

The Impact of COVID-19 on Food and Water Systems

Key Insights

- The United Nations is predicting two scenarios for the future of COVID-19¹:
 - Quick containment and slow pandemic where quarantine and social distancing measures successfully lower the COVID-19 transmission rates, and the socioeconomic effects are largely mitigated within 3 to 4 months.
 - Escalating transmission in fragile countries where governments with under resourced public health systems are strained under the increasing COVID-19 infections, causing quarantine measures to continue and socioeconomic effects to be felt for 9 to 12 months.

While it's still too early to say which scenario will be more accurate, growing infection rates in Africa, India, Southeast Asia, and Latin America suggest COVID-19 will spread more rapidly, and warnings of a global food crisis from the United Nations' Food and Agriculture Organization (FAO) point to sustained and systemic socioeconomic effects.

- Threats to Water, Sanitation and Hygiene (WASH) services
 - Countries with populations who lack adequate WASH services are likely to be most affected by COVID-19, especially dense, informal settlements where residents rely on an informal market for water and use communal WASH facilities.
 - Water utilities in countries such as Ghana are already reporting a strain to maintain water services under increased demand, disruptions in global supply chains for fuel and parts, and reduced revenue from residents who are unable to pay water fees due to unemployment and loss of income. Many residents are also having to forgo regular handwashing in order to ration water.
 - The risk of further COVID-19 transmission is particularly high in healthcare facilities that lack access to basic WASH services such as soap and water. This threat is especially acute for women, who makeup 70% of the global health workforce. The increased risk of COVID-19 for women healthcare workers is compounded by the mental exhaustion, stress, harassment, and low wages these workers also endure given that women are underrepresented in higher-paying leadership positions in healthcare.²
 - Public water points and latrines are more likely to be accessed by women and girls, which may increase the risk of COVID-19 transmission since social distancing at these locations is challenging.
 - Access to sexual and reproductive health care services, including menstrual hygiene products, is being severely restricted as these needs are often deprioritized by male decision-makers who are now working with reduced incomes. Impacted supply chains and local mobility restrictions are also limiting access to these critical services, which further threatens the health of women and girls. New information sources for COVID-19 hygiene best practices will need to be created in the absence of community meetings.
- Threats to smallholder farmers
 - Reduced purchasing power from consumers, food price shocks, and the prioritization of non-perishable foods threaten demand for goods from smallholder farmers.
 - Women are especially vulnerable to the demand and supply side threats that COVID-19 poses to agricultural production as more than 60% of employed women in sub-Saharan Africa are working in agriculture — for half the wages men make. The reduced incomes and food shortages will put further strain on the burden of care endured by women who are also tasked with

¹ United Nations Coordinated Appeal. (March 25, 2020). COVID-19 Global Humanitarian Response Plan. Available at: <https://www.unicef.org/rosa/media/6171/file/PRESS%20RELEASE%20COVID-19%20Global%20Humanitarian%20Response%20Plan.pdf.pdf>

² Dhatt, R. (March 2020). Opinion: Global health security depends on women. Available at: <https://www.devex.com/news/opinion-global-health-security-depends-on-women-96861>

childcare, water collection, and food preparation. That caregiving burden will also be exacerbated as family members living in urban areas travel back to rural communities.³

- Global supply chain disruptions, mobility restrictions, the closure of open markets, and the spoilage of food with a short shelf-life that's unable to reach a market are all ongoing factors that threaten the livelihoods of smallholder farmers.
- Smallholder farmers in rural communities who rely on open markets to purchase their own food also face food insecurity in addition to labor shortages and reduced incomes.
- COVID-19 will also exacerbate the effects of pre-existing stressors such as droughts, monsoons, and the ongoing locust infestation in East Africa and South Asia.
- Some smallholder farmers are using mobile applications to create new markets and deliver goods to local consumers.
- However, women are less likely to be able to access cash transfers and mobile markets as globally 327 million fewer women have access to smartphones than men.⁴
- Under normal circumstances women smallholder farmers' unequal access to resources reduces their production by 20-30% compared to men.⁵ The digital divide between men and women will further disrupt women's access to farming inputs and other critical resources. Due to the gap in information access, an increased caregiving burden, reduced sexual and reproductive health services, increasing gender-based violence and sexual exploitation, mobility restrictions, and price shocks, COVID-19 is likely to further decrease the production of women smallholder farmers who are priced out of markets for farming inputs.
- Threats to nutrition
 - COVID-19 could have severe implications for millions of malnourished populations due to the increased risk of mortality from the synergy of malnutrition and infectious diseases. Conversely, many populations who rely on cheap, processed food are also especially vulnerable from the interaction of COVID-19 and obesity and other non-communicable diseases.
 - The closure of schools worldwide is preventing millions of children from accessing what is often their most reliable source for healthy food. NGOs and governments are devising new ways to address this shortcoming, such as delivering food packages and using cashless transfers.
 - Current evidence shows that COVID-19 has not been found in breast milk, and mothers are advised to continue breastfeeding (as able and feasible in light of nutrition needs and impacts of stress) while practicing proper hygiene, such as wearing a medical mask when near the baby and washing hands with soap and water (or use alcohol-based hand sanitizer) before and after having any close contact with the baby.
 - Women's nutrition is likely to disproportionately suffer as women are usually the first to starting less, or eating last, when food shortages occur since the vast majority of women are tasked with keeping families fed (which also impacts on women's ability to breastfeed).
 - The increased risk of malnutrition for women also increases their risk of anemia, which makes them particularly susceptible to COVID-19 transmission and sickness overall. In addition, malnutrition also threatens the health of pregnant women and children, who are at a higher risk of anemia.
 - Reports of increased gender-based violence have been prevalent throughout the COVID-19 pandemic, which is exacerbated by the fact that inadequate food preparation is often considered a justifiable reason for husbands to abuse their wives. Overall, food stress increases the likelihood of gender-based violence and sexual exploitation.
- Examples of opportunities to improve gender-responsive food and water systems
 - Use mobile platforms to create new markets for smallholder farmers, and ensure that women have equal access to these mobile markets by increasing smartphone ownership and empowering women to have greater control over access to information technologies that are

³ CARE Food and Water Systems. (2020). COVID-19, Food & Nutrition Security, and Gender Equality. Available at: https://www.care.org/sites/default/files/documents/covid_food_security_and_gender_equality.pdf

⁴ Ibid.

⁵ Ibid.

typically controlled by male heads of household. An increased access to smartphones also helps more women smallholder farmers receive cash transfers, which will be increasingly necessary as women are forced to sell off agricultural assets in order to survive.

- Create a diverse and decentralized food supply to combat food insecurity from regional and global supply chain disruptions. Ensure that women have equal access to farming inputs and food in local markets. Work to change behaviors and norms to reduce the burden of care placed on women.
- Increase support of smallholder farmers and local food systems with a focus on supporting women smallholder farmers by building their connection to markets, influencing the private sector to recognize the role of women as food producers and market players in agricultural value chains, and empowering women to be in leadership roles in order to influence community decision-making.
- Use COVID-19 as an opportunity to move from reactive responses to crises to systems strengthening programming that prioritizes WASH in budgets and policies on multiple levels of governance, strengthens agrifood supply chains, increases access to digital and mobile markets, increases the participation of marginalized groups in policy and decision-making, and center the role and needs of women and girls within food and water systems.
- Increase awareness of public health as a multi-disciplinary issue and how it interacts with food and water systems. Work to ensure that data collection is a gender-sensitive process, and that data is disaggregated in order to monitor and evaluate the impact of COVID-19 on women and other vulnerable groups.

Introduction and Context

Since COVID-19 was first reported in Wuhan, the capital city of China's Hubei province, in November 2019, this new strain of coronavirus has spread to nearly every country, manifesting a pandemic and global crisis. While pandemic themselves are not unique, the COVID-19 pandemic represents an existential threat due both to its rapid, global dispersion and its primary transmission route from close contact. Because combatting COVID-19 necessitates extreme social distancing measures, almost every aspect of global social and economic life has been disrupted. As a result, the COVID-19 pandemic represents twin crises in both public health and livelihoods, with far-reaching consequences for global food and water systems in the short, medium, and long-terms.

This paper is an attempt to synthesize the current learnings and experiences on COVID-19's impacts on food and water systems, with the acknowledgement that the situation is rapidly changing, and any conclusions reached thus far can only be described as preliminary. Despite the persistent spread of COVID-19, people and practitioners across disciplines and sectors have already developed a robust understanding of how COVID-19 is interacting with pre-existing issues of food security, nutrition, and access to water, sanitation, and hygiene (WASH) services. In addition, this paper is particularly concerned with how COVID-19 is affecting the livelihoods and health of smallholder farmers in the Global South, who play a critical role in the survival of local and global food systems. Women smallholder farmers often comprise the majority of farmers in many regions, and along with girls face some of the most severe risks from the COVID-19 pandemic, due to the intersections of gender-based violence and unequal access to nutritious food, farming inputs, leadership and decision-making positions, smartphones and information technology, sexual and reproductive health services, and WASH services. While in many aspects COVID-19 a crisis without a precedent, creating solutions to shelter the most vulnerable from its worst effects also represents an unparalleled opportunity to fundamentally change our food and water systems to be more sustainable, equitable, and resilient in the face of future threats.

Scenarios

There are two potential scenarios for the spread of COVID-19 in the medium and long-term. Both of these scenarios are dependent on the policies that governments develop to slow the rate of transmission and strengthen their social safety nets:

- Quick containment to slow the pandemic: Governments employ aggressive social distancing measures that succeed at slowing transmission rates, and our public health, food and water, and economic systems begin to recover in three to four months.
- Escalating transmission rates in fragile countries: Countries with fragile and resource-scarce institutions face rapidly increasing infection rates, particularly in parts of Africa, Asia, and the Americas. Severe mobility restrictions are enforced, disrupting socioeconomic activity both domestically and globally, creating comorbidities between COVID-19 and pre-existing crises such as malnutrition, climate change, and inadequate WASH services. As healthcare systems struggle to cope with transmission rates, social distancing measures are enforced for a longer period of time, and the public health and socioeconomic effects are deepened and sustained, potentially for 9 - 12 months.⁶

While more time is still needed to conclude which scenario will occur, early signs are indicating the world is heading towards a sustained pandemic that will be particularly devastating for countries with inadequate resources to minimize the effect of a COVID-19 outbreak. Transmission rates are expected to rapidly increase across countries in Africa, Latin America, and Asia, particularly those with poor access to WASH services.

The FAO has already warned of a “looming food crisis unless measures are taken fast to protect the most vulnerable, keep global food supply chains alive and mitigate the pandemic’s impacts across the food system.”⁷ African Finance Ministers also emphasized that African economies and societies will face severe negative consequences without rapid and coordinated efforts, such as an immediate emergency economic stimulus estimated at \$100 billion, waiving interest payments on municipal and sovereign debt, and the coordinated delivery of testing equipment to vulnerable populations in informal settlements.⁸ The full scope of COVID-19’s impacts won’t be fully understood until its intersections with upcoming threats are observed, such as gender and socioeconomic marginalization, monsoons, hurricane, elections, warfare and conflict, and locust swarms in East Africa and South Asia.

Threats to Water, Sanitation, and Hygiene

Increased transmission due to inadequate WASH Services

Health agencies such as the World Health Organization and the Center for Disease Control have made it clear that hand washing with soap and water is one of the most critical ways to reduce exposure to COVID-19. As COVID-19 spreads more rapidly throughout the world, the pre-existing crisis of inadequate access to WASH services will only exacerbate transmission rates and highlight the intense vulnerability of these communities. A number of disturbing statistics on WASH access reveal the existential threat COVID-19 poses to many countries. For example, nearly three-quarters of the populations in the poorest countries have no hand-washing facilities with soap and water, and 1 out of 6 health care facilities globally have no hygiene services.⁹ Though many countries have national policy strategies to strengthen WASH services, less than 15% reported

⁶ United Nations Coordinated Appeal. (March 25, 2020). COVID-19 Global Humanitarian Response Plan. Available at: <https://www.unicef.org/rosa/media/6171/file/PRESS%20RELEASE%20COVID-19%20Global%20Humanitarian%20Response%20Plan.pdf>

⁷ Cremer, J. (April 1, 2020). Coronavirus presents ‘looming food crisis,’ FAO warns. Available at: <https://allianceforscience.cornell.edu/blog/2020/04/coronavirus-presents-looming-food-crisis-fao-warns/>

⁸ United Nations Economic Commission for Africa. (March 23, 2020). African Finance Ministers call for coordinated COVID-19 response to mitigate adverse impact on economies and society. Available at: <https://www.uneca.org/stories/african-finance-ministers-call-coordinated-covid-19-response-mitigate-adverse-impact>

⁹ Coates, S., Albuquerque, C. (March 19, 2020). COVID-19 a collective failure, an unprecedented opportunity. Available at: <https://www.devex.com/news/sponsored/opinion-covid-19-a-collective-failure-an-unprecedented-opportunity-96811>

having sufficient financial resources to implement these plans, according to a report by the United Nations.¹⁰ Practitioners working to maintain and increase access to WASH facilities are some of the most vulnerable to infection, such as cleaners in healthcare facilities and staff working to set up handwashing facilities in vulnerable communities.

Previous outbreaks such as Ebola have been exacerbated by increased rates of transmission in hospitals with poor access to basic WASH services, such as handwashing stations. Globally, one quarter of health care facilities lack access to basic water services, while nearly half of these facilities in Sub-Saharan Africa's reported having limited or no access to clean water or proper handwashing stations. Thus, as health centers brace for increased demand due to COVID-19 infections, they are ill prepared with the basic hygiene to ensure they don't spread COVID rather than prevent it. This is an especially severe threat to women healthcare workers, who comprise 70% of the global health workforce, and but only make up 25% of global health leadership.¹¹ This increased risk of COVID-19 transmission puts further stress on women in healthcare facilities, who are also forced to cope with low incomes, increased care burdens, increased risk for gender-based violence and sexual exploitation, and increased risk of anemia due to poor nutrition from lack of food supply.

People living in dense settlements, including informal settlements, refugee camps, and prisons, are also some of the most vulnerable to COVID-19 transmission due to reliance on communal WASH facilities and dependency on private actors for water.¹² In addition, women and girls also faced an increased risk of COVID-19 transmission as they are often the ones burdened with the responsibility of retrieving water from communal WASH facilities. Many residents living in areas without utilities also rely on informal markets for water, which are likely to be disrupted by mobility restrictions. For example, residents living in the Mukuru informal settlement in Nairobi, Kenya, have reported fears of water disruption, which will be compounded by loss of incomes from reduced economic activity linked to COVID-19 restrictions.¹³ Ghana Water Company Limited recently advised its users to ration water due to difficulties in meeting demand in Accra and other cities, and some households have been forced to limit handwashing in order to ration water.¹⁴ WASH interventions are already a main priority in COVID-19 response plans from international agencies such as UN-Habitat and UNICEF, in addition to countries such as Chad, where their multisectoral WASH – Health strategy, initially developed for the cholera epidemic, will be extended to integrate management of the COVID-19 epidemic.¹⁵

Pressures on water utilities

Humanitarian agencies have also expressed fears that the global economic effects of COVID-19 could threaten the ability of water utilities to provide water and sanitation services. For example, Kelly Ann Naylor, associate director of WASH at UNICEF, voiced concerns about supply chain disruptions, fuel shortages, and economic recessions. Limited access to materials and parts for maintaining water systems could disrupt the

¹⁰ UN-Water, World Health Organization. (2019). UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) 2019 report. Available at: https://www.who.int/water_sanitation_health/publications/glaas-report-2019/en/

¹¹ Dhatt, R. (March 2020). Opinion: Global health security depends on women. Available at: <https://www.devex.com/news/opinion-global-health-security-depends-on-women-96861>

¹² Jerving, S. (March 27, 2020). What does a COVID-19 response look like with limited water?. Available at: <https://www.devex.com/news/what-does-a-covid-19-response-look-like-with-limited-water-96834>

¹³ Natarajan, S. (March 18, 2020). Coronavirus: Why washing hands is difficult in some countries. Available at: <https://www.bbc.com/news/world-51929598>

¹⁴ International Water Association. (March 23, 2020). COVID-19 and 'Chasing for Water' – Water Access in Poor Urban Spaces. Available at: <https://iwa-network.org/covid-19-and-chasing-for-water-water-access-in-poor-urban-spaces/>

¹⁵ United Nations Coordinated Appeal. (March 25, 2020). COVID-19 Global Humanitarian Response Plan. Available at: <https://www.unicef.org/rosa/media/6171/file/PRESS%20RELEASE%20COVID-19%20Global%20Humanitarian%20Response%20Plan.pdf>

provision of water in municipalities reliant on regional or global supply chains. Fuel shortages could affect the ability for water pumps to operate, “causing taps to run dry or create a need for water rationing.”¹⁶ During the 2013—2016 Ebola outbreak in West Africa, researchers found a reduction in household incomes in Liberia, even in areas without Ebola, suggesting the outbreak had far-reaching economic effects.¹⁷ Similar economic stressors from COVID-19 could reduce fee payments from water users, reducing revenues and resources for water utilities, and threatening their ability to provide essential services such as water quality testing or purchasing water treatment chemicals. Tariff collection rates in Kenya are already at 30% of previous rates.¹⁸

Reduced access to sexual and reproductive health services, including menstrual hygiene products

According to Françoise Girard, president of the International Women’s Health Coalition (IWHC), “Globally, as COVID-19 has taken hold, access to sexual and reproductive health care services, from routine services and testing for STIs to antenatal care, contraception, and abortion, has suffered significantly.”¹⁹ Before COVID-19, only 49% of women in Sub-Saharan Africa reported having the right to make decisions on their sexual and reproductive health, while only 43% reported the same in Central and Southeast Asia, according to the United Nations Population Fund. As COVID-19 reduces purchasing power of vulnerable households, acquiring supplies for women and girls’ sexual and reproductive health will become further deprioritized as men typically control financial decision. An increased risk of malnutrition and anemia from lack of nutritious food also compounds potential health issues arising from a lack of access to critical sexual and reproductive health services.

Supply chains for menstrual hygiene products have been disrupted amid the COVID pandemic, and access to the products already in the market is severely reduced by mobility restrictions, and lack of purchasing power from widespread unemployment and reduced incomes. In addition, the limited supply of menstrual hygiene products may escalate prices, and as a result menstruating women and girls will be at an increased risk of developing reproductive tract infections as they resort to reusing menstrual products for an unsafe amount of time, or use unhygienic products such as rags instead. In urban informal settlements, COVID transmission will be more likely for menstruating women and girls attempting to maintain social distancing while relying on community latrines, though mobility restrictions may limit access to these facilities. Limited access to clean water and soap also places a severe burden on women and girls needing WASH services during menstruation. Some countries such as India have made efforts to keep these supply chains open by classifying sanitary pads as essential items.²⁰ UNICEF has encouraged civil society actors to include menstrual materials in distributions of food or non-food items to women and girls in home quarantine, ensure that sanitary pads are deemed essential commodities, provide access to basic WASH facilities, and ensure that menstrual hygiene supplies are well-stocked for healthcare workers and patients.²¹

¹⁶ Jerving, S. (March 27, 2020). What does a COVID-19 response look like with limited water?. Available at: <https://www.devex.com/news/what-does-a-covid-19-response-look-like-with-limited-water-96834>

¹⁷ Hall, B. (March 12, 2020). Coronavirus and the Implications for Food Systems and Policy. Available at: https://www.agrilinks.org/post/coronavirus-and-implications-food-systems-and-policy?utm_source=USAID+Bureau+for+Food+Security+%2F+Agrilinks&utm_campaign=123442bfc2-EMAIL_CAMPAIGN_2019_08_21_07_27_COPY_01&utm_medium=email&utm_term=0_8f8d227958-123442bfc2-57329663

¹⁸ USAID. (2020). WASH and COVID-19 Community Stakeholder Report. Available at: <https://vimeo.com/414064762>

¹⁹ Sadeque, S. (April, 2020). How the COVID-19 Pandemic is Affecting Women’s Sexual and Reproductive Health. Available at: <http://www.ipsnews.net/2020/04/covid-19-pandemic-affecting-womens-sexual-reproductive-health/>

²⁰ [Muralidharan, A., and Mahajan, T.](https://thewire.in/women/coronavirus-menstruation-sanitary-pads) (April 2020). A Reminder: Periods Don’t During a Pandemic. Available at: <https://thewire.in/women/coronavirus-menstruation-sanitary-pads>.

²¹ UNICEF. (April 2020). Mitigating the impacts of COVID-19 on menstrual health and hygiene. Available at: <https://www.unicef.org/media/68446/file/Mitigating-the-impacts-of-COVID19-on-menstrual-health-and-hygiene-Brief.pdf>

Threats to Smallholder Farmers

Demand-side threats

Due to reduced purchasing power, the prioritization of non-perishable goods, and protectionist economic measures, COVID-19 poses a serious threat to the demand for goods from smallholder farmers. In Italy, for example, demand for flour has increased by 80 percent, and canned goods are seeing increased sales.²² Due to panic buying and long-term food stocking, households are beginning to buy more non-perishable goods. Foods with a short shelf life are also likely to perish during transportation due to restricted mobility and disrupted supply chains. In contrast, smallholder cocoa farmers in Côte d'Ivoire, who comprise a significant amount of the agriculture sector, are likely to be minimally affected by COVID-19 supply chain disruptions “due to its longer shelf-life, and predictions from investment bank Credit Suisse that chocolate sales rise during times of crisis”.²³

The reduction of household purchasing power combined with rising food prices also threatens demand for smallholder farmers. According to the United Nations, COVID-19 could lead to “diminished export earnings and ensuing currency depreciation,” which would increase the price of imports, including basic foodstuffs. This effect has already been observed as rice prices in China, Europe, and Southeast Asia have increased by 10 - 15 percent.²⁴ Food price spikes also occurred during the 2014 West African Ebola outbreak, where a reduction in land cultivation due to labor shortages among other factors led to domestic rice price increases of more than 30 percent and a 150 percent increase in cassava prices.²⁵ Similar price shocks are likely to occur as COVID-19 mobility restrictions lead to labor shortages and the reduced cultivation of land. These demand side-threats will be especially acute for women smallholder farmers, who comprise 43% of the farming workforce in developing countries. In Sub-Saharan Africa, over 60% of employed women are in the agricultural workforce, but make only half the wages of men.²⁶ The unequal wage gap, time taken away from agricultural production from an increased burden of care, and unequal access to markets are all likely to severely affect the purchasing power of women smallholder farmers who are uniquely vulnerable to the effects of reduced demand and increased food prices.

Supply-side threats

Supply chain disruptions and limited market access are some of the most serious threats to the livelihoods of smallholder farmers. Again, the 2014 Ebola outbreak provides a valuable reference point to estimating supply chain shocks. One study that analyzed the effect of the outbreak on food and nutrition in Sierra Leone observed an array of effects on food production and commerce, including distribution, transport, trade, and retailing. The study's authors noted that these “system-wide impacts were similar to those typically seen in large-scale disasters such as earthquakes”.²⁷ Social distancing poses serious threats to smallholder farmers who sell their crops through open markets. Increased food prices also pose a threat to smallholder farmers who are unable to subsist on their crops. In addition, food price spikes will reduce the amount of income

²² United Nations Africa Renewal. (March 27, 2020). A battle plan for ensuring global food supplies during the COVID-19 crisis. Available at: <https://www.un.org/africarenewal/news/coronavirus/battle-plan-ensuring-global-food-supplies-during-covid-19-crisis>

²³ Oxford Business Group. (March 31, 2020). Is Côte d'Ivoire's cocoa trade immune to Covid-19?. Available at: <https://oxfordbusinessgroup.com/news/is-cote-divoire-s-cocoa-trade-immune-to-covid-19>

²⁴ United Nations Coordinated Appeal. (March 25, 2020). COVID-19 Global Humanitarian Response Plan. Available at: <https://www.unicef.org/rosa/media/6171/file/PRESS%20RELEASE%20COVID-19%20Global%20Humanitarian%20Response%20Plan.pdf.pdf>

²⁵ Ibid.

²⁶ CARE Food and Water Systems. (2020). COVID-19, Food & Nutrition Security, and Gender Equality. Available at: https://www.care.org/sites/default/files/documents/covid_food_security_and_gender_equality.pdf

²⁷ Kodish SR, Bio F, Oemcke R, Conteh J, Beauliere JM, Pyne-Bailey S, et al. (2019) A qualitative study to understand how Ebola Virus Disease affected nutrition in Sierra Leone—A food value-chain framework for improving future response strategies. *PLoS Negl Trop Dis* 13(9): e0007645. <https://doi.org/10.1371/journal.pntd.0007645>

smallholder farmers can use to purchase farming inputs such as fertilizer or seeds. Women smallholder farmers, who rely on in-person interactions and networks to access critical farming inputs, will be particularly affected by supply-side shocks as agricultural services move online. Globally, 327 million fewer women have access to smartphones than men. In Sub-Saharan Africa, only 58% of women own a mobile phone compared to 71% of men.²⁸ Women smallholder farmers will struggle to maintain access to seeds, fertilizers, and other tools as mobility restrictions force markets online. Early surveys of smallholder farmers are already revealing the impact of COVID-19 on their livelihoods. In a recent survey of 55 Chinese smallholder farmers conducted by Selena Ahmed, Associate Professor at Montana State University, 93% of the participants reported that they had experienced a change in their household income because of COVID-19. In addition, 73% reported that they had experienced a change in food affordability. Existing vulnerabilities such as droughts, malnourishment, the ongoing locust infestation in East Africa, poor access to WASH services, and gender inequities are likely to be exacerbated by the socioeconomic effects of COVID-19. The influx of urban residents back into their home communities in rural towns and villages also creates additional stress for smallholder farmers living in these food insecure communities. The unique and severe vulnerabilities of smallholder farmers can be mitigated by creating access to local and decentralized food systems, increased access to mobile cash transfer systems, and using mobile communication to create new local markets, with a particular focus on ensuring women smallholder farmers have equal access to mobile cash transfer and market systems.

Threats to Nutrition

Currently, the populations most threatened by COVID-19 in wealthy countries have been the elderly and immuno-compromised. However, COVID-19 will likely create a new class of at-risk populations in lower income and food insecure countries. Research has shown that there is an interaction between infectious diseases and undernutrition, causing higher mortality among those who are malnourished.²⁹ Traditionally, people may think of the cause of death as these infectious diseases, but often the cause of death is synergistic when there is an interaction between malnutrition as both the disease and the malnutrition underlie the mortality. While the severely malnourished are most at risk, mild and moderate cases of malnutrition are often the most common causes of deaths with infectious disease comorbidity. Countries dealing with high rates of malnutrition will likely face a severe strain on their healthcare system due to the increased mortality rate from COVID-19 and malnourishment.

Previous research demonstrates that in times of crisis and food insecurity, women are often the ones to forgo eating in order to ensure there is enough food for the rest of the family. This trend is especially problematic in light of the fact that half of all pregnant women in developing countries are anemic, and that women as a whole are three times more likely than men to have anemia.³⁰ As food insecurity increases the likelihood of malnutrition and anemia in women and girls, they will be especially susceptible to the effects of COVID-19 and an increased risk of mortality. Access to nutrient-rich food will be critical for pregnant mothers, especially those still in adolescence, and children, to maintain good health and reduce the risk of COVID-19 comorbidities.

The quality and quantity of food will also affect millions of children who rely on school lunches as a consistent source of healthy food. According to Carmen Burbano, director of the World Food Programme's (WFP) school meals program, "the coronavirus has led to more than 367 million children missing out on school lunches worldwide, and that number is expected to continue rising as more schools shut their doors."³¹ Mobility

²⁸ Ibid.

²⁹ Pelletier, David & Frongillo, E.A. & Schroeder, Dirk & Habicht, Jean-Pierre. (1995). The effects of malnutrition on child mortality in developing nations. *Bulletin of the World Health Organization*. 73. 443-8.

³⁰ World Food Programme. (n.d.). Women and WFP Policy Brief. Available at: https://cdn.wfp.org/wfp.org/publications/Women%20and%20WFP%20Brief.pdf?_ga=2.191538402.916783033.1573071919-854007623.1571856671

³¹ Lieberman, A. (March 31, 2020). WFP repackages efforts to reach hungry children as COVID-19 closes schools. Available at: <https://www.devex.com/news/wfp-repackages-efforts-to-reach-hungry-children-as-covid-19-closes-schools-96878>

restrictions and social distancing also prevent barriers to community food distribution centers. Governments and NGOs are resorting to new strategies to improve nutrition in the wake of COVID-19, such as Trinidad and Tobago providing food cards for use at the supermarket, Costa Rica's Ministry of Public Education delivering food packages to students, and WFP's use of cashless mechanisms.³² People living in urban areas and informal settlements also face unique nutrition risks from the overconsumption of cheap, highly processed foods that can lead to obesity and other non-communicable diseases, increasing vulnerability to COVID-19 symptoms.³³ A lack of food and nutrition from schools will increase the burden on mothers to cook and provide food for their households. This stress on food insecurity increases the risk of gender-based violence as men often see a failure to provide food as a justifiable reason for abusing their wives.³⁴

Breastfeeding mothers who are infected with the COVID-19 virus may be confused about whether they should continue breastfeeding their baby. Much about how COVID-19 spreads is still unknown, but for another, similar coronavirus (SARS) the virus has never been found in breast milk. Without evidence to suggest that COVID-19 is different, it is likely that COVID-19 too is not transmitted through breast milk. However, as misleading or incomplete information is spread about the transmission of COVID-19 through breast milk, it's vital to convey that a cessation of breastfeeding threatens the nutrition of newborns who benefit from the protective immune factors contained in breast milk.³⁵

The WHO recommends that, considering the benefits of breastfeeding and the insignificant role of breast milk in the transmission of other respiratory viruses, a mother can continue breastfeeding. The mother should wear a medical mask when she is near her baby and wash her hands with soap and water (or use alcohol-based hand sanitizer) before and after having any close contact with the baby. If the mother is too ill to breastfeed, she may be able to express and feed breast milk (following recommended hygiene) or, if possible, ask a non-infected person to feed the expressed breast milk. Wet-nursing by another, non-infected mother also is an option. Mothers should follow all other recommended transmission precautions as well.

Opportunities

Despite the pervasive and unprecedented threat that COVID-19 poses to our health and livelihoods, community organizations, NGOs, governments, and private sector actors are already coordinating in new and innovative ways to strengthen our food and water systems now and after COVID-19. Below are only a few examples of gender-responsive opportunities, both theoretical and fully realized, of how this crisis can engender a better future.

- Mobilize smallholder farmers to manufacture personal protective equipment (PPE), menstrual hygiene products, and support the livelihoods of female smallholder farmers
 - The Smallholder Farmers Alliance in Haiti has partnered with public and private sectors in an effort to create "a grassroots sewing army to help Haiti fight a virus." The Alliance is providing its members with equipment to make masks at home in order to sustain an income while also practicing social distancing.³⁶

³² GCNF. (April 2020). COVID-19 & School Meals Around the World. Available at: <https://gcnf.org/covid/>

³³ Gillepsie, S., Whiteside, A. (March 30, 2020). Lessons from the AIDS epidemic on how COVID-19 may impact food and nutrition security. Available at: <https://www.ifpri.org/blog/lessons-aids-epidemic-how-covid-19-may-impact-food-and-nutrition-security>

³⁴ CARE Food and Water Systems. (2020). COVID-19, Food & Nutrition Security, and Gender Equality. Available at: https://www.care.org/sites/default/files/documents/covid_food_security_and_gender_equality.pdf

³⁵ UNICEF. (April 2020). Breastfeeding during the COVID-19 pandemic. Available at: <https://www.unicef.org/eap/breastfeeding-during-covid-19>

³⁶ Charles, J. (March 30, 2020). Haiti is making face masks, medical garments to fight the coronavirus and save jobs. Available at: <https://www.miamiherald.com/news/nation-world/world/americas/haiti/article241624391.html>

- To increase the supply of menstrual hygiene products, encourage manufacturers, particularly women-owned businesses, in relevant industries such as clothing and paper to produce reusable or disposable menstrual materials.
- This intervention could also boost the income of female smallholder farmers facing unequal reductions in agricultural production when compared to men.
- Use mobile platforms to create new markets and reduce the digital gender gap
 - Young entrepreneurs are creating mobile platforms to maintain agricultural commerce. These entrepreneurs are relying on delivery mobile applications like Mkulima Young, which enable farmers to sell their current stock online. In addition, “there are other digital platforms that also educate users on their daily nutrition intake, cost of products amongst hundreds of other valuable agricultural data.”³⁷
 - The rise of online platforms for mobile markets and cash transfers presents an unprecedented opportunity to decrease the digital divide between men and women. Governments, service providers, NGOs, and civil society organizations can partner together to reduce or eliminate the cost of Internet services and provide women and girls with smartphones. This increase in access to markets has increased women’s ability to bounce back from economic shocks. For example, when political unrest shut down Bangladeshi markets in 2014, women who had built links to market buyers were able to return to pre-crisis levels of production in only two weeks compared to seven weeks for women who were disconnected.³⁸
 - In addition, smartphone access can connect women and girls to potentially lifesaving resources to prevent sexual exploitation, harassment, and abuse via domestic abuse hotlines or apps that provide support to those exposed to gender-based violence.³⁹
- Create a diverse and decentralized food supply that increases women’s access to farming inputs
 - Smallholder farms and rural communities with robust access to local, regional, and global food supplies will be more resilient to food insecurity. “According to IFPRI, one lesson we can take away from China is that food availability in Wuhan, where COVID-19 was first detected, has been somewhat stabilized through ‘green channels’ that send food from outside production hubs, such as Shuoguang located hundreds of miles away. Thus, having a diverse and decentralized food supply landscape linked through secondary cities has proven effective in reducing food insecurity in locked down urban and rural areas.”⁴⁰
 - Ensure that women have access to farming puts and food at a local level and recognize the role women smallholder farmers play in food production. For example, the United Nations Conference on Trade and Development estimated that 70 percent of the food produced in Africa is directly produced by women.⁴¹ This means consulting with women to understand

³⁷ ASARECA. (April 1, 2020). Opportunities for Agriculture Amidst COVID-19. Available at: <https://www.asareca.org/news/opportunities-agriculture-amidst-covid-19>

³⁸ CARE Food and Water Systems. (2020). COVID-19, Food & Nutrition Security, and Gender Equality. Available at: https://www.care.org/sites/default/files/documents/covid_food_security_and_gender_equality.pdf

³⁹ Albrechtsen, A., Mlambo-Ngcuka, P. (May, 2020). Opinion: We cannot allow COVID-19 to reinforce the gender divide. Available at: <https://www.devex.com/news/opinion-we-cannot-allow-covid-19-to-reinforce-the-digital-gender-divide-97118>

⁴⁰ Hall, B. (March 12, 2020). Coronavirus and the Implications for Food Systems and Policy. Available at: https://www.agrilinks.org/post/coronavirus-and-implications-food-systems-and-policy?utm_source=USAID+Bureau+for+Food+Security+%2F+Agrilinks&utm_campaign=123442bfc2-EMAIL_CAMPAIGN_2019_08_21_07_27_COPY_01&utm_medium=email&utm_term=0_8f8d227958-123442bfc2-57329663

⁴¹ Mhlanga, D. Ndhlovu, E. (April 2020). Socio-economic Implications of the COVID-19 Pandemic on Smallholder Livelihoods in Zimbabwe. *Preprints*, 2020040219 (doi: 10.20944/preprints202004.0219.v1).

their needs and empowering them into decision-making roles within their community and industry.

- Support smallholder farmers and local food systems while empowering the decision-making roles and livelihoods of women smallholder farmers.
 - Disruptions in global food supply chains, and solidarity from communities looking to support local farmers threatened by COVID-19 are already leading to instances of greater demand for local goods. EURACTIV Poland recently reported that COVID-19 is changing consumer demands as online stores run by local farmers are experiencing a “boom” in sales of short shelf-life products.⁴²
 - A renewed support for local smallholder farmers and food systems presents opportunities to support and empower women smallholder farmers and entrepreneurs, and change attitudes around the roles of women in decision-making. In the rural village of Xiaruoyao, in China’s northwestern Qinghai Province, UN Women sponsored a series of workshops for women entrepreneurs that increased their access to mobile markets, and increased their role in public affairs, which has benefited the community during the COVID-19 pandemic as women organized to manage checkpoints, check body temperatures, and ensure community members maintain social distancing guidelines.⁴³
- Raise awareness of public health as a multi-disciplinary issue, increase systems strengthening, and mainstream gender assessments in data collection
 - The global socioeconomic shocks of COVID-19 are already revealing how poorly equipped our public health, food, water, labor, and transportation systems are at handling shocks and stressors. As a result, governments, private sector actors, and the development community will be forced to deal with the underlying structural inequalities of our food and water systems in order to effectively mitigate the worst outcomes of COVID-19. Hopefully, this level of coordination and localization of recovery efforts will create a more holistic understanding of how environmental, socioeconomic, and public health factors are deeply interrelated. As reactive interventions are implemented to increase the access of critical services such as clean water and soap, it is vital that civil society actors use this opportunity to build systems in a way that reduces the vulnerability of marginalized communities to the next pandemic in addition to other socioeconomic and environmental stressors. Systems strengthening means embedding policy and coordination around food and water systems services across different sectors, and at multiple levels of governance.
 - It is vital to disaggregate data in the data collection process in order to fully understand the impact of COVID-19 on women (including pregnant and breastfeeding women) and girls, ethnic minorities, indigenous groups, people with disabilities, members of LGBTQ+ communities, and other marginalized groups. The robust data collection process required to track COVID-19 also presents an opportunity to mainstream gender assessments within this process so the needs of women and girls are fully understood and centered.

⁴² Foote, Natasha. (April 2, 2020). Innovation spurred by COVID-19 crisis highlights ‘potential of small-scale farmers.’ Available at: <https://www.euractiv.com/section/agriculture-food/news/innovation-spurred-by-covid-19-crisis-highlights-potential-of-small-scale-farmers/>

⁴³ UN WOMEN. (April 2020). in the rural village of Xiaruoyao, in China’s northwestern Qinghai Province. Available at: <https://www.unwomen.org/en/news/stories/2020/4/feature-rural-women-farmers-join-the-fight-against-covid-19-in-china>