGs.

4. With regard to reporting and measuring outcome and impact, assess if the targets are well defined and what institutions have indicators available.
5. How does SDG 6 interlink with other SDGs? What are positive and negative interrelations, and how do they affect human well-being?
6. Which are the SDG 6 benefits for communities, countries and businesses in general?
7. Which are the main difficulties you can identify in the implementation of SDG 6 in your country?
8. List some examples of positive successes over the last two decades in promoting clean water and sanitation in your community.
9. What role can stakeholders play to improve and promote SDG 6?
10. What are the gaps and constraints and how should we address them?

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