Food and Agriculture Organization of the United Nations

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Integrated agriculture water management and health

COVID-19 AND SDG6

The COVID-19 pandemic recalls the vital importance of achieving Sustainable Development Goal (SDG) 6: Ensure availability and sustainable management of water and sanitation for all. The pandemic is closely related to water and sanitation. For instance, one of the simple precautionary measures – frequent hand washing – helps prevent the transmission along with additional important measures such as physical distancing, avoid touching eyes, nose and mouth; and others. However, 2.2 billion people still lack access to water and 4.2 billion people to sanitation services (UNICEF and WHO, 2019), making them much more vulnerable in times of epidemic diseases.

Ensuring sustainable access to safe water and sanitation, achieving sustainable water management, and preventing or reducing pollution, scarcity and flooding events are key global challenges of the twenty-first century.

Water is also essential for agricultural production and food security. It is the lifeblood of ecosystems, including forests, lakes and wetlands, on which our present and future food and nutritional security depend on. Yet, our freshwater resources are dwindling at an alarming rate.

Agriculture accounts for 70 percent of freshwater withdrawals worldwide, and pressure on water supplies for industrial, domestic and agricultural sectors is growing. That is why sustainable water resource management to increase water productivity in food and agriculture remains critical.

Agriculture and waterborne diseases

Agriculture is widely recognized as an important source of water contamination including microorganisms (FAO and IWMI, 2018). There are different pathways of pollution that can reach water resources. These include unsustainable cropping systems, waste from livestock and aquaculture as well as misuse of fertilizers (including manure applications), pesticides, bacteria, microorganisms and antimicrobial residues via leaching, surface and subsurface runoff from croplands and grazing systems.

Livestock can become colonized or infected by microorganisms that are human pathogens; they can act as reservoirs for potential human infection via water (Coffey *et al.*, 2013). Nowadays over 1 400 infectious diseases have been described by modern medicine and most of them are shared between humans and animals (Taylor *et al.*, 2001). Human health is strongly linked to ecosystem health.

The degradation of ecosystems, such as primary forests, rangelands and wetlands, often facilitate the spreading of zoonotic diseases. Recent outbreaks of West Nile virus, Ebola virus disease, SARS, monkeypox, mad cow disease, avian influenza and COVID-19 remind us that human and animal health are intimately connected. These diseases can cross the Darwinian divide between animals and people and do not depend on humans for their survival, giving

them a competitive advantage (Karesh and Cook, 2009). Therefore, a broader understanding of health and disease demands a unity of approach achievable only through a consilience of human, animal and environment health – **One Health.** This approach is rooted in three urgent considerations:

- There is an urgent need to simultaneously address the health of people and animals, recognizing that disease poses challenges to both conservation of the planet's biodiversity and efforts to improve the quality of human life, including food supplies.
- Biodiversity conservation, specifically protected and sustainably managed ecosystems including water quality and availability are critical foundations for present and future health and wellbeing.
- There is a need to create and increase trans-sectoral funding streams, which provide significant opportunities to improve global health through agri-environmental investments.

The Food and Agriculture Organization of the United Nations (FAO) promotes a multi-sectoral approach to integrated water resources management under the **One Water One Health** concept of water, reflected in SDG6. This approach recognizes that decisions regarding land and water use have real implications for health. Less-resilient ecosystems, shifts in patterns of disease emergence and spreading, manifest themselves when we fail to recognize this relationship.

FAO's One Water One Health concept provides an integrated water resources management approach that embraces the value of water in all its forms and recognizes the intrinsic role of water in protecting human, animal and ecosystem health. We need to rethink our relationship with nature and view water and the use we make of it with new eyes.

Recommendations

Traditional approaches to water management have created a fragmented landscape of independently managed silos and undervalued water in its different forms. Simultaneously, traditional approaches have failed to address the linkages between waterborne diseases and management of waste, particularly livestock waste, and the added value of health and well-being of humans and animals, including financial savings through closer cooperation of human and animal health.

With well-documented evidence of growing pressures on water supplies and overuse of existing surface water and groundwater resources, coupled with the ever-present threat of zoonotic diseases as demonstrated by the ongoing COVID-19 global pandemic, alternatives are clearly needed.

Moving forward, countries may consider the following:

- **Make water and sanitation issues a priority in their development plans, policies and strategies,** including a proactive policy plan to reduce risks of emergencies such as water-related disasters, floods and droughts, including the spread of waterborne diseases.
- **Monitor and assess water resources,** including supporting identification of hotspots for the spread of zoonotic diseases. FAO hosts AQUASTAT, the global information system on water resources including water quality and agricultural water management. FAO facilitates monitoring water productivity through the open access, remote sensed WaPOR platform (https://wapor.apps.fao.org/home/WAPOR_2/1) and supports countries in monitoring the progress on SDG6, as the custodian agency of SDG target 6.4: By 2030,

substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

- **Make water resources management** part of the One Health integrated multi-sectoral approach. Access to safe, reliable and sustainable water, including irrigation water development and quality, as well as water used in livestock rearing, food production and processing under the umbrella of integrated water resources management, are all fundamental aspects.
- **Improve water quality and access** by identifying, fostering and promoting technical innovations that address wastewater management (urban and animal livestock) in agriculture, reuse, water efficiency and the protection of essential services by aquatic ecosystems.
- **Strengthen global health security** through improved management of agricultural runoff and livestock waste, irrigation management and biosecurity towards prevention, detection and response frameworks.
- **Create healthier ecosystems and restore degraded ecosystems,** by ensuring sustainable use of available resources and expertise in addressing resource scarcity in the agriculture sectors, promoting integrated programme development, resource mobilization and implementation.

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