



## TECHNICAL BRIEF

# Closing the U.S. Sanitation Equity Gap: Exploring Opportunities to Learn from the Global Sanitation Sector Experience

## Introduction

Global Communities embraces sustainable safely managed sanitation as essential for public health and for lifting people out of poverty. Safely managed sanitation is defined as the use of improved sanitation facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated off-site.<sup>4</sup> The world is severely lagging in achieving the United Nations' Sustainable Development Goal 6.2, which promises progressively more equity of access until sanitation for all is reached in 2030,<sup>1</sup> especially for people experiencing poverty. This is true in many parts of the underdeveloped world such as sub-Saharan Africa and South Asia — and it is also true in the United States.

Access to reliable and safely managed sanitation is a human right, but many communities in the United States have been overlooked and neglected for decades. The least-served areas in the U.S. are commonly communities of color, impoverished areas and Indigenous communities. While these problems have been studied in specific communities, there has not previously been a nationwide study to evaluate the extent of sanitation equity issues in the U.S., or assess the role of international actors within the U.S. context.

To achieve equitable sanitation access in the U.S. by 2030, services need to be safe, acceptable, accessible, affordable and non-discriminatory for all of the U.S. population.<sup>6</sup> The current U.S. administration

has shown an increasing interest in the infrastructure crisis for both centralized and decentralized systems, with a growing focus on water, sanitation and hygiene (WASH) equity. **Global Communities and other U.S. based and international non-governmental organizations (NGOs) and multisectoral stakeholders have an opportunity and responsibility to support communities to improve their access to safely managed sanitation and contribute to efforts to provide the human right to accessing safely managed sanitation for every person in the U.S.**

The purpose of this technical research brief is to describe equity gaps in safely managed sanitation for people living with poverty and other disadvantaged communities in the U.S. and to understand how lessons learned by Global Communities and other international development partners working in underdeveloped countries present opportunities to address this challenge. This technical research brief is a summary of a larger U.S. landscape analysis research report that is available from Global Communities upon request. The research methodology was comprised of a desktop review of literature from peer reviewed journals as well as from "grey literature" related to the problem and challenges to reaching people experiencing poverty in the U.S. with sustainable sanitation services. In addition, virtual interviews were carried out with U.S. based actors and multisectoral stakeholders.

## Key Findings:

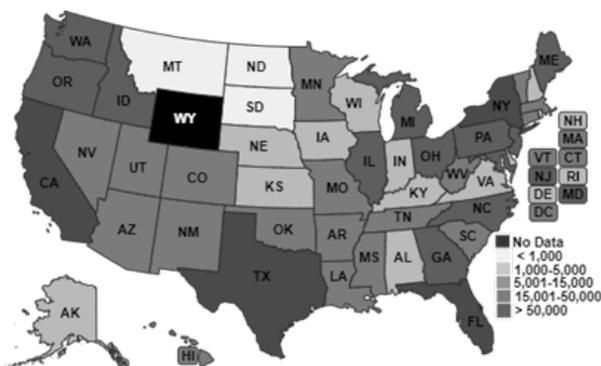
- More than two million Americans across the majority of U.S. states are living without basic indoor plumbing, and/or rely on failing septic tanks, straight pipes, cesspools, failing outhouses, bucket latrines and open defecation.
- Those most affected are low-income residents, people of color, tribal communities and immigrants.
- Poor sanitation results in health, economic, social and environmental impacts in poor communities.
- Existing laws and policies have placed the burden of sanitation management on households, many of whom are the least able to afford the costly systems.
- There is currently no nationwide inventory of the communities without access to adequate sanitation and their wastewater challenges. These data gaps prevent policymakers and researchers from estimating the costs and benefits of providing proper wastewater management to all U.S. residents.
- Every dollar invested in water and sanitation access yields a fourfold return in reduced healthcare costs and at least a twentyfold return in health benefits in tribal areas.<sup>6</sup>
- According to the EPA, at least \$35 billion needs to be invested every year for 20 years to bring the water, sewage and storm water infrastructure nationwide into compliance with federal safety regulations.<sup>27</sup>
- Lessons and experience from international WASH actors are relevant for closing the equity gap in the U.S.

## Findings

### Gaps in safely managed sanitation are widespread in the U.S. among disadvantaged communities.

There are likely more than two million Americans living without running water and basic indoor plumbing and many more households do not have access to household or community sanitation systems that safely contain, transport and treat fecal sludge,<sup>6,7</sup> resulting in public health risks and contamination of neighborhoods and water resources. These households, which can be found in the majority of states in the U.S., rely on failing septic tanks,<sup>8</sup> straight pipes,<sup>9</sup> cesspools<sup>10</sup>, failing outhouses<sup>6,11</sup> and open defecation<sup>15</sup> (see Figure 1 and Table 1). This situation affects millions of the most vulnerable

FIGURE 1: ESTIMATES OF POPULATION LACKING ACCESS TO BASIC SANITATION BY STATE: UNITED STATES, 2017-2019 (ADAPTED FROM CAPONE ET AL., 2020)



people in the U.S. including low-income residents, people of color, tribal communities and immigrants. These communities have historically been excluded from investments in infrastructure and decision making.<sup>5</sup>

For those who do have access to water and sanitation services, affordability is a major ongoing challenge. The U.S. Environmental Protection Agency (EPA) considers water bills to be affordable if they are below 2% of a household's median income, and wastewater bills are affordable if they are below 2.5% of the household's median income.<sup>30</sup> Between 1990 and 2006, there was a 105.7 percent increase in water and wastewater bills nationally while there was only a 48 percent increase in the median household income.<sup>31</sup>

The situation in the U.S. is a stark contrast to the global human rights standards that require sanitation to be safe, acceptable, affordable, accessible and available without discrimination.<sup>5</sup> Many of the disadvantaged communities and households that do not have access to safely managed sanitation have experienced years of oppression, which prevents them from being able to vocalize their concerns. Additionally, some of their coping strategies for lacking accessible safely managed sanitation are often not consistent with existing regulatory requirements, which discourages them from drawing attention to their situation.

TABLE 1. OVERVIEW OF TYPES OF GAPS IN SAFELY MANAGED SANITATION IN THE U.S.

<b>Incomplete Plumbing</b>	At least 1.4 million people live with incomplete plumbing, in which their household lacks hot and cold running water, a sink, a shower or bath, and/or toilet. <sup>6</sup>
<b>Failing Septic Tanks</b>	At least 22 million households rely on septic systems; <sup>6</sup> in some areas (i.e. Puerto Rico and the Virgin Islands) over half of septic systems are failing <sup>19</sup> and households bear the burden of high replacement costs or expensive fines.
<b>Straight Pipes</b>	Straight pipes discharge raw sewage from homes into yards, trenches or other nearby surfaces and are documented in 15 states. <sup>9</sup>
<b>Cesspools</b>	Cesspools are a solution some households use in which wastewater is disposed into underground holes with or without a structure, such as a concrete cylinder, that allows wastewater to flow out an open bottom and/or perforated sides; cesspools are currently documented in five states but likely more extensively used (See full report).
<b>Failing Outhouses</b>	Outhouses not properly installed, where the soil types are not conducive for outhouses, the water table or bedrock depths are too shallow, and/or the wastewater is not properly contained. Failing outhouses are still a common sight in Navajo Nation and Texas colonias. <sup>27</sup>
<b>Bucket Latrines</b>	A large bucket with a seat attached and used as a toilet, with high risk of exposure to fecal-borne pathogens, gasoline, disinfectants and more. <sup>13,14</sup> In some Alaska communities, households disconnected from piped services and relying on honey buckets increased from 2016-17. <sup>14</sup> Similar situations are potentially occurring in other isolated communities and native communities throughout the U.S.
<b>Open Defecation</b>	Populations without access to a toilet defecate in the open; in the U.S., this condition is primarily found among the hundreds of thousands of people experiencing homelessness. <sup>15</sup>

**Poor sanitation results in health, economic, social and environmental impacts in affected communities.**

Lack of access to safe sanitation leads to significant health impacts, economic costs and environmental impacts. Not only do affected people have increased risk of gastrointestinal illnesses such as diarrhea, there are also risks of tropical diseases, vector-borne diseases, stunting, antimicrobial resistance, anemia, spontaneous abortions, and pre-term births associated with helminth infections.<sup>4</sup>

There are also economic costs associated with the environmental and water source pollution from these discharges of raw sewage, such as increased water treatment costs.<sup>4</sup> Affected people also have increased out-of-pocket payments, travel expenses and loss of income associated with sickness that affect their prosperity.<sup>4</sup> Their earning potential is also negatively impacted by sewage infrastructure failures.<sup>5</sup>

Not having access to safe sanitation also creates social impacts, including but not limited to decreased dignity, increased poverty, greater exclusion for those with disabilities, decreased safety, greater gender inequality, and decreased ability to access equitable education and work opportunities.<sup>4</sup>



EXAMPLE OF CESSPOOL



DISCHARGE FROM STRAIGHT PIPE

## Existing laws and policies have placed the burden of sanitation management on households, many of whom are the least able to afford the costly systems.<sup>5</sup>

In areas of the U.S. that are serviced by a centralized system or a municipality operated decentralized system, wastewater services are considered a public good. However, U.S. laws, policies and regulations treat safe sanitation at the household level as a private good, making household level wastewater treatment the sole responsibility of the homeowners. Homeowners with onsite wastewater treatment systems are therefore responsible for the full capital costs of the wastewater system and installation as well as the operating and maintenance expenses.<sup>3</sup> Some soil conditions and lot sizes make it more difficult and expensive for onsite systems to meet regulations. Residents with systems that fail to comply with state sanitation requirements have the potential to receive a misdemeanor charge with fines that accrue daily, and some jurisdictions may impose criminal penalties.<sup>5</sup> Many states have laws that make it illegal to install or repair existing onsite systems where there is available access to a public sewer system, thus requiring residents to pay significant connection fees, or go without repairing their systems.<sup>5,24</sup>

*Every dollar invested in water and sanitation access yields a fourfold return in reduced healthcare costs and at least a twentyfold return in health benefits in tribal areas.<sup>6</sup>*

## Structural racism has resulted in systemic exclusion of services for communities of color.

Structural racism is “the institutional structures that define the social hierarchies and power of white populations over populations of color.”<sup>33</sup> This is done through direct, passive and colorblind acts of racism.<sup>33</sup> Some of the ways this is seen in sanitation are exclusions from infrastructure investments during the 20th century, effects of underbounding (intentional exclusion of African American neighborhoods from service areas),<sup>34</sup> requirements for residents to bear full cost for their individual system or the connection to a centralized system, legal issues related to heir property (properties without a written will that have been passed down informally through several owners), redlining (intentional denial or increased charges for services, especially loans, in certain areas), and exploitative practices of contractors.<sup>9</sup> Case studies show systemic exclusion of water and wastewater services in Alabama, Illinois, Mississippi, Michigan and Ohio for Black residents,<sup>33</sup> but likely also in other states. The majority of funding for sanitation flows from federal agencies to states and local entities for allocation, with most of the funding going to large systems (i.e. centralized, municipal systems) rather than community entities, nonprofits, and individual homeowners<sup>5</sup> (See Table 2. Key Actors). A few of these key federal funding mechanisms are the Water Infrastructure Finance and Innovation Act (WIFIA), U.S. Department of Housing and Urban Development (HUD) Title 1, and the Clean Water State Revolving Fund (CWSRF). Eligibility requirements for funding recipients include having existing staff and financial capacity, being a public entity rather than individuals, or ability to cost share or repay funds; these requirements can exclude communities who have the greatest funding needs.<sup>5</sup>

*From a human rights framework, the underlying structural causes of inadequate sanitation and failures come not only from soil conditions, geography, and infrastructure, but most significantly from political choices that marginalize and exclude communities of color, especially rural ones.<sup>5</sup>*

## The problem is likely larger than known due to lack of data at national and local levels.

According to the EPA, at least \$35 billion needs to be invested every year for 20 years to bring the water, sewage and storm water infrastructure nationwide into compliance with federal safety regulations.<sup>27</sup> However, there is currently no nationwide inventory of the communities without access to adequate sanitation and their wastewater challenges. These data gaps prevent policymakers and researchers from accurately estimating the costs and benefits of providing proper wastewater management to all U.S. residents. Currently, the main surveys that collect wastewater data for U.S. residents are the American Community Survey (ACS) and American Housing Survey (AHS), since the Decennial U.S. Census removed its question on wastewater access after the 1990 census.<sup>22,23</sup> In 2016, the ACS question about toilets was removed, precluding tracking changes past 2015<sup>6</sup> and limiting data collected to running water and indoor plumbing. This survey does not clarify if the services are affordable, reliable and functioning properly.<sup>6</sup> The AHS estimates that 22 million households used septic systems, but does not clarify if the system was functioning properly.<sup>6</sup> In 2015, the AHS survey added “none” as an option for their wastewater system and 199,000 homes selected this option.<sup>5</sup> Without comprehensive data, especially from rural areas where onsite wastewater systems are typically implemented, it will be impossible to estimate the full scope of sanitation issues.

*“Households do not lose economic access to water because the cost is unaffordable. Households lose water because the law makes it permissible to not just ignore their inability to pay, but to wield it as a weapon against them.”<sup>28</sup>*

TABLE 2. KEY ACTORS IN THE U.S. WORKING TO ADDRESS THE SANITATION EQUITY GAP

<b>Federal Government</b>	The national agency for regulating wastewater is the U.S. Environmental Protection Agency (EPA). The EPA uses the Clean Water Act (CWA) to regulate the discharge and treatment of wastewater. Other relevant agencies include the U.S. Department of Housing and Urban Development (HUD) and U.S. Department of Agriculture (USDA).
<b>State &amp; Local Governments</b>	Each state (and tribe) has its own environmental, natural resources, and/or public health agency that is responsible for enforcing safely managed sanitation. State Agencies may include a State Department of Environmental Quality or Environmental Management Agency, a State Department of Natural Resources, a State Department of Public Health, or a State Department of Water Resources. Local governments may also have departments with a role in oversight or enforcement.
<b>Private Sector</b>	The private sector includes manufacturers and vendors of wastewater treatment technologies, installation companies and consulting firms. Licensed engineers and installation are typically overseen by state health departments. Some private companies have philanthropic efforts that support other organizations’ work to address water equity issues in the U.S.
<b>University Affiliated Collaborators</b>	Researchers at universities around the U.S. play a key role in developing and implementing solutions for communities throughout the country to close equity gaps. These researchers also work as key advocates for these communities and help bridge the gap between the communities and public sectors.
<b>Non-Governmental Organizations (NGOs)</b>	Many local community organizations have members from a specific area working together to advocate for solutions to their sanitation challenges. NGOs work to bridge the gap between local residents and government agencies. NGOs are a neutral party to help facilitate resources and improvement to sanitation situations. Local community organizations are key, since there are few nationwide NGOs working on sanitation in the U.S.

## Evaluating the Relevance of Experiences & Lessons Learned from the International WASH Sector

This research has provided insights into the sanitation equity gap in the United States. A key insight from this research is that the root causes and solutions to address this equity gap are very similar to what is experienced in underdeveloped countries, where significant progress is being made in increasing overall access to safely managed sanitation and progressively reducing inequity. While progress in most underdeveloped countries is still lagging behind international goals, learning from the lessons, experiences and best practices emerging from the global WASH sector may help to inform successful approaches to addressing sanitation equity gaps in the U.S., particularly as national infrastructure investments are considered.

Evidenced based learning by the U.S. Agency for International Development, Global Communities and other multisectoral actors working globally in water and sanitation, and pioneering work and thinking by organizations like DigDeep and the U.S. Water Alliance and U.S. universities, has generated consensus around best practices for approaches to addressing sanitation gaps. Below is a selection of key best practices that may have relevance for actors working to address the sanitation equity gap in the U.S.

### Key Approaches

**Strengthen enabling environments** that ensure safely managed sanitation services are sustainable over time and inclusive of communities most affected.

**Go beyond individual behavior-change based approaches to changing community social norms** and move from measuring behavioral outputs to behavioral outcomes.

**Incorporate continuous learning.** Acknowledge that sanitation solutions are an iterative process that needs to have time incorporated for learning, monitoring success and improving.<sup>35</sup> Data should be collected regularly and publicly reported with frequent evaluations of water systems, policies and ongoing outreach programs.<sup>5</sup>

### Investment & Advocacy

**Invest in area-wide or market systems-level solutions** in order to support sustainability and impact beyond the level of individual households

or communities.<sup>35</sup> Sanitation programming should incorporate relevant aspects of governance, financing, markets and behaviors.<sup>35</sup>

**Prioritize equity in infrastructure investments.** Use data to target the most vulnerable communities for the progressive reduction inequities in access to safely managed sanitation; invest in data and monitoring infrastructure to continually monitor improvements and inform ongoing efforts. Advocate for revising codes and regulations to be equity-oriented with input from all communities, including rural and/or low-income communities.<sup>5,36</sup>

**Advocate at the State and National levels that lack of access to safely managed sanitation is an equity and environmental justice issue.** Quantifying the potential health and economic benefits of investing in universal water access would strengthen the case for increased funding.<sup>6</sup>

### Community Engagement

**Provide technical assistance to help communities navigate funding opportunities,** support installations and improvements to infrastructure, help develop rate-planning structures to cover anticipated infrastructure capital projects as well as operation and maintenance expenses<sup>38</sup> through Life Cycle Cost Analysis.<sup>35</sup> Homeowners and small communities should be assisted throughout the process of applying for financial assistance to ensure that they are able to navigate the process successfully.

**Directly involve the community and empower them to make their own sanitation changes.**<sup>35</sup> For improving transparency and cultivating an engaged, educated customer base, provide adequate information regarding services, policies, regulations and billing practices.<sup>36</sup> Conduct assessments with communities to understand their perception and interest in sanitation, available resources and skill sets, and the root causes of the issue.<sup>35</sup>

**Improve relations between communities neglected by the government and government agencies.**<sup>38</sup> To further the success of projects, there can be an increased focus on working not only directly with communities, but also governments on larger scales.<sup>37</sup> There will continue to be distrust with government until it is able to adequately represent and provide for residents' needs through accessible solutions and laws, policies, and regulations with language that reflects equity.



## Recommendations for Advancing Sanitation Equity in the U.S.

The following recommendations are made to guide Global Communities and other U.S. WASH sector organizations to help remediate the situation for those who have been left without access to safely managed sanitation throughout the U.S.

1. Target/focus on geographic areas where vulnerable populations are mostly like to not have access to safely managed sanitation – these include communities living in poverty on both sides of the U.S.-Mexico Border; rural populations in states such as Alabama; Tribal Lands; Puerto Rico and Hawaii.
2. Support grassroots direct service providers who lack capacity to apply for grants.<sup>6</sup>
3. Introduce alternatives to traditional infrastructure<sup>6</sup> such as the reinvented toilets financed by the Bill & Melinda Gates Foundation.
4. Work with other partners and stakeholders to build a U.S. WASH sector<sup>6</sup> that can collaborate, share approaches and have a stronger advocacy role at the national level on issues of WASH equity.
5. Advocate for new and larger public sector funding options for household-level infrastructure<sup>6</sup> – including public subsidies for lower income households.

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