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# **WASH** Report

2018 UPDATE

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*A resource for current research, statistics,  
and trends in global WASH issues*

***With joy you will draw from the wells of salvation.***

ISAIAH 12:3

# Contents

Executive Summary .....	4
<b>1.0 WASH Coverage .....</b>	<b>6</b>
<b>2.0 WASH and Children .....</b>	<b>15</b>
<b>3.0 WASH and Women .....</b>	<b>19</b>
<b>4.0 WASH and Education .....</b>	<b>22</b>
<b>5.0 WASH and Disease .....</b>	<b>25</b>
<b>6.0 International and National Policies .....</b>	<b>28</b>
<b>7.0 Additional Resources .....</b>	<b>30</b>

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## AT A GLANCE

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***Access to safe drinking water, sanitation, and hygiene (WASH) affects our chances for survival, our ability to enjoy good health and safety, our opportunity to get an education and work, and the realization of our inherent dignity and potential.***

- Globally, 844 million people (11%) do not have access to at least a basic level of safe water.
- For 159 million people, the only water available is contaminated surface water from lakes, streams, or ditches.
- Almost one third (32%), or 2.3 billion people, do not have access to basic sanitation.
- Roughly 892 million people (12%) must defecate in the open, one of the clearest signs of extreme poverty.
- People living in rural areas are disproportionately underserved in water and sanitation. Nearly one in five do not have safe water and half do not have basic sanitation.
- Only 58% of people in Sub-Saharan Africa have access to basic safe water services, and only 28% have basic sanitation. In Least Developed Countries (LDCs), the rates are 62% and 32%, respectively. Only 27% of people living in LDCs have access to basic hygiene.
- Sustainable Development Goals (SDGs), established in 2016, are a list of 17 goals to which significant international, national, and private resources are directed. Goal 6 aims for universal coverage in safe water and sanitation, as well as an end to open defecation, by 2030.
- The UN and other agencies have redefined the standards for basic access to safe water and sanitation, as well as established new standards for basic sanitation. The new standards take into account the availability of these resources and the time needed to get them.

***About 5.6 million children will die this year before their fifth birthday, about 15,000 each day. Many of these deaths are from infectious diseases that can be prevented with access to water, sanitation, and hygiene.***

- The global under-5 mortality rate was 41 per 1,000 live births, a 56 percent decline from 93 per 1,000 in 1990. This represents nearly 7 million fewer under-5 deaths in 2016 than in 1990.
- The main causes of death for children under age 5 outside of the neonatal period are pneumonia (13%), diarrhea (8%), injury (6%), and malaria (5%). Together, they account for nearly one in three under-5 deaths and over half of the deaths of children between 28 days and five years old.
- Half of the children who die before their fifth birthday live in Sub-Saharan Africa; almost a third live in Southern Asia. A child born in Sub-Saharan Africa is 15 times more likely to die before his or her fifth birthday than one born in a high-income country.
- Education is a path out of poverty. A worker's income increases 8.3% for each additional year of schooling.
- Improved sanitation at schools, which is essential for the privacy and dignity of girls, is lower than access to improved water sources. Globally, 71% of schools have water and 69% have sanitation. In LDCs, it drops to 52% and 51%, respectively.
- Globally, there are 33 million school-age children not in school. There are 4 million more girls (15%) out of school than boys.
- Some studies show that handwashing with soap can decrease absenteeism by 42-54%, and when water is brought 15 minutes closer, the proportion of girls attending school increases 8-12%.

***When women have WASH, they are more likely to attend school, engage in productive labor, maintain good health for themselves and their families, and participate more in social, political, and economic arenas.***

- Over 70% of the responsibility for collecting water in Sub-Saharan Africa falls on women and girls.
- Women without improved sanitation spend 86 billion hours per year looking for a safe place to go to the bathroom. One study showed that when facilities are available at the workplace, absenteeism decreased 70%.
- Women in developing countries have a 23x greater risk of death in childbirth than their wealthier counterparts. About 10-15% of maternal deaths can be prevented with good hygiene during and after childbirth, and many more can be prevented when women have access to WASH during pregnancy.
- Women and girls are routinely subjected to harassment and assault when they do not have access to improved sanitation, especially the 526 million women who must defecate in the open.

***Lack of WASH contributes heavily to the global burden of disease.***

- Adequate WASH can prevent at least 9.1% of disability-adjusted life years (DALYs) and 6.3% of all deaths globally.
- Respiratory infections and diarrheal disease are the most common illnesses worldwide, with over 21 billion cases each year combined. Incidences of both can be drastically reduced with WASH.
- Diseases like cholera, typhoid, giardia, and dysentery affect millions of people each year, causing debilitating pain and weakness. Increased death occur among the young, the old, and those with compromised immune systems.
- About 1 in 4 people worldwide are infected with soil-transmitted helminths that can be prevented with WASH.
- Diarrheal diseases are closely linked to malnutrition, which is linked to 45% of childhood deaths, as well as stunting and cognitive impairment.
- The United Nations recognizes the human right to water and sanitation.
- Although most countries recognize the right to water and sanitation, relatively few have fully funded and implemented plans to achieve universal coverage.
- The United States does not officially acknowledge the human right to water, but the Paul Simon Water for the World Act of 2014 prioritizes efforts to provide WASH to those in need around the world.
- WASH can help prevent the spread of infectious disease as seen during the Ebola outbreak in 2014.
- Natural disasters and conflicts, such as the earthquake in Nepal and the wars in the Middle East have left millions without WASH, leaving them more vulnerable to disease.
- Rapid urbanization and climate change present significant challenges to achieving universal WASH.

# 1.0 WASH Coverage

**WASH coverage data tell us the story of who wakes up each day with access to safe water, adequate sanitation, and healthy hygiene.** The data tell us most often where they live, and, sometimes, their age, gender, ethnicity, and economic status. Over the past several decades, billions of people have gained access to safe water and improved sanitation, but there are still billions without, and many about whom we have little or no information.

Significant gaps in WASH coverage exist among the rich and poor, urban and rural, and between global regions. Recognizing WASH as a critical factor in human survival and development, and a key factor of social stability and economic progress, the world has agreed to work toward the goal of universal WASH coverage by 2030. This section summarizes the most recent WASH coverage trends, identifying changes to standards and definitions, progress toward universal coverage, and the remaining gaps.

## 1.1 Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a set of goals guiding the coordinated international development efforts of governments and international NGOs, building upon several years of progress under the Millennium Development Goals (MDGs), which ended in 2015. In 2016, the United Nations agreed to a set of 17 SDGs, including Goal 6: “Ensure availability and sustainable management of water and sanitation for all,” including “6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all,” and “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.”<sup>1</sup>

## 1.2 New Definitions and Indicators for Coverage

To establish baselines and track progress toward the goals of universal coverage for water and sanitation, the World Health Organization (WHO) and United Nations Children’s Fund (UNICEF) formed a Joint Monitoring Programme (JMP), whose recent report defines standards for coverage in more detail. These definitions establish slightly different, and higher, standards than those tracked during the MDG years.

There are five main levels of water access now tracked across the world: safely managed, basic, limited, unimproved, and surface water.

1 The full set of goals and specific targets can be found online at <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> (accessed March 10, 2018).

## A New ladder for drinking water services

### SERVICE LEVEL

#### **Safely Managed**

Drinking water from an improved water source that is located on premises, available when needed and free from fecal 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 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, rainwater, and packaged or delivered water.

*Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines.* Geneva: World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), 2017, 8.

## B New 2017 definitions and indicators

**Basic Access**  
= no more than



**Round trip for collecting, including queuing**

**The most noticeable change in the standards of water coverage are that people who have access to an improved source of safe water but must wait and/or travel more than 30 minutes roundtrip to reach it are not accessing the “basic” level of water coverage, but “limited” water coverage.** This category of “limited” access is especially significant for women and girls, who are responsible for water collection in 8 out of 10 households where water is collected off-premises. There are 10 countries where at least 20 percent of the population has “limited” water access, and 8 of those are in Sub-Saharan Africa.<sup>2</sup> Additionally, the highest level of water coverage is now called “safely managed,” which is an improved water source available on the premises that is free from contamination.<sup>3</sup>

The most significant change in the sanitation ladder is that the highest level is now “safely managed,” which means access to private facilities where excreta is safely disposed of in situ or safely transported and treated offsite. “Basic” or “limited” access includes people using improved facilities, but access is considered “limited” if it is shared between two or more households, such as facilities in public places.<sup>4</sup> Additionally, the JMP established a new ladder defining three levels of access to hygiene: basic, limited, and no facility.

### 1.3 Minimum Standards for Coverage

Standards for adequate drinking water supply and sanitation vary among nations, but there are minimum standards used in the WASH sector. Most often applied in humanitarian (emergency) response situations, these standards can also serve as minimum standards for long-term development.<sup>5</sup>

In general, individuals should have at least 15 liters of water per day.<sup>6</sup> Based on flow rates, this usually means no more than 250 people per tap and no more than 500 people per hand pump.<sup>7</sup> The water must be palatable and not cause health risks, either through fecal or chemical contamination.<sup>8</sup>

Sanitation must effectively separate humans from their waste, separating and containing excreta apart from humans, in their homes and environment. All sanitation facilities must not contaminate surface water and must be at least 30 meters away from a water source, with any pits at least 1.5 meters above the water table. Facilities (toilets) must be accessible to all sections of the population, including the old, young, pregnant, and disabled. They must

2 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 11.

3 Ibid., 8.

4 Ibid., 8.

5 The Sphere Project issues commonly-used standards on a wide range of themes and interventions through its publication, *Humanitarian Charter and Minimum Standards in Humanitarian Response*, most recently revised in 2011.

6 The Sphere Project, *Humanitarian Charter and Minimum Standards in Humanitarian Response* (Rubgy, UK: Practical Action, 2011), 105-110.

7 Ibid., 99.

8 Ibid., 100.

## C New ladder for sanitation services

### SERVICE LEVEL

#### **Safely Managed**

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

#### **Basic**

Use of improved facilities that are not shared with other households

#### **Limited**

Use of improved facilities shared between two or more households

#### **Unimproved**

Use of pit latrines without a slab or platform, hanging latrines or bucket latrines

#### **Open Defecation**

Disposal of human feces 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, composting toilets or pit latrines with slabs.

**Source:** *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2017, 8.

## D New 2017 definitions and indicators

### **Basic Access**

= a private, improved facility for **each household**

provide privacy for users, including segregating by household or gender (when public), be no more than 50 meters from dwellings, and serve no more than 20 people for each toilet. Public facilities must have internal locking mechanisms. Facilities serving women must allow for proper disposal of menstrual hygiene materials and a private washing area. All facilities must provide adequate water and handwashing supplies.<sup>9</sup>

The JMP classifies drinking water facilities, where they exist, as “improved” or “unimproved” based on their “potential to deliver safe water by nature of their design and construction.” Likewise, sanitation facilities are classified based on whether they are “designed to hygienically separate excreta from human contact.”<sup>10</sup>

## 1.4 Global WASH Coverage

The following data was collected in 2015 and published in 2017 to serve as the baseline status against which the world will measure progress toward the SDGs until 2030.<sup>11</sup>

### 1.4.1 Water

Globally, 844 million people do not have at least basic access to safe drinking water services.<sup>12</sup> This represents about 11 percent of the planet. Of these 844 million, 263 million have access to an improved water source, but it is not accessible within 30 minutes (including travel and wait time) per trip, which is called “limited” access.<sup>13</sup> Others are collecting water from unimproved sources like open wells, or from surface water like lakes or streams. There are 159 million people still collecting drinking water from contaminated surface sources. As of 2015, 6.5 billion people had at least basic access to safe water, representing 89 percent of the global population.<sup>14</sup>

Since 2000, over 1 billion people gained access to piped water supplies, so that in 2015, roughly 4.7 billion were using safe water from a tap in their home, yard, or from a public standpost.<sup>15</sup> Globally, four in five people in urban areas used piped water, but less than half of the people in rural areas have access at this level.<sup>16</sup> In many countries, a significant portion of the population relies on packaged, bottled, or delivered water for drinking and/or other purposes. These populations are included in the coverage statistics

9 The Sphere Project, *Humanitarian Charter and Minimum Standards in Humanitarian Response* (Rugby, UK: Practical Action, 2011), 105-110.

10 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 50.

11 For a more detailed look at progress in WASH coverage from 1990 – 2015, see Lifewater’s WASH Report 2016, available at <https://lifewater.org/resource-categories/research/> (accessed March 12, 2018).

12 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 10-11.

13 Ibid., 10-11.

14 Ibid., 10.

15 Ibid., 12.

16 Ibid., 12.

## IMPROVED FACILITIES

### Classification of improved and unimproved facility types

#### DRINKING WATER

##### Piped supplies

- Tap water in the dwelling, yard or plot
- Public standposts

##### Non-piped supplies

- Boreholes/tubewells
- Protected wells and springs
- Rainwater
- Packaged water, including bottled water and sachet water
- Delivered water, including tanker trucks and small carts

#### SANITATION

##### Networked sanitation

- Flush and pour flush toilets connected to sewers

##### On-site sanitation

- Flush and pour flush toilets or latrines connected to septic tanks or pits
- Ventilated improved pit latrines
- Pit latrines with slabs
- Composting toilets, including twin pit latrines and container-based systems

## UNIMPROVED FACILITIES

#### DRINKING WATER

##### Non-piped supplies

- Unprotected wells and springs

#### SANITATION

##### On-site sanitation

- Pit latrines without slabs
- Hanging latrines
- Bucket latrines

## NO FACILITIES

#### DRINKING WATER

##### Surface water

#### SANITATION

##### Open defecation

**Source:** *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*. Geneva: World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), 2017, 50.



according to the same criteria, where access is considered “limited”, people must wait for 30 minutes or more for collection.<sup>17</sup> Of the countries with a significant portion of the population (>5%) without basic drinking water services, only 1 in 5 is on track to achieve universal access to basic sanitation by 2030.<sup>18</sup>

### 1.4.2 Sanitation

Globally, about 5 billion people have access to improved sanitation facilities, while 2.3 billion – roughly one in three people – remain without at least basic sanitation.<sup>19</sup> Of those without basic sanitation, 892 million people, or about 12% of the world’s population, practice open defecation, one of the clearest indicators of extreme poverty.<sup>20</sup> An additional 856 million people use unsafe or unsanitary facilities, and 600 million only have access to facilities shared with two or more families.<sup>21</sup>

While billions of people gained access to basic sanitation over the past 25 years, and though the rate of open defecation is steadily decreasing worldwide, it is not improving everywhere. In some areas population growth has outpaced the rate of improved access to sanitation, or war and natural disasters have wrecked sanitation facilities and infrastructure. The result is that in some areas the proportion of people with access to at least basic sanitation is **decreasing**.<sup>22</sup> Of the countries with a significant portion of the population (>5%) without basic sanitation, only 1 in 10 is on track to achieve universal access to basic sanitation by 2030.<sup>23</sup>

### 1.4.3 Hygiene

Hygiene was, until recently, not explicitly referenced or tracked in global WASH statistics, but its inclusion in the SDGs signifies its importance to health and means that data will be increasingly available. Although hygiene includes behaviors like handwashing, menstrual management, and food

17 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 12.

18 *Ibid.*, 11.

19 *Ibid.*, 14.

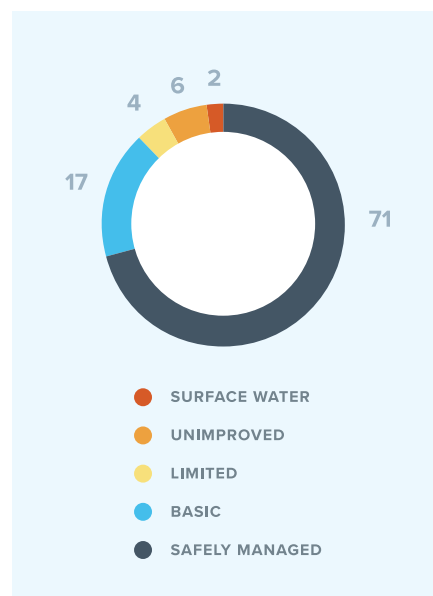
20 “Open defecation perpetuates the vicious cycle of disease and poverty and is an affront to personal dignity. Those countries where open defecation is most widely practiced have the highest numbers of deaths of children under the age of five, as well as high levels of undernutrition, high levels of poverty and large disparities between the rich and the poor. There are also strong gender impacts: lack of safe, private toilets makes women and girls vulnerable to violence and is an impediment to girls’ education.” WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation, *Progress on Drinking Water and Sanitation: 2014 Update* (Geneva: WHO Press, 2014), 21. Current data from WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 15.

21 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 15.

22 This is true in 20 countries for which data are available. WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 14.

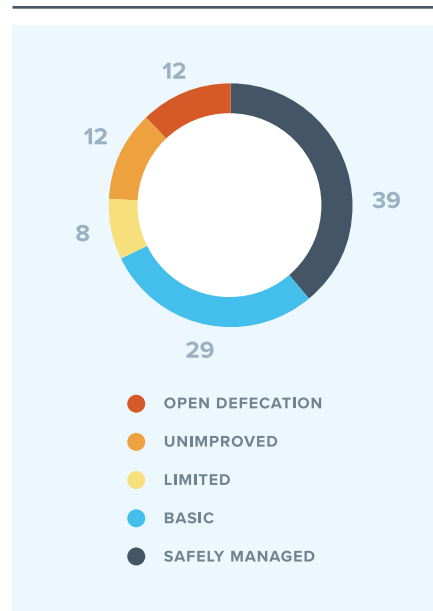
23 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 14.

## F Global Drinking Water Coverage, 2015



Source: *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*. Geneva: World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), 2017, 3.

## G Global Sanitation Coverage, 2015



Source: *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*. Geneva: World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), 2017, 5.

preparation, the indicator being tracked for the purposes of accessing “basic” hygiene is whether people have handwashing facilities with soap at home.<sup>24</sup> Those who have facilities but lack either soap or water are counted as having “limited” access.

Basic hygiene is considered nearly universal in high-income countries, but the estimates for low-income countries are limited, so no global estimate is available. However, in the 70 countries where data has been collected, most are in Sub-Saharan Africa, where 34 of 38 countries have less than 50% of the population accessing basic hygiene, and most have less than 20%.<sup>25</sup>

## 1.5 Regional and National Estimates and Disparities

Global estimates often mask the stark contrast between regions in WASH access. Similarly, a significant gap in WASH coverage remains between high-income and Least Developed Countries, and within countries between urban and rural populations and the rich and poor.

### 1.5.1 Unequal Water Access

#### Regional

While nearly nine in ten people worldwide have access to at least basic drinking water services, only a little over half of the population enjoys this in two regions: Sub-Saharan Africa (58 percent) and Oceania (52 percent).<sup>26</sup> Moreover, more of the population enjoys the highest level of water services – safely managed drinking water – in some regions than in others. For example, 94 percent of the population in Europe and North America has the highest level of service, compared to 24 percent in Sub-Saharan Africa and 57 percent in Central and Southern Asia.<sup>27</sup> Of the 159 million people still collecting surface water from lakes and streams, 58 percent live in Sub-Saharan Africa.<sup>28</sup>

#### Economic

Least Developed Countries (LDCs) are a group of 47 underdeveloped nations with high poverty rates. LDCs are home to 880 million people, or 12 percent of the world’s population.<sup>29</sup> There is some overlap between these states and the Landlocked Developing States and Small Island Developing States

24 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 18.

25 Ibid., 18.

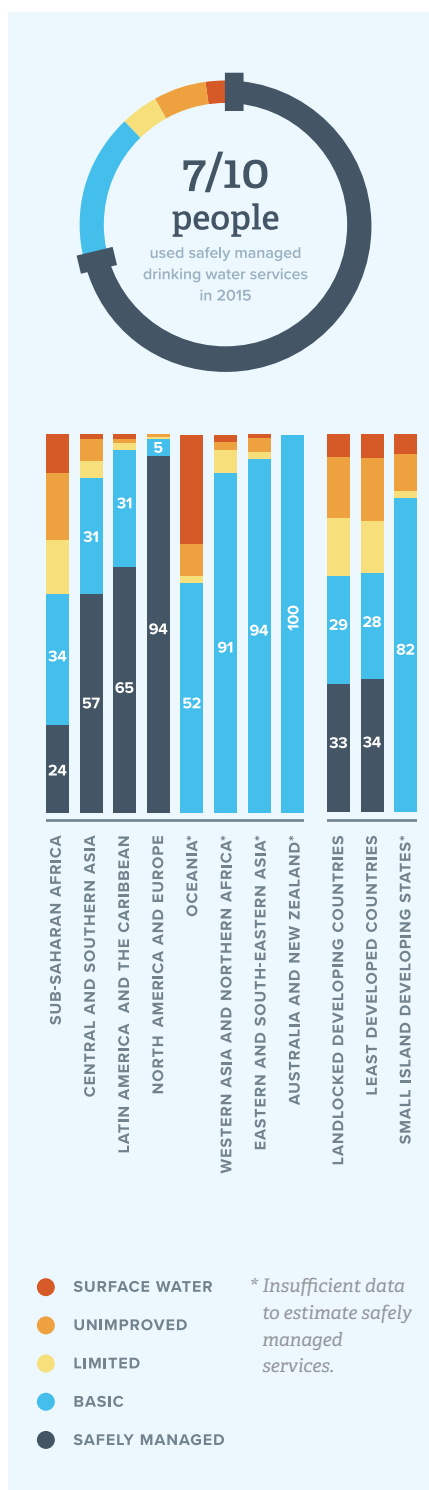
26 Ibid., 10.

27 Ibid., 3.

28 Ibid., 3.

29 Least Developed Countries are nations “deemed highly disadvantaged in their development process, for structural, historical and also geographic reasons... more than 75 percent of the LDC’s population live in poverty.” Currently, there are 47 LDCs that make up 12 percent of the world’s population, about 880 million people, yet they account for less than 2 percent of the world GDP and 1 percent of trade. United National Conference on Trade and Development, “Least Developed Countries (LDCs)”, webpage available at <http://unctad.org/en/Pages/ALDC/Least%20Developed%20Countries/LDCs.aspx> (accessed March 12, 2018).

## Regional Drinking Water Coverage, 2015



Source: *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*. Geneva: World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), 2017, 3.

that are also tracked in the most recent study. LDCs lag far behind their wealthier counterparts in access to safe water. Only 62 percent of the population has at least basic access to safe water and only 34 percent enjoy the highest level of water services. Compare this to the 89 and 71 percent, respectively, that have access globally.<sup>30</sup>

### Urban/Rural

Within countries, there are also gaps in safe water coverage between urban and rural dwellers as well as rich and poor. These gaps are consistent and common enough that the gaps persist worldwide.

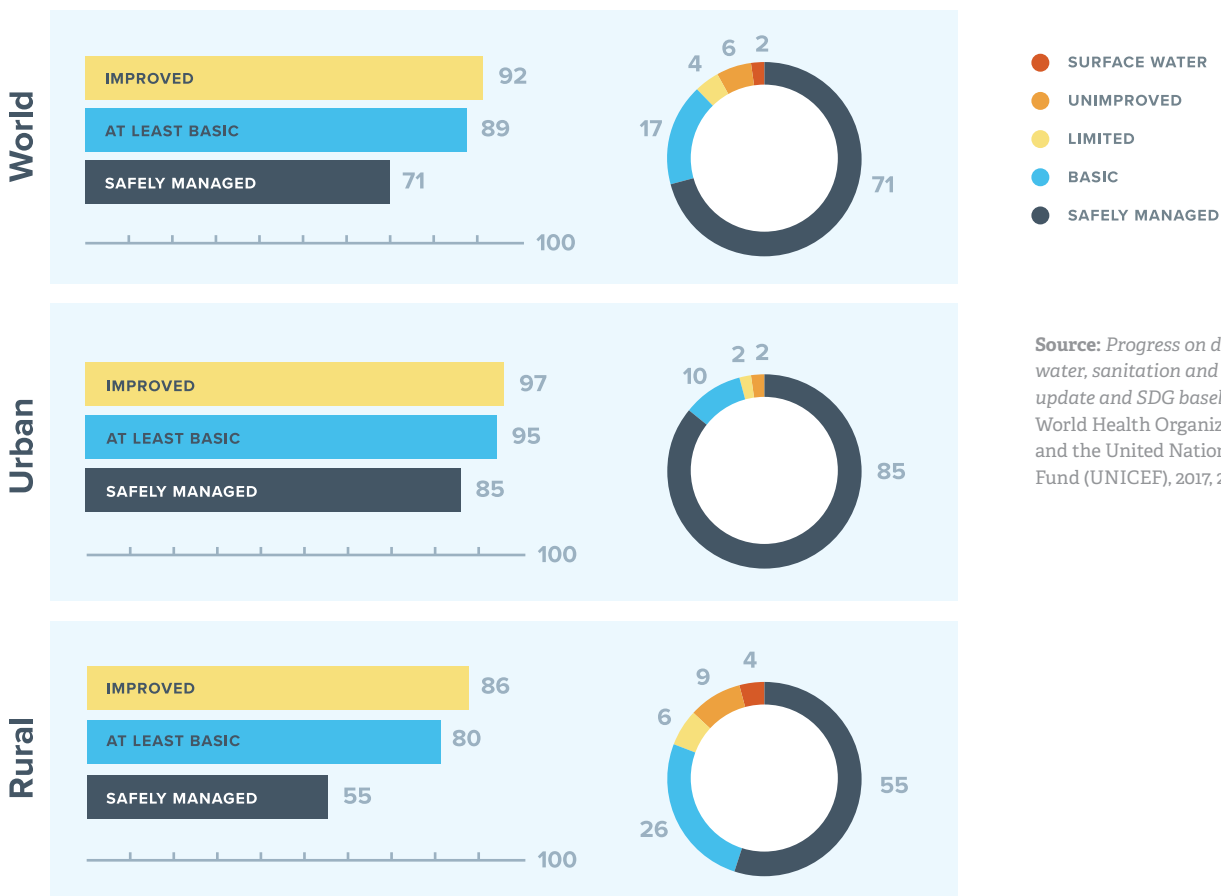
Specifically, those who live in rural areas are less likely to have access to basic safe water services and less likely to have safely managed water services. Only 55 percent of rural dwellers have access to safely managed water services, compared to 85 percent of urban dwellers; 80 percent of rural populations have at least basic service, which is under the 89 percent global estimate, and well behind the 95 percent estimate for urban populations.<sup>31</sup> More than three in four people who remain without access to basic drinking water live in rural areas, and nearly all those collecting surface water – the lowest level – are rural residents.<sup>32</sup>

30 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017), available at <https://washdata.org/reports> (accessed March 10, 2018), 3.

31 Ibid., 23.

32 Ibid., 24.

## Population using drinking water sources meeting SDG criteria for safely managed services, global, rural and urban, 2015



Source: *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2017, 23.

## Domestic Wealth

Within countries that do not have universal access to safe water, the poor are much less likely to have access than their rich neighbors, both in absolute and relative coverage rates. In countries with a wider gap between the richest quintile (top 20 percent) and the poorest quintile (lowest 20 percent), the disparity is often more pronounced.<sup>33</sup> For example, in Angola, about 80 percent of the richest quintile have basic drinking water services, while less than 20 percent of the poorest have basic access.<sup>34</sup>

### 1.5.2 Unequal Sanitation Access

#### Regional

The regional disparities that exist for access to safe water are also present for sanitation. Worldwide, 68 percent of the population have access to at least basic sanitation, but in three regions this is true for only half or less of the populations. Sub-Saharan Africa has the lowest coverage rate for at least basic sanitation, at 28 percent; Oceania's coverage is 36 percent; Central and Southern Asia is 50 percent.<sup>35</sup> Although Central and Southern Asia have decreased rates of open defecation more than any other region, the high population means that most people practicing open defecation live in this region, followed by Sub-Saharan Africa.<sup>36</sup>

#### Economic

Least Developed Countries lag far behind the rest of the world in basic sanitation coverage. Only 32 percent, or one in three people living in an LDC, have access to basic sanitation.<sup>37</sup> By comparison, coverage is nearly universal in Europe, North America, Australia and New Zealand. LDCs also have significant portions of the population practicing open defecation and high numbers of people (15 percent) with "limited" access, or access to improved sanitation facilities that are shared by two or more households.<sup>38</sup>

#### Rural/Urban

The global rate of coverage for at least basic sanitation services is 68 percent, but there is a 33 percent difference in coverage between urban (83

33 Countries with lower overall coverage tend to have less of an absolute gap but more of a relative gap. WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 38.

34 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017, available at <https://washdata.org/reports> (accessed March 10, 2018), 35. This is a similar gap to that shown in people who have access to safely managed water service in Europe and North America compared to those in Least Developed Countries (94 percent and 34 percent, respectively).

35 *Ibid.*, 4.

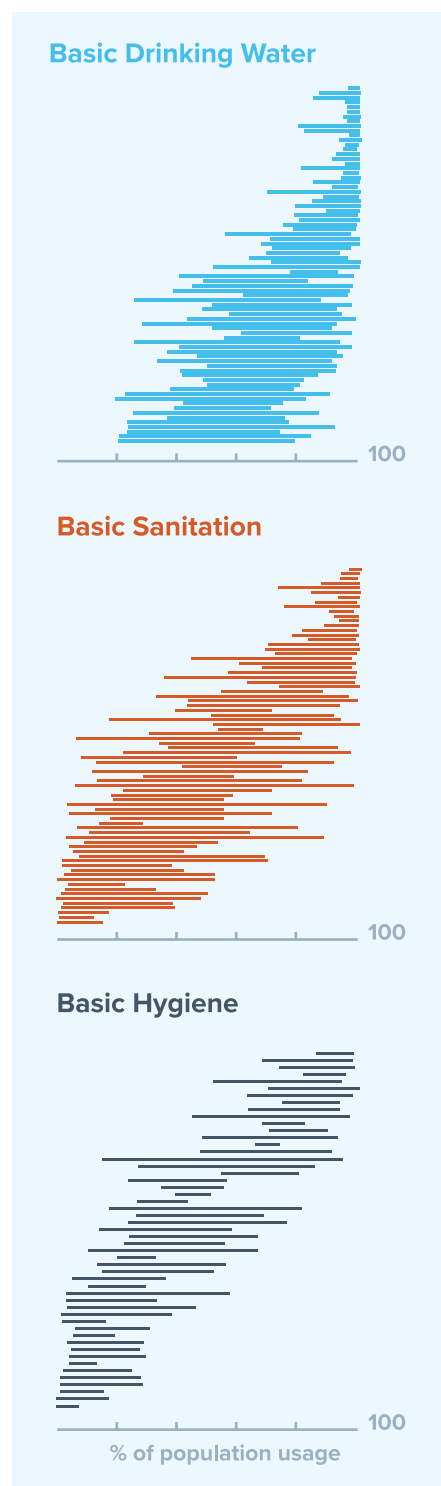
36 *Ibid.*, 36.

37 *Ibid.*, 4.

38 *Ibid.*, 14.

J

## Use of basic drinking water, sanitation, and hygiene, shown via richest quintile and poorest quintile gap by country



Source: *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2017, 39-39.

percent) and rural (50 percent) residents.<sup>39</sup> This means that while about 1 in 5 urban residents worldwide lack basic sanitation, 1 in 2 rural residents lack it. The vast majority of people who lack access to any improved sanitation facilities live in rural areas.<sup>40</sup> In almost all countries where data are available, urban dwellers are more likely to have the highest level of sanitation services, safely managed sanitation, than their rural neighbors.<sup>41</sup>

### Domestic Wealth

Gaps in coverage between the rich and poor are larger for sanitation than for water or hygiene.<sup>42</sup> The richest quintiles of residents are more likely to have access to at least basic sanitation than the poorest residents. In nations where coverage is very low, the absolute inequality may be less, but the relative inequality is significant. For example, in Liberia, there is only an 8 percent difference between coverage rates for the richest and poorest quintiles, but the relative coverage for the richest is 9 times higher than the poorest.<sup>43</sup>

### 1.5.3 Unequal Hygiene Access

Hygiene access in high-income countries is assumed to be near-universal, and data is only available from 70 countries worldwide. Even so, some disparities emerge between urban and rural, rich and poor.

Sub-Saharan Africa has the lowest rates of any region where data are available. In most Sub-Saharan nations, basic hygiene coverage is under 20 percent, and 34 out of 38 have coverage under 50 percent.<sup>44</sup> Overall, about 85 percent of people living in Sub-Saharan Africa do not have access to basic hygiene facilities.<sup>45</sup> No hygiene data is available for Oceania, which has some of the lowest coverage rates for drinking water and sanitation, which probably carries over into hygiene coverage. In other developing regions, most national coverage rates are above 60 percent.<sup>46</sup> Western Asia and Northern Africa has a coverage rate of 76 percent.<sup>47</sup>

Those living in rural areas in developing nations have lower rates of access to basic hygiene than those in urban areas. In Least Developed Countries, where overall coverage is 27 percent, 39 percent of urban dwellers have basic hygiene whereas only 22 percent of rural dwellers have access.<sup>48</sup> The same disparities that exist between rich and poor within each country are similar to those with drinking water and sanitation; the richest are much more

39 Ibid., 48.

40 Ibid., 29.

41 WHO and UNICEF, *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017), available at <https://washdata.org/reports> (accessed March 10, 2018), 43.

42 Ibid., 38.

43 Ibid., 38.

44 Ibid., 18-19.

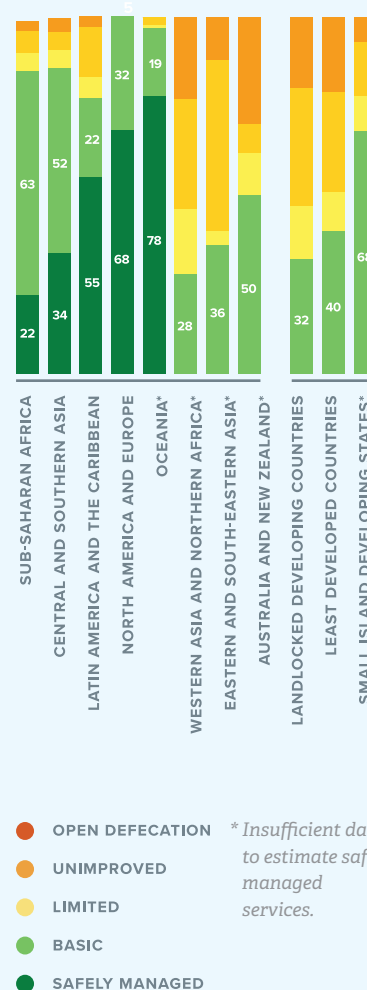
45 Ibid., 18-19.

46 Ibid., 18-19.

47 Ibid., 108

48 Ibid., 18-19

## K Regional Sanitation Coverage, 2015



● OPEN DEFECATION \* Insufficient data to estimate safely managed services.  
 ● UNIMPROVED  
 ● LIMITED  
 ● BASIC  
 ● SAFELY MANAGED

Source: *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2017, 4.

likely than the poorest to have basic hygiene.<sup>49</sup>

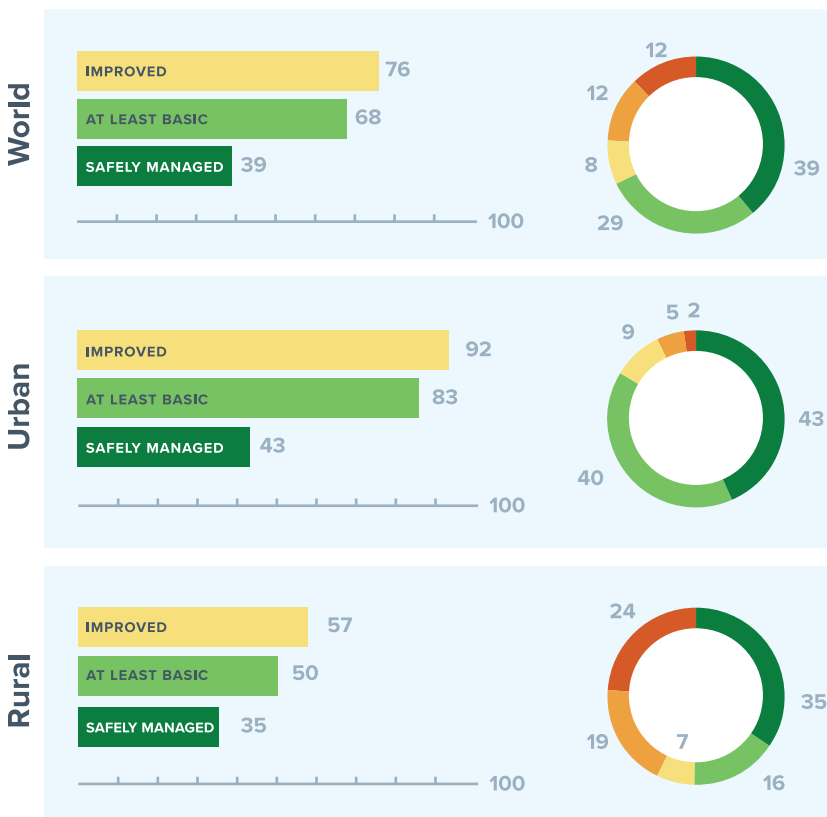
## 1.6 The Future of WASH Coverage

These baselines for global, regional, and national WASH coverage rates help us see where greater investments are needed to achieve the goal of universal coverage and an end to open defecation. Relatively few nations with low coverage rates are on track to meet these goals. Despite significant gains over the past 20-30 years, there are still 11 percent of people without safe drinking water and 32 percent without improved sanitation. We know

from this recent data that those living without safe water or improved sanitation tend to be in a few regions: Sub-Saharan Africa, Central and Southern Asia, and Oceania. They tend to live in nations that are recognized globally as underdeveloped – Least Developed Countries. They tend to live in rural areas, and they tend to be the relatively poor within their own nation.

49 Ibid., 38-39.

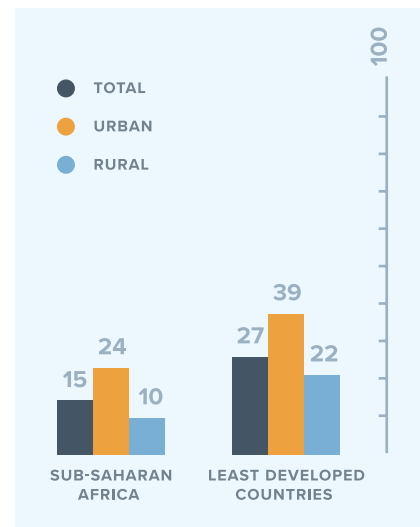
### L Population using sanitation facilities meeting SDG criteria for safely managed services, global, rural and urban, 2015



- OPEN DEFECCATION
- UNIMPROVED
- LIMITED
- BASIC
- SAFELY MANAGED

Source: Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2017, 28.

### M Population with basic handwashing facilities including soap and water at home, by region, 2015 (%)



Source: Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2017, 19.

## 2.0 WASH and Children

### ***Access to safe water, improved sanitation, and hygiene are life and death matters for children.***

Health and nutrition are most important in the first few years of life, and WASH access helps prevent the diseases, infections, and malnutrition that stunt physical and cognitive growth. Education provides a path out of extreme poverty and increases productivity and lifetime earnings; WASH helps children stay in school. WASH access close to home and school also removes vulnerable children from dangerous situations. This section contains information on the role of WASH in children's lives, especially in developing regions.

### **2.1 Mortality**

The third Sustainable Development Goal (SDG) concerning health and well-being, contains specific targets for reducing child mortality, including, "By 2030, end preventable deaths of newborns and children under 5 years of age with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births."<sup>1</sup>

In 2016, the most recent year from which data are available, the global under-5 mortality rate was 41 per 1,000 live births, a 56 percent decline from 93 per 1,000 in 1990.<sup>2</sup> This represents nearly 7 million fewer under-5 deaths in 2016 than in 1990. Still, in 2016, about 5.6 million children died before their fifth birthday, roughly 15,000 per day.

Most of these deaths are from preventable diseases, and many are preventable with adequate safe water, sanitation, and hygiene.<sup>3</sup> Child mortality and WASH access are strongly linked. Generally, the greater access to WASH, the greater a child's likelihood of surviving until his or her fifth birthday. A child dies each minute because of preventable diarrhea.<sup>4</sup>

When disease is spreading through a community, newborns are particularly vulnerable. The global neonatal (infants under 28 days old) mortality rate was 19 per 1,000 live births, a 49 percent decrease from 37 per 1,000 that existed in 1990.<sup>5</sup> This represents over 2.4 million fewer neonatal deaths per year. Neonatal deaths account for 46 percent of all under-5 deaths.<sup>6</sup> Up to 70 percent of newborn deaths could be avoided by known, low-cost health measures such as early and exclusive breastfeeding, and hygienic umbilical cord and skin care.<sup>7</sup>

Furthermore, community-level WASH access is very important in places where births mostly take place at home. This is especially true in Least Developed Countries (LDCs), including the Southern Asia and Sub-Saharan Africa regions, where most births are not in health facilities.<sup>8</sup> Handwashing by those who come in contact with the newborn can help keep the newborn safe. A study in Nepal found that if mothers washed their hands with soap before handling their child, the newborn had a 44% lower risk of death.<sup>9</sup>

The main causes of death for children under age 5 outside of the neonatal period are pneumonia (13%),

1 United Nations Sustainable Development Goals, available at <http://www.un.org/sustainabledevelopment/health/> (accessed March 13, 2018).

2 UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 4.

3 Ibid.

4 UNICEF, *One is too many, Ending child deaths from pneumonia and diarrhea*, available at <https://data.unicef.org/resources/one-many-ending-child-deaths-pneumonia-diarrhoea/>

5 Ibid., 9.

6 Ibid., 10.

7 Darmstadt G, Bhutta Z, et al, "Evidence-based, cost-effective interventions: how many newborn babies can we save?" *The Lancet* 365 (2005): 977-988.

8 United Nations Children's Fund (UNICEF), *Committing to Child Survival: A Promise Renewed, Progress Report 2014* (New York: UNICEF 2014), 59.

9 Rhee V, Mullany L, et al, "Maternal and Birth Attendant Hand Washing and Neonatal Mortality in Southern Nepal." *Archives of Pediatrics and Adolescent Medicine* 162(7) (2008): 603-608.



diarrhea (8%), injury (6%), and malaria (5%).<sup>10</sup> Together, they account for nearly one in three under-5 deaths and over half of the deaths of children between 28 days and five years old.<sup>11</sup> Although the rates are still high, significant progress has been made to fight these diseases in the past twenty-five years, much of which has come through increased access to WASH.

Malaria-carrying mosquitoes breed in stagnant water where many children must gather surface water from ditches, ponds, or rivers. Even safe water that is not kept properly can perpetuate the growth of mosquito populations. Improving local water and sanitation conditions, as well as improving safe water practices, can help decrease incidence of malaria.<sup>12</sup>

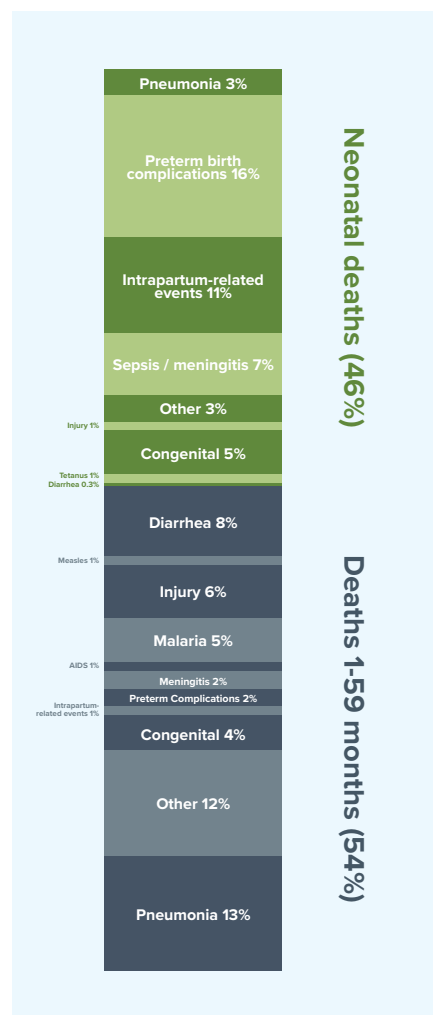
Many children, even young ones, must walk long distances to retrieve water, along roads and through dangerous terrain, putting them at increased risk of injury and death from automobiles, assault, animal attacks, falls, and drowning. Having a source of safe water close to home and school greatly decreases their exposure to these risks.

Diarrheal disease is caused by pathogens ingested from unsafe water or contaminated food and hands. Most diarrheal disease can be prevented with the use of safe drinking water and improved hygiene and sanitation. Handwashing with soap is both the most efficient and effective way to prevent diarrhea.<sup>13</sup>

Studies also show that handwashing with soap can prevent respiratory illness.<sup>14</sup> One study found that children under 5 living in a house that received soap and handwashing promotion had a 50% lower incidence of pneumonia.<sup>15</sup>

Moreover, undernutrition is a huge factor in childhood deaths. About half of all deaths for children under 5 can be attributed in some way to undernutrition.<sup>16</sup> Diarrhea and undernutrition are strongly linked because diarrhea can prevent a child from getting the nutrients he or she needs, and the resulting undernutrition weakens immune systems and makes

## N Child mortality, causes under age 5



UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 11.

10 UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 11. UNICEF identifies a category of “Other” that accounts for 12% of under-5 deaths (outside of the neonatal period). This category may include causes such as cancer, severe malnutrition, and other unspecified causes. See Liu, Oza et al., *Global, regional, and national causes of under-5 mortality in 200-2015: an update systematic analysis with implications for the Sustainable Development Goals*, (Lancet 2016; 388:3027-35), 3029.

11 UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 11.

12 Prüss-Üstün, Bos, Gore, Bartram. *Safer Water, Better Health: Costs, benefits, and sustainability of interventions to protect and promote health* (Geneva: WHO Press, 2008), 9.

13 Ibid., 17. See also, Ashe Institute, “WASH: A High Value Kingdom Investment” (San Luis Obispo: Lifewater, 2014), 3.

14 See Aiello, Coulborn, et al, “Effect of Hand Hygiene on Infection Disease Risk in the Community Setting: A Meta-Analysis.” *American Journal of Public Health* (Aug 2008) 98(8) 1372-1381.

15 Luby, Agboatwalla, et al, “Effect of handwashing on child health: a randomized controlled trial”. *The Lancet* 366 (2005) 225-233.

16 United Nations Children’s Fund (UNICEF), *Committing to Child Survival: A Promise Renewed, Progress Report 2014* (New York: UNICEF 2014), 21.



children more susceptible to disease (including diarrheal, respiratory and vector-borne diseases). It is a deadly spiral that can be stopped with effective WASH access. Undernutrition in young children also leads to stunted growth, which has life-long, irreversible negative consequences like impaired cognitive ability, poor school performance, and less productive work. This also leads to a cycle of poverty and poor health.<sup>17</sup>

## 2.1.1 Regional and Subnational Disparities

Although there has been great progress in reducing child deaths, half of the children who die before their fifth birthday live in Sub-Saharan Africa.<sup>18</sup> Almost a third live in Southern Asia.<sup>19</sup> Together, these two regions also account for four out of five neonatal deaths each year.<sup>20</sup> While pneumonia, diarrhea, and malaria account for more than one third of under-5 deaths globally, they account for more than 40 percent of under-five deaths in Southern Asia and Sub-Saharan Africa.<sup>21</sup> These are also the regions with the lowest rates of water and sanitation coverage.

Eastern Asia has reduced its child mortality rate by over four fifths since 1990.<sup>22</sup> During that same time period, the region also experienced the largest increase in percentage of the population gaining access to safe drinking water and improved sanitation.<sup>23</sup>

There is a large gap between rich and poor countries in child mortality rates. A child born in the country with the highest mortality rate is 60 times more likely to

die before age 5 than one born in the country with the lowest mortality rate.<sup>24</sup> A child born in Sub-Saharan Africa is 15 times more likely to die before his or her fifth birthday than one born in a high-income country.<sup>25</sup> Although the population of Least Developed Countries (about 880 million) is only 12 percent of the world's population, over 37 percent of children who do not reach age five are born there.<sup>26</sup> The under-5 mortality rate in LDCs is 68 per 1,000 live births; it is 6 per 1,000 in Europe and North America.<sup>27</sup>

Even within countries, a gap remains between rich and poor households. In a study of nearly 100 nations, children living in the poorest households (bottom quintile) are twice as likely to die as their richest (top quintile) neighbors.<sup>28</sup> This is consistent with a gap in WASH coverage between rich and poor households within a nation; the rich have better access to safe water, sanitation, and hygiene.

Globally, there is not a wide gender gap in child mortality. Girls have a slightly lower under-5 mortality rate than boys, where the male rate is 42.7 per 1,000 live births and the female rate is 38.7 per 1,000.<sup>29</sup> The lower mortality rate for girls is consistent with most individual nations and regions, with the notable exception of India.<sup>30</sup>

## 2.2 Morbidity

Child mortality rates give us a picture of the lives lost to preventable diseases, but morbidity rates can help us

17 UNICEF, *Progress for Children, Beyond averages: learning from the MDGs*. (Number 11, 2015), 10. See also UNICEF, *Tracking Progress on Child and Maternal Malnutrition* (New York: UNICEF, 2009), 3.

18 Sub-Saharan Africa had 2.8 million deaths in 2016, or 49.2% of total global deaths. UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 5.

19 South Asia had 1.7 million deaths in 2016, or 30.7% of total global deaths. UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 5.

20 Each region accounts for slightly under 40 percent of the total neonatal deaths each year, about 1 million in each region. UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 9.

21 UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 11.

22 *Ibid.*, 4.

23 WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation, *Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment* (Geneva: WHO Press, 2015), 6-17.

24 UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018), 5.

25 *Ibid.*

26 *Ibid.*

27 *Ibid.*, 4.

28 *Ibid.*, 6.

29 UNICEF "Child Mortality Estimates: Sex-specific under-five mortality rate" (updated Oct. 19, 2017), available at <https://data.unicef.org/topic/child-survival/under-five-mortality/> (accessed March 13, 2018).

30 *Ibid.*

get a picture of the prevalence of diseases that lead to suffering and limit the potential of children and families. The effectiveness of WASH in preventing diseases is important because as children experience fewer illnesses, they have a greater opportunity to attend school. Household wealth may also increase because women and children spend less time caring for the sick and families spend less of their money on medicine and visits to the health clinic.

Studies have shown that WASH can significantly reduce the incidence of several diseases that pose serious threats to children worldwide. WASH works to prevent diarrhea. About 88% of the cases of diarrhea can be prevented with safe drinking water, improved sanitation, and good hygiene practices.<sup>31</sup> Furthermore, WASH helps prevent respiratory illnesses like pneumonia by up to 50%.<sup>32</sup> Other debilitating but sometimes non-fatal infections like schistosomiasis, trachoma (leading to blindness), and intestinal nematodes (parasites) can be almost entirely attributed to lack of safe water, sanitation, and effective hygiene.<sup>33</sup> Together, these infections affect hundreds of millions of people each year, with the highest prevalence being in communities and regions without WASH. For more on diseases that can be prevented with WASH, see Section 5.

## 2.3 Education

Lack of WASH causes children to miss opportunities for education. When children are unable to attend school consistently, they are unable to advance to higher grades and continue in a cycle of poverty, illness, and lack of education. Worldwide, in communities and schools without WASH, kids must miss class because they are: sick, caring for a sick family member, needed to fetch water at long distances, and/or unable to endure the indignity of having no safe place to go to the bathroom

or care for themselves during menstruation. In many places, a lack of household WASH exacerbates poverty, preventing a child from attending school altogether. There is significant overlap between populations that do not have access to WASH and those whose children are not enrolled in school.<sup>34</sup>

School attendance also provides access to life-saving knowledge of disease prevention. People with little or no education are much more likely to practice open defecation than people with a secondary or higher education level.<sup>35</sup>

## 2.4 Safety

When clean water and sanitation are located closer to home and school, children are safer. Children who fetch water at long distances and must defecate in the open are at risk of injuries from falls, animal attack, and abuse or kidnapping. Unsafe open water environments also put more kids in danger of drowning and exposure to water-related infections. Girls are especially at risk of sexual assault when retrieving water or when they must defecate in the open.<sup>36</sup>

## 2.5 Gender disparities

Access to WASH helps decrease gender inequality among children. In the regions with the lowest access to safe water, girls bear the largest burden for retrieving water, sometimes at great distances. They also take on much of the responsibility for caring for sick family members. Because of this, many girls do not have the opportunity to go to school. Greater education for girls is associated with marrying later, a lower risk of contracting HIV/AIDS or dying in childbirth, increased household income, and better health over a lifetime for girls and eventually for their families.<sup>37</sup>

31 Prüss-Üstün, Bos, Gore, Bartram, *Safer Water, Better Health: Costs, benefits, and sustainability of interventions to protect and promote health* (Geneva: WHO Press, 2008), 7.

32 Luby, Agboatwalla, et al, "Effect of handwashing on child health: a randomized controlled trial". *The Lancet* 366 (2005) 225-233.

33 Prüss-Üstün, Bos, Gore, Bartram, *Safer Water, Better Health: Costs, benefits, and sustainability of interventions to protect and promote health* (Geneva: WHO Press, 2008), 8.

34 See Section 6 of this report.

35 WHO and UNICEF *Joint Monitoring Programme for Water Supply and Sanitation, Progress on Drinking Water and Sanitation: 2014 Update* (Geneva: WHO Press, 2014), 36.

36 See, for example, "Why India's sanitation crisis kills women," by Soutik Biswas (BBC: May 30, 2014), available at <http://www.bbc.com/news/world-asia-india-27635363>. Lifewater recorded this comment from a 10 year old girl in Uganda in 2014: "My sister was raped by some drunkard because the water source was very far from home and this time the water is brought near, the dignity of female will be restored."

37 UNICEF, *Progress for Children, Beyond averages: learning from the MDGs*. (Number 11, 2015). See also USAID, *Education: Opportunity Through Learning, USAID Education Strategy 2011-2015* (Washington, DC: 2011).

## 3.0 WASH and Women

### *Women are perhaps most affected by lack of WASH access.*

Their traditional role as primary caregivers and household laborers, their biological role as child-bearers, and their vulnerability to abuse and exploitation are all directly affected by the availability of water, sanitation, and hygiene. Moreover, WASH access frees women to attend school, engage in more productive labor, experience good health for themselves and their children, and participate more fully in social, political, and economic arenas. This section identifies some of the WASH-related issues specific to women.

### 3.1 Women and WASH

WASH access increases females' opportunity to attend school, find paid work, enjoy good health, stay safe, and experience dignity. Experience shows that when women's health, education, and livelihood improve, they pass these benefits along to their families and future generations. Prioritizing WASH access for women is "reaching the most vulnerable people experiencing the most detrimental effects of poor sanitation and hygiene, and improving health, equality, and social justice."<sup>1</sup>

### 3.2 Burden of Labor

Over 70 percent of the responsibility for collecting water in Sub-Saharan Africa falls on women and girls.<sup>2</sup> Women without improved sanitation spend over 86 billion hours each year finding a private place to go to the bathroom.<sup>3</sup> When there are no private facilities available for women at their place of work, they miss work because they are

at increased risk of infection and humiliation, especially during menstruation. In one study, providing adequate facilities for women to care for themselves during menstruation at the workplace resulted in a 70% decrease in absenteeism.<sup>4</sup>

The proportion of women in paid employment has risen worldwide and in every developing region, though not equally. Since 1990, the regions that have seen the most significant increases in women in the workforce are Southern Asia and Sub-Saharan Africa, both of which also significantly improved their primary school enrollment in that same time.<sup>5</sup>

### 3.3 Maternal Health

Pregnant women especially benefit from WASH access close to home. Each year nearly 300,000 women die from causes related to pregnancy and childbirth. Many of these causes are preventable with WASH. Over 99% of maternal deaths occur in developing countries,<sup>6</sup> and over 85% of maternal deaths occur in Sub-Saharan Africa and Southern Asia, where WASH coverage is lowest.<sup>7</sup> In Sub-Saharan Africa, more than 1 in 200 births results in the mother's death.<sup>8</sup>

Millennium Development Goal 5A aims to reduce maternal deaths by 75%, but that goal is unmet. Since 1990, the global ratio of maternal deaths has dropped 45%, from 380 to 210 deaths per 100,000 live births. When considering lifetime risk and that women in developing countries have more pregnancies than women in developed countries, a 15-year-old woman in a developing country has a 23x greater risk of death in childbirth than

1 The Partnership for Maternal, Newborn & Child Health (PMNCH), *Knowledge Summary 30: Water, sanitation and hygiene – the impact on RM-NCH* (2014), 4, available at <http://www.who.int/pmnch/knowledge/publications/summaries/ks30/en/> (accessed Aug. 7, 2015).

2 UNICEF, *WASH and Women*, available at [http://www.unicef.org/wash/index\\_womenandgirls.html](http://www.unicef.org/wash/index_womenandgirls.html) (accessed Aug. 7, 2015).

3 This is a conservative estimate using 2015 data. A WHO report estimates that each person who moves from open defecation to a private latrine saves 0.5 hours per day, or 182.5 hours per year. Guy Hutton, *Global costs and benefits of drinking-water supply and sanitation interventions to reach the MDG target and universal coverage* (Geneva: WHO Press 2012), 30. This is multiplied by half the number of people currently practicing open defecation (946 million: 473 million). In 2012, one report estimated 97 billion hours lost. WaterAid, Briefing Note: 1 in 3 women lack access to safe toilets (Nov 2012), citing "Calculated from WHO/UNICEF (2012), Hutton 2012 & European Union Labour Force Survey (2011)."

4 Domestos, WaterAid, WSSCC, *We Can't Wait: A Report on Sanitation and Hygiene for Women and Girls* (2013), 18.

5 United Nations, *Millennium Development Goals Report 2014* (New York: United Nations, 2014), 16, 21.

6 World Health Organization, "Maternal Mortality: Fact sheet N°348" (May 2014), available at <http://www.who.int/mediacentre/factsheets/fs348/en/> (accessed Aug. 7, 2015).

7 United Nations, *Millennium Development Goals Report 2014* (New York: United Nations, 2014), 28-29.

8 *Ibid.*, 29.

her wealthier counterpart (1 in 160 vs. 1 in 3700).<sup>9</sup>

WASH access, especially good hygiene, also decreases the risk of infection during a time when mothers and babies are most vulnerable. In developing countries, 10-15% of maternal deaths are caused by infections that can be prevented with good hygiene during childbirth and the following weeks.<sup>10</sup> A recent study of 54 low-income countries revealed that 38% of health care facilities did not have access to safe water.<sup>11</sup> Furthermore, in many low-income settings, the majority of childbirths take place in homes and not health care facilities, and many of these homes lack access to improved water and sanitation.<sup>12</sup> This lack of adequate WASH access at childbirth contributes to a large discrepancy in maternal mortality ratios between developed countries (16 per 100,000 live births) and developing countries (230 per 100,000).<sup>13</sup>

WASH access also decreases the risk of intestinal worms and diarrhea that lead to nutritional deficiencies, including anemia. Arsenic, present in the water that millions of pregnant women drink, also leads to anemia. Anemia is linked to increased risk of hemorrhaging, which is the primary direct cause of death for mothers during and immediately after childbirth.<sup>14</sup> Safe drinking water and sanitation help avoid this risk. Furthermore, having safe water nearby decreases the workload for pregnant women, which supports healthy weight gain and lowers the risk of injury.

### 3.4 Burden of Disease

Women experience unique, gender-based risks of injury and disease when water, sanitation, and hygiene are not available. To avoid exposing themselves publicly in the daytime, many women without improved sanitation have to wait until dark to defecate. This leads to discomfort and infection.

Women who perform most of the tasks of child-rearing are exposed

9 World Health Organization, "Maternal Mortality: Fact sheet N°348" (May 2014) available at <http://www.who.int/mediacentre/factsheets/fs348/en/> (accessed Aug. 7, 2015).

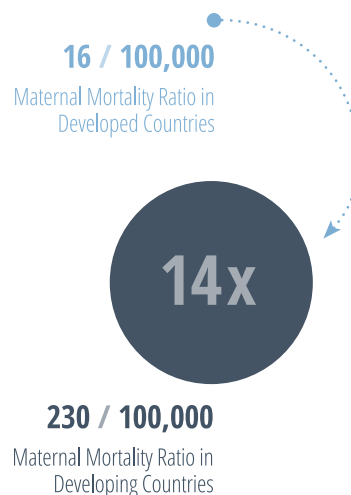
10 PMNCH, Knowledge Summary 30 (2014), available at <http://www.who.int/pmnch/knowledge/publications/summaries/ks30/en/>; citing Goodburn E, Campbell O. "Reducing maternal mortality in the developing world: sector-wide approaches may be the key," *BMJ* (2001); 322: 917–20; Gravett CA, Gravett MG, Martin ET, et al. "Serious and life-threatening pregnancy-related infections: opportunities to reduce the global burden," *PLoS Med* 2012; 9: e1001324; and Shordt, Smet, IRC, *Getting it right : improving maternal health through water, sanitation and hygiene* (Haarlem, Netherlands: Simavi, 2012).

11 Velleman, Mason, et al., "From Joint Thinking to Joint Action: A Call to Action on Improving Water, Sanitation, and Hygiene for Maternal and Newborn Health." *PLoS Med* 11, no. 12 (2014).

12 Ibid.

13 Ibid.

14 Shordt, Smet, IRC, *Getting it right : improving maternal health through water, sanitation and hygiene* (Haarlem, Netherlands: Simavi, 2012), 9.



to pathogens carried by children and therefore share a greater burden of disease and infection. For example, women who dispose of infant feces or care for infections like trachoma are in close contact with harmful parasites and pathogens that can infect them as well. WASH helps them avoid this contact and increases their ability to interrupt disease pathways.

### 3.5 Safety and Dignity

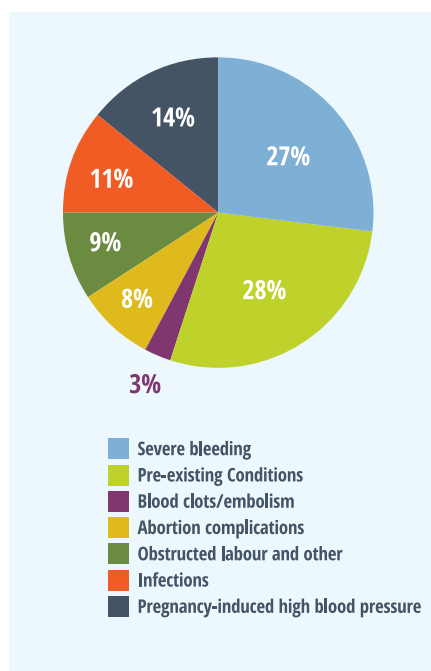
Access to water and sanitation directly affects a woman’s safety and dignity at all stages of life. Water is often in remote, insecure places. Toilets or latrines, where they exist, may not be separate from the men’s facilities. Women and girls without separate sanitation facilities report frequent abuse and humiliation from males. This is especially true for women who are menstruating (which, on any given day, is about 800 million women<sup>15</sup>); when they are unable to stay clean at school or at home, they are excluded from education and social life.

In areas without adequate WASH access, girls miss significant amounts of school when they menstruate. When they cannot clean themselves or care for themselves privately and safely, they stay home from school for up to a week each month. Many choose to drop out of school entirely. For many women, menstruation is a taboo topic that prevents women and girls from getting information and supplies that can help alleviate the heavy burden of shame, indignity, and loss of opportunity they bear.<sup>16</sup>

Furthermore, those who must walk far from home to find water or a private place to defecate – especially those who must do so in the dark – are at risk of sexual assault, rape, and other gender-based violence. These crimes are rarely reported but widely known by those working in communities without WASH access. Studies in several countries reveal that fear of sexual assault is a consistent fear among women and girls without improved sanitation, which has its own emotional toll in addition to any physical violence that takes place.<sup>17</sup> One survey found that over 25% of women defecating outside experienced harassment, intimidation, threats, or actual assault in the past year.<sup>18</sup> It is a sobering reality for the 1 in 3 women living without WASH access, and especially for the 526 million who must defecate in the open.<sup>19</sup>

Conversely, when women are included in WASH interventions, they often report increased dignity, not only felt in themselves but also acknowledged by their community. Women gain dignity from increased cleanliness, privacy, and security, but they also show how they are able to lead their families toward better health, increased income, and meaningful participation in community decisions.

### Maternal Mortality, Causes (2014)



Source: World Health Organization, “Maternal Mortality: Fact sheet N°348” (May 2014)

15 Domestros, WaterAid, WSSCC, We Can’t Wait (2013), 6.

16 Ibid., 16-17.

17 PMNCH, Knowledge Summary 30 (2014); citing reports from Uganda, Kenya, and India.

18 WaterAid, Briefing Note: 1 in 3 women lack access to safe toilets (Nov. 2012), citing an internal survey from Lagos, Nigeria, in 2012.

19 Domestros, WaterAid, WSSCC, We Can’t Wait (2013), 6-7.

## 4.0 WASH and Education

***Education is a path out of poverty and toward health, equality, productivity, and an improved standard of living.*** Lack of WASH access threatens education, which in turn blocks that pathway and continues a dangerous spiral of poverty and disease.

Lack of WASH access threatens education, which in turn blocks that pathway and continues a dangerous spiral of poverty and disease.

WASH access in schools and for school-aged children can secure opportunities for education that did not exist before. This section reports on the intersection of WASH and schools as well as the lifetime impacts of WASH and education.

### 4.1 WASH and Access to Education

WASH in schools means access to safe drinking water, improved sanitation, and hygiene facilities at the places where children gather for formal education. Access to WASH in primary and secondary schools increases school enrollment because it decreases the burden of labor and disease on children. Furthermore, it decreases inequalities in enrollment by providing for the dignity and safety of all children at school, especially girls and children with disabilities.

Sending more children to school, and helping them to complete more years of school, leads to higher quality of life. On average, a worker's income increases 8.3 percent for each additional year of schooling.<sup>1</sup> More education also leads to better health and more productive work. This is especially true for girls, for whom higher levels of education mean they have fewer children, better nutrition, healthier pregnancies, healthier babies, and a lower risk of contracting HIV/AIDS.<sup>2</sup> Education also helps reduce inequality when universal access to quality education means better opportunities for the poor to increase earnings.

### 4.2 WASH in Schools

Globally, about 71% of schools have water coverage and 69% have sanitation coverage.<sup>3</sup> In developing countries the average is only slightly lower; 70% of schools have water and 67% have sanitation.<sup>4</sup> Coverage in least-developed countries (LDCs) is significantly lower, where only half of the schools have water (52%) or sanitation (51%).<sup>5</sup> Generally, access to WASH in schools is increasing in every region. In both developing countries and LDCs, water coverage is higher at home than in schools, but sanitation coverage is higher at schools than in homes.<sup>6</sup>

Water and sanitation coverage rates are similar within each region, with sanitation coverage only slightly lower than water coverage. Globally, the rates of water and sanitation in schools both increased by six percent between 2008 and 2013, with higher rates of increase occurring in LDCs.<sup>7</sup> Since 2008, Eastern Asia has experienced the largest growth rate, although Western Asia and Latin America & the Caribbean have the highest rates overall. Central Asia and Sub-Saharan Africa have the lowest rates overall for both water and sanitation.<sup>8</sup>

While most countries measure some indicator of sanitation and water, few measure hygiene. In one study, only 11 of 149 countries (7%) had any data on whether schools had handwashing facilities. Of these 11, only 4 indicated whether soap was present,<sup>9</sup> and only 21% of schools in these 11 countries for which data is available have handwashing facilities.<sup>10</sup>

The accessibility of WASH in schools for students with physical disabilities is rarely measured. In a survey involving 54 developing countries, only 2 (<4%) monitored whether water is accessible to students with physical disabilities and only 6 (11%) monitored the accessibility of sanitation.<sup>11</sup>

1 US Agency for International Development (USAID), Opportunity Through Learning: Education Strategy 2011-2015 (Washington DC, 2011), 2.

2 Ibid., 3.

3 Experts explain the presence of WASH in schools is difficult to measure due to limited available data as well as different standards and indicators used in different countries. UNICEF, Advancing WASH in Schools Monitoring (New York: UNICEF, 2015), 16-22.

4 Ibid., 17-19

5 Ibid.

6 Ibid., 24.

7 Ibid., 17-20.

8 Ibid.

9 Ibid., 22.

10 Ibid.

11 Ibid., 10.



### 4.3 Primary Education

Goal 2 of the Millennium Development Goals is to achieve universal primary education. In developing regions overall, however, 1 in 10 children who are primary school age are not in school. Since 1990, the enrollment rate for primary school went from 83% to 90%, but there are still 58 million children not in school. Many regions are approaching the goal of universal primary education, including most Asian regions, but Oceania and Sub-Saharan Africa still have an enrollment rate below 90%. About 1 in 4 children in developing regions who start attending school drop out before finishing primary school. In Sub-Saharan Africa, 2 in 5 children drop out before finishing; in Oceania, 1 in 2 do not finish.<sup>12</sup>

In Sub-Saharan Africa, the number of kids in primary school has more than doubled since 1990, amounting to a 26% increase in net enrollment, but 33 million kids are still not in school, and most of them (56%) are girls.<sup>13</sup> Several regions, including Southern Asia and Eastern Asia, experienced significant improvement of gender parity in schools, but a few are still falling well short of the goal, including Sub-Saharan Africa and Oceania.<sup>14</sup>

Gender, economic status, and location are all significant factors in the likelihood that a child will attend primary school, and significant overlap exists between populations where children are not enrolled in school and populations without adequate access to WASH at home or in school. The poorest children are three times as likely to be out of school than the richest children.<sup>15</sup>

In poorer areas, girls are more likely than boys to be out of school.<sup>16</sup> Globally, among primary school age children, 4 million (15%) more girls are out of school than boys.<sup>17</sup> Many countries do not measure whether sanitation facilities are available to both boys and girls in schools, but in the ones that do, girls have 5% lower sanitation coverage than the male students.<sup>18</sup> When clean water and sanitation are not available in schools, girls miss class in order to retrieve water at a distance.

When they begin to menstruate and separate sanitation facilities are not available, girls are not able to properly and privately care for themselves at school, and so they must miss several days of school each month or drop out altogether. In Sub-Saharan Africa, fewer than 1 in 4 girls living

12 United Nations, *Millennium Development Goals Report 2014* (New York: United Nations, 2014), 16-19.

13 Ibid.

14 Ibid., 20.

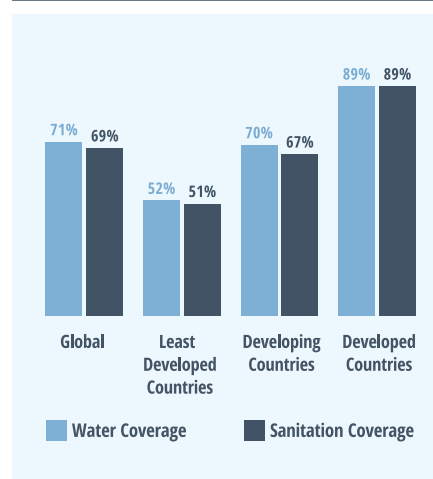
15 Ibid., 17.

16 Ibid.

17 UNICEF, *Progress for Children, Beyond averages: learning from the MDGs*, (Number 11, 2015), 21.

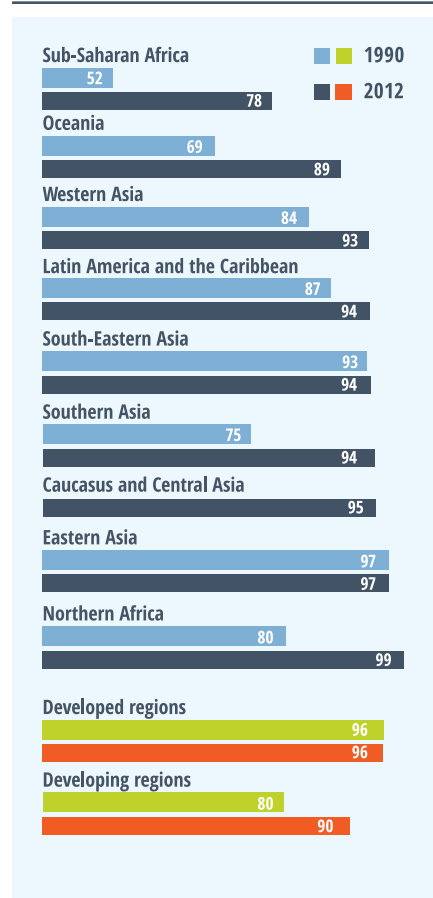
18 UNICEF, *Advancing WASH in Schools* (2015), 22-23.

### P WASH in Schools Coverage (2013)



UNICEF, *Advancing WASH in Schools Monitoring* (New York: UNICEF 2015), pp. 17, 19.

### Q Primary School Enrollment Rate (2014)



Source: United Nations, *Millennium Development Goals Report 2014*, p.16.

in poor, rural areas complete primary school.<sup>19</sup>

Children in rural areas are twice as likely to be out of school than children in urban areas.<sup>20</sup> Schools in urban areas have higher rates of coverage in both water and sanitation, 80% and 72%, compared to rural school coverage of 63% and 57%.<sup>21</sup> More than half of the children who are not in school are in conflict-affected areas, where many people are displaced and living without adequate WASH coverage, without schools, or both.<sup>22</sup>

WASH in schools can increase enrollment and attendance. Inadequate WASH conditions lead to soil-transmitted worm infections, which contribute to 25% of overall missed schooling.<sup>23</sup> One program recorded a 42% reduction in student absenteeism in primary schools that provided free soap and handwashing facilities. Overall, students who participated in the handwashing program missed 54% fewer days of school than those who did not.<sup>24</sup> When a 15-minute reduction in water collection time is introduced, the proportion of girls attending school increases 8-12%.<sup>25</sup>

#### 4.4 Adult Literacy

WASH availability in schools affects adult literacy. When lack of WASH impedes early primary school attendance, fewer children learn to read, and this persists into adulthood. Globally, about 84% of adults can read and write, but there are still 781 million adults who lack these

skills, effectively excluding them from participation in many types of social and economic activities.

Furthermore, women are more than 60% of the population of illiterate adults.<sup>26</sup>

Section 2 reports that increased access to WASH leads to lower rates of infant and child mortality, but WASH and child survival are connected through women's education as well. When WASH is present in a school and community, girls and women have more opportunities to receive formal education. Higher levels of education for women are linked to increased household wealth as well as women waiting longer to have their first child, both of which are also connected with lower rates of infant and child mortality.<sup>27</sup> Babies born to mothers without an education are twice as likely to die as babies born to mothers with a secondary education or higher.<sup>28</sup> One study found the risk of recurring diarrhea to be 25% lower for infants born to mothers who completed high school compared to those whose mothers did not finish primary school.<sup>29</sup>

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19 United Nations, Millennium Development Goals Report 2014 (New York: United Nations, 2014), 17.

20 Ibid.

21 UNICEF, *Advancing WASH in Schools* (2015), 22-24.

22 United Nations, Millennium Development Goals Report 2014 (New York: United Nations, 2014), 17.

23 UNICEF, *Raising Even More Clean Hands: Advancing health, learning and Equity through WASH in Schools* (2012), 13, citing World Health Organization, Report of the Third Global Meeting of the Partners for Parasite Control: Deworming for health and development, (WHO: Geneva, 2005), 15. The World Health Organization reported in 2005 that over 200 million years of schooling and 633 million IQ points have been lost by people in developing countries due to preventable worm infections. (In these two reports UNICEF reports "200 years," while WHO reports "200 million years".)

24 UNICEF, *Raising Even More Clean Hands: Advancing health, learning and Equity through WASH in Schools* (2012), 12.

25 UNICEF, *Raising Even More Clean Hands: Advancing health, learning and Equity through WASH in Schools* (2012), 18, citing Céline Nauges and Jon Strand, "Water Hauling and Girls' School Attendance: Some new evidence from Ghana," World Bank, Washington, DC (May 26, 2011); 25-26.

26 United Nations, Millennium Development Goals Report 2014 (New York: United Nations, 2014), 18.

27 United Nations Children's Fund (UNICEF), *Committing to Child Survival: A Promise Renewed, Progress Report 2014* (New York: UNICEF 2014), 33-34.

28 Ibid., 6.

29 Dargent-Molina et al., "Association between maternal education and infant diarrhea in different household and community environments of Cebu, Philippines" *Soc. Sci. Med.* 38, no. 2 (1994): 343-350.



## 5.0 WASH and Disease

### *The real threat to life arises not out of thirst, but out of water-borne and water-related diseases.*

While providing safe drinking water is an essential and inspiring act, improved sanitation and hygiene are necessary companions to prevent life-threatening illness. This section considers the nature and prevalence of diseases that can be prevented with WASH.

#### 5.1 WASH and the Global Disease Burden

A significant amount of the global disease burden and causes of death are preventable with WASH. Disability-adjusted life years (DALYs) are a measure of healthy years lost due to disability, poor health, or early death. Globally, adequate WASH can prevent at least 9.1% of DALYs lost and 6.3% of all deaths.<sup>1</sup> For children in developing countries, more than 20% of the disease burden can be eliminated and over one million lives saved each year.<sup>2</sup>

Adequate WASH and environmental management indirectly affect many other diseases causing either disability or death, like malnutrition and malaria. Those living in developing countries with low WASH coverage rates, and those with weaker immune systems, like the very young, very old, and those living with HIV/AIDS stand to gain the most freedom from disease and death through WASH interventions.

##### 5.1.1 WASH and Disease Prevalence

In 2013, there were over 19 billion cases of respiratory infections and over 2.7 billion diarrheal disease episodes.<sup>3</sup> The incidences of these two disorders far outnumber all others, and both can be drastically reduced with improved WASH conditions.<sup>4</sup>

In the past several years, as access to safe drinking water, improved sanitation, and good hygiene practices has increased, incidence of diarrheal diseases has declined significantly,<sup>5</sup> contributing to lower maternal, neonatal, and child mortality rates in many regions and globally.

#### 5.2 Types of Water-Related and Water-Borne Diseases

“Water-borne,” “water-washed,” and “water-based” diseases are directly related to human contact with dirty water, feces, and soil that carry pathogens, introduced to the body orally or through skin and soft tissue. These are diseases that can be directly prevented with safe drinking water, safe disposal of feces, and hygienic practices like handwashing with soap. Other widespread and debilitating illnesses are related to safe water management, including vector-borne diseases like malaria and lymphatic filariasis, and these are commonly referred to as “water-related” illnesses.

##### 5.2.1 Diarrheal Diseases

Diarrhea affects billions of people each year. Diarrhea is defined by the World Health Organization as “the passage of three or more loose or liquid stools per day.”<sup>6</sup> It is the result of an infection in the intestines from bacteria, viruses, or parasites that enter the body by ingesting contaminated food, through water or dirt, or person-to-person. It can easily spread when good hygiene is not practiced. It leads to dehydration and malnutrition, which can be fatal to children and those with weakened immune systems, such as people living with HIV/AIDS. Over 500,000 children under 5 die each year from preventable diarrhea.<sup>7</sup>

1 Prüss-Üstün, Bos, Gore, & Bartram, Safer Water, Better Health: Costs, benefits, and sustainability of interventions to protect and promote health (Geneva: WHO Press, 2008), 10.

2 Ibid., 11.

3 Vos, Salomon, Murray et al., “Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: A Systematic analysis for the Global Burden of Disease Study 2013,” *The Lancet* (published online June 8, 2015), [http://dx.doi.org/10.1016/S0140-6736\(15\)60692-4](http://dx.doi.org/10.1016/S0140-6736(15)60692-4), Table 3.

4 See Aiello, Coulborn, et al., “Effect of Hand Hygiene on Infection Disease Risk in the Community Setting: A Meta-Analysis,” *American Journal of Public Health* 98, no. 8 (Aug 2008): 1372-1381.

5 Vos, Salomon, Murray et al., *Global Burden of Disease Study 2013*, Table 3.

6 World Health Organization (WHO), *Diarrheal disease: Fact Sheet N°330* (April 2013), available at <http://www.who.int/mediacentre/factsheets/fs330/en/> (accessed Aug. 7, 2015).

7 United Nations Children’s Fund (UNICEF), *Committing to Child Survival: A Promise Renewed, Progress Report 2014* (New York: UNICEF 2014), 20-21.

Cholera is caused by a water-borne bacteria and outbreaks are known to occur in densely populated areas with poor infrastructure, like peri-urban slums and refugee camps. It leads to diarrhea, vomiting, and dehydration. There are 3-5 million cases of cholera each year, killing over 100,000 people.<sup>8</sup>

Typhoid, caused by a bacteria transmitted through contaminated food or water, leads to fever, abdominal pain, headaches, and diarrhea. There are over 17 million cases of typhoid worldwide annually.<sup>9</sup>

Giardia is caused by a protozoa that is ingested through contaminated food or water, causing nausea, cramping, and diarrhea.<sup>10</sup>

Dysentery can be caused by a bacteria (*Shigella*) or protozoa (amoeba) and leads to diarrhea with blood or mucus as well as fever and abdominal pain. The bacterial form can be transmitted through contaminated water, person-to-person, or house flies, and the amoebic form can be transmitted through contact with contaminated hands or objects. Both are very dangerous and highly prevalent. There are over 120 million cases of dysentery annually, and each year amoebic dysentery kills 40,000-100,000 people, while *Shigella* kills 1.1 million people - most of them (60%) children under 5 years old.<sup>11</sup>

Rotavirus (virus) and *E. coli* (bacteria) infections are also responsible for many cases of diarrhea each year, both leading to dehydration that can be fatal for young children.<sup>12</sup>

## 5.2.2 Malnutrition

Malnourishment is the failure to have the right nutrients for tissue and organ function. It can be either failure to get enough nutrients (undernourishment) or failure to get the right nutrients. Malnutrition and diarrhea form a dangerous, even fatal, cycle of poor health. Individuals

who are malnourished have compromised immune function and are less able to fight off infections that cause diarrhea. Diarrhea exacerbates malnutrition by accelerating nutrient loss. When a person is caught in this cycle, the results can be fatal. Malnutrition can be linked to about 45% of all child deaths.<sup>13</sup> Globally, nearly 100 million children are underweight, and the majority of these live in South Asia.<sup>14</sup> Even when children survive malnutrition, many experience stunted growth, fatigue, and cognitive impairment.

## 5.2.3 Helminths

Helminths are parasitic worms that infect the intestines, urinary tract, or bloodstream. Worm eggs are passed in infected people's feces and are often found in soil. They enter the body through the skin or orally by ingesting contaminated food or water. Helminths include nematodes like roundworm, whipworm, and hookworm, all of which can cause abdominal pain, diarrhea, malnutrition, stunting, cognitive impairment, and anemia. Globally, over 1.5 billion people, about 1 in 4, are infected with soil-transmitted helminths.<sup>15</sup> Treatment (medicine) is available, but reinfection rates are high, especially in areas where open defecation is practiced and people walk barefoot in contaminated soil. Improved sanitation can help to prevent these parasitic infections.

Schistosomiasis is caused by a worm whose eggs are passed in infected people's feces and urine. Schistosome larvae are released by freshwater snails and enter the body through people's skin when they stand or swim in contaminated water. It causes diarrhea, abdominal pain, weakness, and anemia. Eggs trapped in tissue can cause significant organ damage, and schistosomiasis can be fatal if untreated or chronic. Over 260 million people were treated for schistosomiasis in 2013.<sup>16</sup> Deaths caused by schistosomiasis are difficult to measure because they can often be attributed to other causes, but estimates

8 Elisa Roma and Isabelle Pugh, *Toilets for Health*, Unilever and London School of Hygiene & Tropical Medicine (2012), 22-25.

9 Ibid.

10 Ibid.

11 Ibid.

12 Ibid.

13 World Health Organization (WHO), *Children: reducing mortality*, Fact sheet N°178 (Sept 2014), available at <http://www.who.int/mediacentre/factsheets/fs178/en/> (accessed Aug. 7, 2015).

14 UNICEF/WHO/World Bank, *Joint Child Malnutrition Estimates (1990-2013)*, available at <http://data.worldbank.org/child-malnutrition> (accessed Aug. 7, 2015).

15 World Health Organization (WHO), *Soil-transmitted helminth infections: Fact sheet N°366* (May 2015), available at <http://www.who.int/mediacentre/factsheets/fs366/en/> (accessed Aug. 7, 2015).

16 World Health Organization (WHO), *Schistosomiasis: Fact Sheet N°115* (May 2015), available at <http://www.who.int/mediacentre/factsheets/fs115/en/> (accessed Aug. 7, 2015).

range from 20,000 to 200,000 per year.<sup>17</sup> Schistosoma transmission can be prevented with proper disposal of human waste and by avoiding infested water.

#### **5.2.4 Trachoma**

Trachoma is a non-fatal but very painful bacterial infection in the eye that if untreated, leads to blindness. The infection can lead to scarring caused by eyelashes to turn inward and scratch the cornea. It accounts for 3% of all cases of blindness worldwide; about 21 million people have active trachoma, and over 8 million have been visually impaired.<sup>18</sup> Trachoma can be prevented with face washing and improved sanitation. Children are the most at-risk of contracting trachoma, but their mothers (or other caretakers) are also at increased risk, especially without access to safe water and hygienic practices that can stop the infection and transmission.

### **5.3 Regional Disease Burdens**

Developing countries bear almost the entire burden of preventable, water-borne diseases, and many of them are concentrated in the poorest areas of these countries. Those regions with least access to improved water and sanitation also have a greater share of diarrheal disease and malnutrition.<sup>19</sup> Sub-Saharan Africa bears the greatest total burden of deaths and DALYs lost because of inadequate water and sanitation.<sup>20</sup> South and Southeast Asian countries also bear a significant burden of disease and death, together with Sub-Saharan Africa accounting for 88% of total deaths attributable to inadequate WASH.<sup>21</sup>

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17 Ibid.

18 Peter Holmes, ed., *Investing to overcome the global impact of neglected tropical diseases: third WHO report on neglected diseases* (Geneva: WHO, 2015), 173-175.

19 For discussion on the prevalence and strategic investments, including WASH, that help prevent disease in developing countries, See Ibid.

20 World Health Organization, *Preventing Diarrhoea Through Better Water, Sanitation and Hygiene: Exposures and impacts in low- and middle-income countries* (Geneva: WHO, 2014), 30-31.

21 Ibid., 31.

## 6.0 International and National Policies

***International and national governmental bodies direct WASH policy and resources, so it is important to know the source of their authority to do so, and their priorities in implementing these policies.***

In the past five years, global and national authorities have identified water and sanitation as human rights, though not all nations recognize or implement these rights alike. This section identifies key international and national legislation relating to WASH.

### 6.1 The Human Right to Water and Sanitation

The United Nations General Assembly specifically recognized the human right to water and sanitation when it passed Resolution 64/292 in July 2010. The Resolution acknowledges that “equitable access to safe and clean drinking water and sanitation as an integral component of the realization of all human rights,” and asks that States provide the resources and cooperation necessary “to provide safe, clean, accessible and affordable drinking water and sanitation for all.”<sup>1</sup>

The UN Committee on Economic, Social and Cultural Rights defines the right to water as the right “to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses.”<sup>2</sup>

In 2015, Pope Francis released an encyclical reiterating the basis for the human right to water, saying:

Fresh drinking water is an issue of primary importance, since it is indispensable for human life... access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights. Our world has a grave social debt towards the poor who lack access

to drinking water, because they are denied the right to a life consistent with their inalienable dignity. This debt can be paid partly by an increase in funding to provide clean water and sanitary services among the poor.<sup>3</sup>

### 6.2 National Implementation

A recent survey found that nearly 75% (70 of 94) of countries recognize the human right to safe water in their constitution or other legislation, and 67% (63 of 94) recognize the human right to sanitation, with two thirds of all countries surveyed recognizing both.<sup>4</sup> Recognizing these rights, however, does not mean that national policies are being fully implemented and reviewed.

Although over 80% of these countries have approved national policies for drinking water and sanitation, only 30% of the countries with policies on water have fully funded and implemented their plans, and only 23% of countries with national policies on sanitation are funding and implementing plans.<sup>5</sup> Lack of funding and implementation at the national level threatens continued progress toward universal water and sanitation coverage.

### 6.3 United States Policy

The United States does not officially acknowledge the human right to water under international law, but supports the goal of universal access and provides foreign assistance to increase access to safe water and improved sanitation in developing countries. California was the first state to pass a law recognizing the human right to water in 2012.<sup>6</sup>

The Senator Paul Simon Water for the World Act of 2014 (Pub.L. 113-289) prioritizes and codifies efforts to provide WASH in areas of greatest need around the world. It strengthens strategy, coordination, and reporting by various agencies and directs USAID resources to reach

1 United Nations General Assembly, Resolution 64/292: The human right to water and sanitation. A/RES/64/292; adopted July 28, 2010.

2 UN Economic and Social Council, Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights, General Comment No. 15 (2002): The right to water. E/C.12/2002/11; January 20, 2003.

3 Pope Francis, *Laudato Si'*, Encyclical letter on Care for our Common Home (May 24, 2015), Vatican Website, sec. 30, available at [http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco\\_20150524\\_enciclica-laudato-si.html](http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html).

4 World Health Organization (WHO), *UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) 2014 Report: Investing in Water and Sanitation: Increasing Access, Reducing Inequalities* (Geneva: WHO Press, 2014), 14.

5 *Ibid.*, 4-16.

6 California Assembly Bill 685, “An act to add Section 106.3 to the Water Code, relating to water.” A.B.685; Sept. 25, 2012.

people living in developing regions, claiming that “the United States should be a global leader in helping provide sustainable access to clean water and sanitation for the world’s most vulnerable populations.”<sup>7</sup> The bipartisan bill passed by unanimous consent in the House of Representatives and by voice vote in the Senate. It was signed into law on Dec. 19, 2014.

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7 The Senator Paul Simon Water for the World Act of 2014 (Pub.L. 113-289).

## 7.0 Additional Resources

United Nations “Sustainable Development Goals”, website available at <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> (accessed March 14, 2018).

UNICEF, *Progress for Every Child in the SDG Era*, (New York: United Nations Children’s Fund, March 2018), available at [https://data.unicef.org/wp-content/uploads/2018/03/Progress\\_for\\_Every\\_Child\\_in\\_the\\_SDG\\_Era.pdf](https://data.unicef.org/wp-content/uploads/2018/03/Progress_for_Every_Child_in_the_SDG_Era.pdf) (accessed March 10, 2018).

WHO and UNICEF Joint Monitoring Programme (JMP), *Progress on Drinking Water, Sanitation and Hygiene: Update and SDG Baselines*, Geneva: WHO and UNICEF, 2017), available at <https://washdata.org/reports> (accessed March 10, 2018).

WHO and UNICEF Joint Monitoring Programme (JMP), *Thematic Report on Safe Managed Drinking Water* (Geneva: WHO and UNICEF, 2017), available at <https://washdata.org/sites/default/files/documents/reports/2017-07/JMP-2017-tr-smdw.pdf> (accessed March 14, 2018).

UNICEF, *Levels & Trends in Child Mortality* (New York: UNICEF, 2017), available at <https://data.unicef.org/resources/levels-trends-child-mortality/> (accessed March 13, 2018).

UNICEF “Child Mortality Estimates: Sex-specific under-five mortality rate” (updated Oct. 19, 2017), available at <https://data.unicef.org/topic/child-survival/under-five-mortality/> (accessed March 13, 2018).

Liu, Oza et al., *Global, regional, and national causes of under-5 mortality in 200-2015: an update systematic analysis with implications for the Sustainable Development Goals* (Lancet 2016; 388:3027-35), 3029.