



## SDG 1: Ensure availability and sustainable management of water for all

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### Introduction

Along with enough food, clean air, and shelter, the supply of clean water, safely managed sanitation and good hygiene are necessary for good health and wellbeing. The biomedical, social, economic and environmental consequences of poor access to water, sanitation and hygiene (WASH) are borne disproportionately by women and transgender people, people with disabilities and those living in poverty (Cairncross and Valdmanis 2006). Whilst poor WASH conditions are usually an issue associated with low-income countries, equitable access to WASH is also an issue in many high-income countries.

Pneumonia and diarrhoea together are responsible for 29 per cent of deaths among children under five worldwide and WASH is known to be one of the key interventions to prevent these deaths (UNICEF & WHO 2013). Improving WASH is a component of primary health care outlined in the Alma-Ata Declaration of 1978 (WHO et al. 1978). It is vital that in the pursuit of health equity, more focus is placed on improving water, sanitation and hygiene globally. The inclusion of WASH in both the Millennium Development Goal 7c (MDG 7c) and Sustainable Development Goal 6 (SDG6) is indicative of the continued importance placed on WASH by the global community.

**Water** refers to both the quality and availability of water. **Sanitation** refers to the safe containment of human faeces. The scope of **hygiene** has increased substantially in recent years: handwashing is still the main focus but bathing, clothes-washing, storage of food and dishes, menstrual hygiene management and household rubbish disposal are also considered important elements of hygiene.

### The importance of water, sanitation and hygiene

WASH has always been important to humans. Water is essential for survival, as is avoiding getting infected by the pathogens transported through faeces. Indigenous Australians, the oldest continuing culture in the world, used coolamons to store water and dug tunnels to access groundwater to survive on the driest continent in the world (Skatssoon 2006). The remains of what look like basic lavatories were found in the remains of dwellings in the Scottish town of Skara Brae, thought to have been occupied as early as 3000 BC (Wickham-Jones 2006).

The main biomedical consequences of poor access to water, sanitation and hygiene are diarrhoea, stunting and infections, all caused by the transmission of bacteria, viruses, protozoa and helminths. In 2008, Prüss-Üstün et al. (2008) estimated that the global burden of disease due to poor WASH was 9.1 per cent. In 2019, the same authors found that the global burden of disease due to WASH was still an 'important fraction' of the total burden (Prüss-Ustün et al. 2019, p.11).

Conversely, creating evidence to show the association between good or improved access to WASH and positive health outcomes is challenging due to the difficulty of controlling confounding governance, physical, environmental, economic, cultural and educational factors. Nevertheless, some studies and reviews suggest that better access to WASH is associated with improved children's health indicators (Clasen et al. 2010; Freeman et al. 2014; Dangour et al. 2013; Njuguna 2016; Strina et al. 2003).

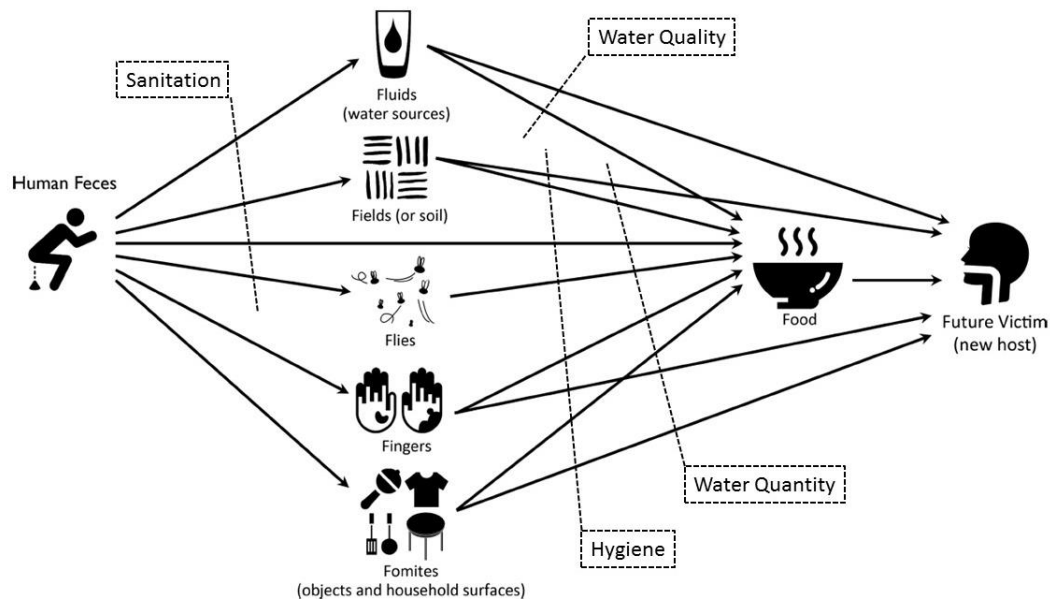
Aside from the health issues related to WASH, there are environmental concerns which broadly fall into two categories: the over-extraction of water resources for human consumption and the contamination of the environment by poorly managed human effluent (Hutton and Chase 2017). There are also myriad socio-economic consequences of poor access to WASH (Cairncross and Valdmanis 2006). Being unwell, or caring for someone who is unwell, due to a WASH-related illness costs households in medical expenses as well as time away from income-generating activities and school (Patel et al. 2013; Hutton and Haller 2004).

The gendered nature of WASH is something the sector has focused on for at least the past decade. The burden of water collection and caring for unwell family members usually falls disproportionately to women and children (Cairncross and Valdmanis 2006; Fisher 2006). Women are more likely than men to need to wait until nightfall to defecate or urinate with dignity, putting them at greater risk of urinary tract infections as well as sexual and physical violence (Cairncross and Valdmanis 2006). These issues, as well as stigma and the lack of facilities for managing menstruation, prevent many women and girls from attending school and work. Non-binary gender identifying people and people of sexual minority groups might experience extra difficulty accessing WASH: for example, in public places where only male and female toilets are available, or in emergency contexts where their presenting gender does not match their identity cards (House et al. 2017; Boyce et al. 2018).

The WASH sector is increasingly paying attention to the specific needs and experience of potentially disadvantaged groups such as people with a disability, elderly people, or people with chronic illnesses. The sector acknowledges that WASH infrastructure needs to be designed differently for people with different abilities (for example, ramps and pathways to public tap stands). Furthermore there is recognition that potentially disadvantaged people often have less decision-making power in community settings and WASH interventions are a platform for challenging this norm (Jones and Reed 2005).

## **Providing access to water, sanitation and hygiene**

Interrupting the pathways of faecal-transmitted pathogens to human hosts is central to WASH. These pathways are conceptualised in a diagram commonly referred to by practitioners as the 'F-diagram' shown in Figure 1 below (this is adapted from the original diagram by Wagner and Lanoix 1958). A common misconception in public health is that improving water quality is the most important method for preventing faecal-transmitted diseases (Cairncross and Feachem 1993; Cairncross 2003). The F-diagram illustrates the way in which sanitation, hygiene and water quantity are also important interventions.



**Figure 1 Traditional F-Diagram showing potential faecal-oral transmission pathways (Penakalapati, Swarthout et al. 2017 p.11538). Broken lines are added to show the ways in which water, sanitation and hygiene interrupt these pathways.**

Interventions that aim to give people access to safe drinking **water** are concerned with minimising or removing contamination at the source, during transportation or during the storage of water. In rural or remote areas, typical water sources include rain water, collected from roof, rock or ground catchments, (Gould and Nissen-Petersen 1999) and ground water, either gravity-fed from a spring or hauled or pumped from a hand-dug well, tube well or borehole (Pedley et al. 2011). In urban areas, water supply systems might be the same as those described above, but are more likely to be centralised water mains supplied by municipal governments. Interventions to improve access to centralised water systems often focus on enabling all users to pay for water tariffs and on building water utilities' capacity to operate and maintain such systems.

The conventional response to poor **sanitation and hygiene** in low-income settings has been to construct or provide subsidies for infrastructure such as toilets and handwashing stations. This assumes that people defecated in the open or did not wash their hands because they were too poor to build toilets and basins. However, several practitioners and researchers have noted that merely providing toilets does not stop people from defecating in the open (Cairncross 1992; Cairncross 2003; Curtis and Cairncross 2003; Bongartz 2010; Peal, Evans et al. 2010). Interventions based on the assumption that improved health behaviour will come about through educating people about the benefits of such behaviour have also been critiqued ((Prüss-Üstün et al. 2008); Simpson-Hebert et al. 1997). Since the 1990s several approaches to improving sanitation and hygiene have emerged that aim to be both more participatory as well as more focused on creating demand among community members for improved services rather than assuming what they want (Peal et al. 2010). An example of such an approach is Community-led Total Sanitation (CLTS) which seeks to motivate communities to build their own toilets through the activation of collective disgust at open defecation (Kar 2003). In remote areas, sanitation and hygiene infrastructure is typically decentralised with households either using pits or septic tanks to contain black and grey water. In urban areas, interventions might include a collection system or improving a piped sewerage system.

In both rural and urban contexts, the operations and maintenance of WASH systems are critical to sustainability and therefore, WASH practitioners are also concerned with governance and management systems. Furthermore, WASH programs are increasingly focused on ensuring that the specific WASH

needs of women and potentially disadvantaged people are being addressed. For example, gender and social inclusion were cross-cutting themes in the last two rounds of Australian Government funding dedicated to Civil Society WASH programs (DFAT & GHD 2018).

## Measuring water, sanitation and hygiene

WHO and its predecessor, the League of Nations Health Organization, have collected data and published recommended standards about WASH since at least 1930 (Bartram et al. 2014). Currently, WASH standards are documented in a number of reports. For example, the World Water Development Report (WWDR) is focused on freshwater resources and the Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) report is focused on the policies, institutions and finance mechanisms for managing WASH globally.

The Joint Monitoring Programme (JMP) is a collaboration between UNICEF and WHO. Since the 1960s, the JMP has reported on national-level WASH standards, and these now serve as the main record of nations' progress against the WASH-related Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs). The latest report includes information about sub-national inequities, drinking water quality and handwashing, and the first report about WASH in health care facilities was published in 2019.

The latest indicators and standards for drinking water quality, sanitation and hand-washing articulated by the JMP are set out in Figure 2, Figure 3 and Figure 4 respectively.

SERVICE LEVEL	DEFINITION
SAFELY MANAGED	Drinking water from an improved water source that is located on premises, available when needed and free from faecal and priority chemical contamination
BASIC	Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing
LIMITED	Drinking water from an improved source for which collection time exceeds 30 minutes for a round trip, including queuing
UNIMPROVED	Drinking water from an unprotected dug well or unprotected spring
SURFACE WATER	Drinking water directly from a river, dam, lake, pond, stream, canal or irrigation canal

*Note: Improved sources include: piped water, boreholes or tubewells, protected dug wells, protected springs, and packaged or delivered water.*

**Figure 2 Joint Monitoring Programme standards for drinking water quality (World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) 2017)**

SERVICE LEVEL	DEFINITION
<b>SAFELY MANAGED</b>	Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite
<b>BASIC</b>	Use of improved facilities that are not shared with other households
<b>LIMITED</b>	Use of improved facilities shared between two or more households
<b>UNIMPROVED</b>	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
<b>OPEN DEFECATION</b>	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces, or with solid waste

*Note: improved facilities include flush/pour flush to piped sewer systems, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets or pit latrines with slabs.*

**Figure 3 Joint Monitoring Programme standards for sanitation (World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) 2017)**

SERVICE LEVEL	DEFINITION
<b>BASIC</b>	Availability of a handwashing facility on premises with soap and water
<b>LIMITED</b>	Availability of a handwashing facility on premises without soap and water
<b>NO FACILITY</b>	No handwashing facility on premises

*Note: Handwashing facilities may be fixed or mobile and include a sink with tap water, buckets with taps, tippy-taps, and jugs or basins designated for handwashing. Soap includes bar soap, liquid soap, powder detergent, and soapy water but does not include ash, soil, sand or other handwashing agents.*

**Figure 4 Joint Monitoring Programme standards for handwashing ((World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) 2017)**

The latest data about global access to WASH reported by the JMP is from 2017:

- 71 per cent of the global population used a **safely managed drinking water service**. Just over 11 per cent of the global population did not have access to a basic drinking water service.
- 45 per cent of the global population used a **safely managed sanitation service** and just over one quarter of the global population did not have access to basic sanitation.
- 60 per cent of the global population (for which there was data) had a **handwashing station with soap and water at home**. There was insufficient data from many high-income countries.

### **Australia’s role in meeting SDG6**

It is encouraging that the SDGs compel all nations – not just those that struggled to meet the MDGs – to improve their performance against the SDG targets. Australia’s voluntary review of its performance against the SDGs in 2018 described both the nation’s strengths and weaknesses in WASH. Australia’s expertise in integrated water management is highlighted as a reason for the nation’s high performance against SDG 6.5 as well as an asset to be shared with other nations working toward improved water

management. The Civil Society Water Sanitation and Hygiene Fund is another example of the Australian Government's commitment to improve WASH in low-income countries. Conversely, the unequal access to WASH within Australia, which disproportionately affects Aboriginal and Torres Strait Islander people, was highlighted as a challenge for meeting SDG6 (The Australian Government 2018).

It is reassuring that WASH has been recognised as an important part of the SDGs. The efforts to advocate for and improve WASH globally predated the MDGs and will likely continue beyond 2030; however, the goals have helped to give more visibility to WASH and spurred on the effort to have global standards for safe WASH. Moreover, SDG6 interconnects with other SDGs pertaining to health, gender empowerment, education, climate action and sustainable communities and therefore provides another valuable platform for these sectors to collaborate. Given that around 30 per cent of the world's population still does not have access to safe water and 25 per cent do not have access to basic sanitation, there is still much work to be done in the WASH sector. The SDGs have an important role for motivating actors at all levels to achieve safe access to WASH for all.

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