



## Water, Human Health, and the COVID-19 Crisis

Charles Iceland, Betsy Otto, Janet Ranganathan, Esben Lunde Larsen, Alberto Pallecchi – World Resources Institute

### Key Recommendations

- 40 percent of the global population lack access to basic hand washing facilities in their home. The international community must help least developed countries provide low cost, low tech hand washing stations in public places immediately. This includes securing the water needed for these hand washing stations, encouraging utilities to maintain water continuity, ensuring that affordability is not a barrier to access for the poor, and providing water tanks where water is not available.
- Longer term, the international community must help least developed countries 1. Increase access to water, sanitation, and hygiene (WASH) services; 2. Protect water supplies and ensure their sustainable use; and 3. Protect and restore forested lands and other natural landscapes that are a source of clean freshwater.
- Pope Francis and the Holy See should consider calling for a virtual conference of leaders from the private sector, development aid donor and recipient countries to help the international community achieve the above objectives. This could entail the creation of a broad public-private water alliance.

### 1 – Background

**The value of water.** As noted in the Vatican’s recently-published document, [Aqua fons vitae](#), water is an essential life-supporting resource that serves many purposes and has many values. Some of its values – religious, socio-cultural, aesthetic – are more spiritual. Other values are more material – urban, industrial, power, and agricultural. Water, this Vatican document observes, also serves as a “connector” between institutions and societies. It is therefore also valid to talk about the value of water for dialogue and peace.

**Water and public health.** The burden of disease in the developing world is enormous. According to the [World Health Organization](#), the top ten causes of death in low income countries in 2016 included “lower respiratory infections” and “diarrheal diseases.” Both of these diseases are linked to water. The simple act of [washing one’s hands](#) can stave off infectious diseases, including COVID-19. This is why The UN’s Sustainable Development Goal nr. 6 is about [ensuring access to water and sanitation for all](#).

**Water and food security.** With the help of improved technologies and farming methods, including access to reservoir water, use of aquifers and irrigation technologies, the world is now able to produce more food than ever before. And yet extreme poverty precludes many people in low-income countries from accessing sufficient food to ward off hunger and malnourishment. The recent World Food Programme ‘[Global Report on Food Crises](#)’ warns that the number of people facing [acute food insecurity](#) could reach

265 million in 2020, a doubling of the 130 million in 2019. Lockdown measures are putting supply chains under pressure, while [prices for key staples are soaring](#) in some parts of the world.

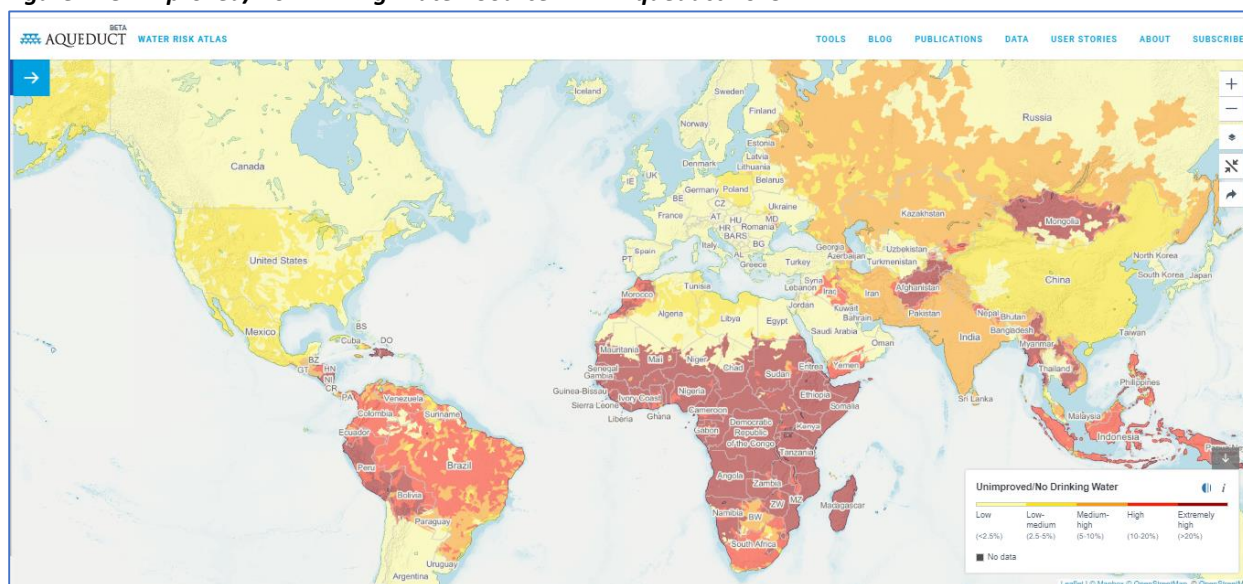
**Water and migration.** In many developing countries, the increasing [scarcity of productive water and land resources is threatening rural livelihoods and forcing people off the land](#). This situation is exacerbated by increasingly erratic and unpredictable rainfall, as a result of climate change. Evidence shows that severe droughts or “dry shocks” are also linked to [rural intergenerational poverty](#).

**Water and Nature.** Water is a gift to mankind from nature. Not only do forests, wetlands, grasslands, and other ecosystems provide immense spiritual value to men and women, they make life itself possible. In the United States, for example, [180 million people](#) – over half the population – rely on forested lands to capture and filter their drinking water. And yet, as reported by the [Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services](#) (IPBES), we are destroying the Earth’s natural systems at an alarming rate. We are cutting down forests, degrading farmland, polluting and draining rivers, lakes, and groundwater sources, and destroying ocean ecosystems. As IPBES finds, 25 percent of all species in the animal and plant groups are threatened, suggesting that around 1 million species already face extinction.

## 2 – Analysis

**Insufficient water, sanitation, and hygiene (WASH) services.** To prevent the spread of COVID-19, health organizations worldwide are advising more frequent handwashing. Washing with warm water and soap can help destroy the virus. Yet 40 percent of the world’s population – [3 billion people](#) – lack access to basic hand-washing facilities in their homes. Nearly 75 percent of people in least developing countries lack such facilities. And even those who have access may only have it [intermittently](#). Obtaining additional water for frequent handwashing is especially a challenge for communities living in [informal settlements](#). The world is not on track to achieve the UN’s Sustainable Development Goal of access to water and sanitation for all. Figure 1 shows the percentages of the world’s population with unimproved/no drinking water in 2019.

**Figure 1. Unimproved/No Drinking Water. Source: WRI-Aqueduct 2019**



**Water resources increasingly at risk.** Providing WASH services requires enough freshwater in rivers, lakes, and aquifers to adequately supply water needed for health and hygiene. In many places, however, because of growing populations, cities, and economies water demand is outstripping water supply. In addition, pollution is rendering many sources of water unusable, while climate change is making rainfall more erratic. Climate change results in more severe droughts that imperil water access and floods that can overwhelm clean water and sanitation systems, leading to outbreaks of diseases like cholera. Droughts and floods cause economic disruption and hardship for poor people and businesses. [A study on the impact of climate hazards has found](#) that a 1% increase in the area affected by drought can slow a country's gross domestic product (GDP) growth by 2.7% per year and a 1% increase in the area experiencing extreme rainfall can reduce GDP growth by 1.8%.

**Natural systems increasingly under siege.** Ecosystems play a key role in regulating water quantity and water quality, providing fundamental health benefits to human populations. A [recent study](#) of 300,000 children in 35 nations across Africa, Southeast Asia, South America and the Caribbean found, for example, that children who live in watersheds with greater upstream tree cover are less likely to suffer from diarrheal disease. In [some instances](#), downstream water users are willing to pay upstream communities to protect their watersheds in order to improve water quality. In [other instances](#), communities have restored degraded lands in order to increase groundwater infiltration, better regulate water flows, and reduce the magnitude of flooding events. In some [cases](#), natural or “green” infrastructure can be a [less expensive way to achieve policy objectives](#) than traditional “gray” infrastructure alone.

### 3 – Policy recommendations

#### **Increase access to water, sanitation, and hygiene (WASH) facilities and services:**

- **Provide low cost, low tech hand washing stations in public places immediately.** To prevent the spread of COVID-19 in developing countries, [countries need quick, easy, and low-tech solutions](#) to increase hand washing, as was successfully done in some African countries to combat the spread of Ebola. Setting up public hand washing stations can be as simple as providing two buckets – one with a spigot and a mixture of water and chlorine to wash one’s hands, and a second to capture wastewater. Such stations were set up in public places – markets, schools, municipal buildings – for people to use during the Ebola outbreak. If there is no chlorine readily available (to kill viruses and other pathogens), there are simple ways to synthesize it, consisting of water, salt, and a car battery. PATH, a global organization, has developed such a device, and 13 countries from sub-Saharan Africa and Southeast Asia have put in requests to PATH for these devices, in preparation for a COVID-19 surge. But it is not enough to simply provide these public hand washing stations; it is also crucial to spread the word about the importance of hand washing in combating COVID-19. [This can be done in many ways](#), including through media, community and religious leaders, and even via celebrities.
- **Make longer-term investments in WASH facilities and services.** Over the longer term, more investment is needed to expand access to improved water and sanitation to those who still lack it. Experts believe the capital investments required to meet [global goals for water supply, sanitation and hygiene services](#) in low-income countries are at least [3 times](#) current expenditure

levels, or approximately \$114 billion per year. These investments would provide the essential foundation to fight diseases like COVID-19, as well as common maladies like diarrheal diseases, which killed 1.6 million people in 2017 alone. Experience has shown that these capital investments must be accompanied by sources of finance to service and maintain them over time. Capacity building is also required for personnel that would provide the service and maintenance.

### **Protect freshwater supplies and ensure their sustainable use**

- **Balance water demands with available supply.** In countries throughout the developing world – from India to China to Iran – water demands are so high that rivers, lakes, and aquifers are literally running dry. Each watershed has a finite amount of water that can supply agriculture, industries, and cities while also supporting the watershed’s ecosystems. In places where water demands exceed available supply, a measurable cap must be placed on total demand and water users must find ways to use water more efficiently (to bring total demand in line with the cap). There are many ways to increase water use efficiency, from using more water-efficient irrigation technologies, to fixing leaking pipes in urban water systems, to redesigning industrial production systems to use less water.
- **Increase wastewater treatment and reuse.** Most wastewater in developing countries is released untreated into local rivers, rendering surface water too polluted to use. Building wastewater treatment facilities will not only reduce pollution and improve public and ecological health, it can also generate a source of relatively clean water that can be used for a variety of purposes, such as irrigation and industrial processes. Wastewater treatment processes can also be designed to capture biogas, providing an additional source of energy.
- **Reduce agricultural pollution.** Fertilizer, pesticides, and animal waste are a major source of surface water and groundwater pollution. [There are simple ways to control such pollution](#), including maintaining vegetation buffers around rivers and streams, reducing fertilizer and pesticide use, capturing and re-using runoff in retention ponds, etc.
- **Adapt to climate change impacts on water availability.** [Climate change impacts water availability in various ways](#). Water supply is expected to decline in the mid-latitude regions of the world because of climate change, which is also expected to alter the timing of water availability, increase the severity of drought and flood events, and change pest and disease patterns. To keep up with shifting climate conditions, farmers and herders will need to continuously adapt by changing the types of crops they produce and livestock they raise. They will also need to change how and when they produce/raise them. More small-scale water storage techniques and infrastructure (preferably “green” infrastructure) will be needed in many places. Farmers and herders will need technical assistance to do this well. Countries may need to import more food and provide additional assistance to farmers and herders when they suffer losses due to climate extremes and help them to find new livelihoods in places where conditions make agriculture impossible. Governments at all levels (local, state, national) and international organizations (e.g., the UN, the World Bank) need to support developing countries in their efforts to adapt to climate change.

## Protect and restore ecosystems

- **Protect and restore forested land.** As found by the International Resource Panel recent report [Land Restoration for achieving the SDGs](#), protecting and restoring forested land provides a number of benefits: 1. Forested lands are associated with improved downstream water quality and reduced diarrheal disease among children in rural households; 2. Forested lands regulate the flow of water through a watershed, thereby diminishing floods, protecting topsoil from erosion, protecting reservoirs from sedimentation, improving downstream water quality, and storing water for later release; 3. Forested lands sequester carbon, thereby mitigating climate change. Further, the role of forests in regulating hydrological cycles is now understood to operate not just at the level of local watersheds, but to play a role in [generating rainfall across continents](#), ensuring the continued productivity of the world’s agricultural systems and our food supply chains. For these reasons, it is critical to support efforts to protect and restore forests, from local efforts designed to boost water quality to regional and global efforts such as [AFR100](#) (a country-led effort to bring 100 million hectares of land in Africa into restoration by 2030), [Initiative 20x20](#) (a similar effort in Latin America to restore 20 million hectares of land) and the [New York Declaration on Forests](#) (whose goal is to restore 350 million hectares of land around the world by 2030). In addition, [Cities4Forests](#), a coalition of cities working to catalyze support among city governments and urban residents to integrate forests into city development plans and programs can be leveraged to support specific projects and investment opportunities.
- **Protect and restore wetlands and floodplains.** Wetlands and floodplains – like forested lands – can regulate, store, and filter runoff, thereby improving water quality and mitigating the impacts of drought and flood events. As with other forms of green infrastructure, they can often achieve policy objectives at a fraction of the cost of traditional gray infrastructure.

Many of these recommendations can be designed as programs that could quickly employ people who have lost jobs, thus helping to address both the human health and the economic impacts of the pandemic. For example, studies suggest that forests in developing countries, on average, may provide [one fifth to a quarter of the incomes](#) for people who live near them. Investment in sustainable management of forests can [create wealth and enable asset accumulation](#) for rural communities through the creation of new livelihoods (in fields such as sustainable forestry or tourism), new markets for sustainable products (such as shade-grown coffee or chocolate), and higher agricultural productivity (by planting trees alongside crops to enrich the soil and prevent erosion). Similar employment and other economic opportunities could be generated via expansion of WASH services and initiatives to protect water resources. In summary, the availability of clean freshwater is indispensable for protecting and promoting human health and well-being. Pursuing ambitious policies to expand water, sanitation, and hygiene (WASH) services; protect and sustainably use water resources; and protect and restore natural landscapes, including forests, wetlands, and floodplains will greatly help in the fight against COVID-19 and other human diseases.