

# Preface to Transitioning to Clean Water and Sanitation

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## 1. Introduction

The Sustainable Development Goals (SDGs) include one goal (SDG 6) dedicated to Water, Sanitation and Hygiene (SDG 6 or SDG WASH)), which illustrates the vital role of this sector globally for a better future (Requejo-Castro et al. 2020). SDG 6 is connected to almost all the other SDGs (UN 2020). The UN Special report 2020 highlights that progress has been slow on many SDGs and that the most vulnerable people and countries continue to suffer the most (UN 2020). The 2020 COVID-19 pandemic and its unprecedented multidimensional crisis are further challenging the achievement of the SDGs (Macht et al. 2020; Pal and Pal 2021).

Five years after 2015, the world entered the decade before 2030. The new shock with the COVID-19 crisis will make the challenges to achieve the goals even harder for all the systems, notably for the water, sanitation and health systems. COVID-19 further emphasized that it is essential to ensure clean water, improved sanitation and proper hygiene conditions for better protection of health in all parts of the world (Armitage and Nellums 2020). This understanding and awakened awareness could lead to a better political goodwill to invest more in this sector.

Following the 2021 report of the World Health Organization (WHO) and the United Nations' Children and Women Fund (UNICEF) Joint Monitoring Program (JMP) on Water, Sanitation and Hygiene, in 2020, 2 billion people lacked safely managed services (WHO and UNICEF 2021). This includes 1.2 billion people with basic services, 282 million with limited services, 367 million using unimproved sources, and 122 million drinking surface water. At current rates of progress, the world will only reach 81% coverage for safe drinking water by 2030, leaving 1.6 billion people without safely managed services.

For sanitation, in 2020, 3.6 billion people lacked safely managed services, including 1.9 billion people with basic services, 580 million with limited services, 616 million using unimproved facilities, and 494 million practicing open defecation. At current rates of progress, the world will only reach 67% coverage for sanitation by 2030, leaving 2.8 billion people without safely managed services (WHO and UNICEF 2021).

For hygiene, in 2020, 2.3 billion people lacked basic services, including 670 million people with no handwashing facilities at all. Over half of these people (374 million) lived in fragile contexts. At current rates of progress, the world will only reach 78% coverage in 2030, leaving 1.9 billion people without basic services (WHO and UNICEF 2021).

Climate change has already shown huge consequences on water and sanitation systems through changes in temperature and rainfall and effects of extreme events such as droughts and floods, and this is likely to increase in the future (Brubacher et al. 2020; Cissé 2019; Musacchio et al. 2021; Sherpa et al. 2014; Suk et al. 2020).

Transition is a key concept that will be essential for the level of action needed to achieve the SDGs in a post-COVID-19 era. The SDGs are complex and their implementation is showing a number of important challenges. To achieve the goals, they call for an effective transition. Efforts and capacities to transition are inequitably distributed across the world. Developed countries will certainly make more rapid progress than less developed countries. As the challenges and the capacities are different between these categories, it will be of most interest to get some examples on the challenges and efforts for transitioning on different continents, e.g., developed countries like Europe or Australia vs. in low- and middle- income countries (LMICs) like Asia and Africa. It was in the aim of this edition to get examples from these categories.

We are happy to be able to present, in this special book on *Transitioning to Clean Water and Sanitation*, four selected contributing papers elaborating situations and cases from Europe (Spain), Oceania (Australia), Africa (Zambia) and Asia (Nepal). These interesting papers will contribute to our better understanding of how transitions are or should be underway in such different socio-economic, physical and cultural contexts for adapting water and sanitation systems to the projected impacts of climate change. Each paper highlights the challenges and indicates a way forward.

## **2. Highlights**

### *2.1. Concepts*

The concepts of transition and transformation are interconnected. The transition in systems will take place through processes of transformation. The IPCC, particularly in the recently released Special Reports (IPCC 2018, 2019a, 2019b), provides further clarifications and definitions about system transitions, particularly for the climate action and solution space. Following IPCC, transition is “the process of changing (the system in focus) from one state or condition to another in a given period of time”. This “another state or condition” should be toward or

ensuring sustainability, as well as a fairer balance between different dimensions. It requires more than technological change, i.e., change also on social and economic factors. These shifts and efforts depend on all systems and the moves should happen at all levels: by state, public and private actors, cities, regions, individuals and communities.

For water and sanitation systems, there is a need for adequate quality and sufficient quantity of water to ensure effective environmental health for better health and wellbeing for ecosystems and people (Daniell et al. 2015; Cissé 2019). Water systems are particularly vulnerable to population growth, uncontrolled urbanization and extreme climate change events. There is an urgent need for transitions in water systems to face these challenges. Transitions in water and sanitation are already happening but should further consider both mitigation and adaptation options and actions, and their interconnections in the perspective of climate-related projected risks. This entails a better understanding of the complex interrelations between several dimensions. Enabling conditions for system transitions include finance, technological innovation, strengthening policy instruments, institutional capacity, multilevel governance, economics, and changes in human behavior and lifestyles. The traditional management of water systems is insufficient and a paradigm shift toward transitioning is needed. This means that transitioning requires more integrated, adaptive and sustainable configurations in water management (Daniell et al. 2015).

## *2.2. Case Studies*

Sandra Ricart et al., from Europe, (Chapter 1) highlights that a better integration of non-conventional water resources is among the strategies for transitioning. The paper highlights how water management, water quality, and water charging are the three main issues to be addressed when promoting water exchange and non-conventional water resource use. The case study focuses on links between agricultural and urban–tourist activities and supports the call for approaches and actions that should combine Targets 6.3 (improve water quality, wastewater, and safe reuse), 6.4 (increase water-use efficiency and ensure freshwater supplies), 6.5 (integrated water resources management), and 6.b (participation in water and sanitation management).

Jayanath Ananda, from Australia, (Chapter 2) highlights that, globally, the water sector’s greenhouse gas (GHG) emission contribution is equivalent to 20% of the sum of committed reductions by all countries in the Paris Agreement. Most reported water sector GHG emissions are still energy related and they exclude emissions from

non-energy related sources, such as methane and nitrous oxide from wastewater treatment. The case study highlights the challenges for controlling emissions and calls upon water utilities for profound transformations that need to occur at three different levels (the global, national and water utility level).

Subodh Sharma et al., from Asia, (Chapter 3) highlights that Nepal is the fourth most vulnerable country with regard to climate change challenges. While the mismatch between the accessibility and the functionality of WASH facilities is still important, Nepal is regularly disrupted by extreme climate change events. This has an impact on various public health issues. Drying up of water sources and water contamination due to temperature rise and water-related disasters are among the challenges in a mountainous country. The authors call upon rapid transitions and transformations in water and sanitation management systems to achieve the targets SDG 6.1 and SDG 6.2.

O'Brien Kaaba, from Africa, (Chapter 4) highlights how neighboring poor and vulnerable communities' water systems can be affected by extractive industries. It explores how, from the perspective of water as a human right, the local level actors can struggle with the defense of their rights to protect their water systems from pollutant activities. Without clean and adequate water, the rights to any high standard of physical and mental health could not be achieved. The case study highlights the contamination of water systems by a large scale mining of copper in a region that faced a lack of systemic enforcement of the local law, a lack of easy and clear mechanisms to fight for the people's rights, and an insufficient capacity and inadequately oriented justice system. The chapter holds a wakeup call that transitions and transformations at the level of justice systems is an important part of enabling conditions to ensure the protection of water quality for all, particularly for the poor.

### 3. Conclusions

The case studies have shown an interesting complementarity in covering different aspects that are all part of what transition means for water and sanitation systems. Be it in developed countries or in developing countries, integrated water management and a stronger investment in environmental health are necessary and this requires a paradigm shift to mainstreaming "transition and transformation" at all levels.

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