

Putting animals on the WASH agenda

Because water connects all species, some of the most pressing challenges related to water, sanitation, and hygiene involve other animals, as do some of the solutions. Learning from existing initiatives, this Policy Brief outlines the rationale for WASH interventions based on a good understanding of the roles, needs, and impacts of animals on water and sanitation and proposes possible pathways for action.



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Key messages

1. A multi-species perspective on water, sanitation, and hygiene (WASH) offers a compelling starting place for achieving more sustainable results in WASH interventions
2. Centring animal-human-water interactions in water, sanitation, and hygiene is a systemic approach that opens opportunities to reap positive synergies in the interlinkages between WASH and other SDGs.
3. The multi-species and systemic nature of WASH challenges require integrative approaches that stretch across sectors and disciplines.

Importance and complexity of animal-human relations

Animals play a vital role in contemporary societies. In more than half of rural households around the world, animals are essential to livelihoods, nutrition, and food security¹, while urban and peri-urban livestock systems play important roles in many cities.^{2,3} For over one billion people globally, livestock - predominantly cattle and pigs⁴, but also poultry, donkeys, horses, camels, goat, sheep, lamas, guinea pigs, and rabbits - are vital for labour, transport, income, nutrition⁵ and for a greater participation of women in society.^{6,7} Non-human animals are also sources of social status and assets for their owners⁸ and they are key parts of agroecosystems.⁹ Importantly, they contribute to human mental and physical health. In addition, nearly 90 percent of flowering plants that are food staples rely on insect pollinators.¹⁰

Intensive animal production is at the heart of many societal problems. Animal agriculture, particularly the production of animal-derived products, is one of the fastest-growing subsectors in agriculture.¹¹ Although the sector has many benefits and could play a critical role in making agriculture sustainable, the expansion instead presents enormous environmental^{12,13}, welfare¹⁴, climate¹⁵, and biosecurity challenges¹⁶, including the rapid development of large-scale and intensive meat and fish production systems. The majority (73%) of antimicrobials sold worldwide are used in animals raised for food¹⁷, and are one of the drivers in the development of drug-resistant pathogens.¹⁸ Intensive production strategies and their impacts on other ecosystems further exacerbate these challenges.

Beyond animal agriculture, we interact with other species in many ways. Animals are everywhere in human lives – in our bodies, our homes, our cities, our environment, our water systems - whether as domestic species or wildlife. Animal lives influence human cultural, economic, and political practices. The increasing number of interactions with other species in living rooms, city streets, laboratories, at the edges of forests, zoos, racecourses, wet markets, and animal derived products, raise urgent questions related to the health and welfare of animals¹⁹ and humans.²⁰ As recent outbreaks of COVID-19, Zika, and Ebola remind us, an estimated 60 percent of emerging infectious diseases have a zoonotic origin.²¹

Since water connects all species, some of the most pressing challenges related to water, sanitation, and hygiene involve other animals, as do some of the solutions. This is particularly the case in low- and middle-income countries, both in humanitarian emergencies and developmental contexts. From a WASH perspective, animals feature as water users, water polluters, zoonotic hosts, and vector hosts or reservoirs of infectious pathogens, as key actors in water supply systems, and as central elements in the resilience of livestock-dependent communities. As such, animals are crucial components of the broad environment of WASH services.

The starting point for this policy brief is the recognition that interconnections between animals, humans, and water are multiple and contrasting. To improve upon existing initiatives by more reflectively including the animal dimension in the provision of water supply, sanitation, and hygiene, this policy brief outlines the rationale for WASH interventions based on a good understanding of the roles, needs, and impacts of animals on water and sanitation, and proposes possible pathways for action.

Rationale for integrating animals in WASH

A more nuanced understanding of the multi-dimensional interlinkages between animals, people, and water within the WASH problem space is required.

Animals matter to the achievements of WASH SDG targets

The achievement of WASH outcomes is intricately linked to other animal species in different roles. The aims of SDG 6 go beyond provision of water, sanitation, and hygiene services. The Development Goal includes targets on water scarcity, water pollution, biodiversity, ecosystem protection, disaster risk reduction, leveraging water for peace, and water management. A better grasp of the intersections between animals and water opens opportunities for advancing progress toward the achievement of these multiple objectives, with the ultimate goal of fulfilling the human right to drinking water and sanitation.

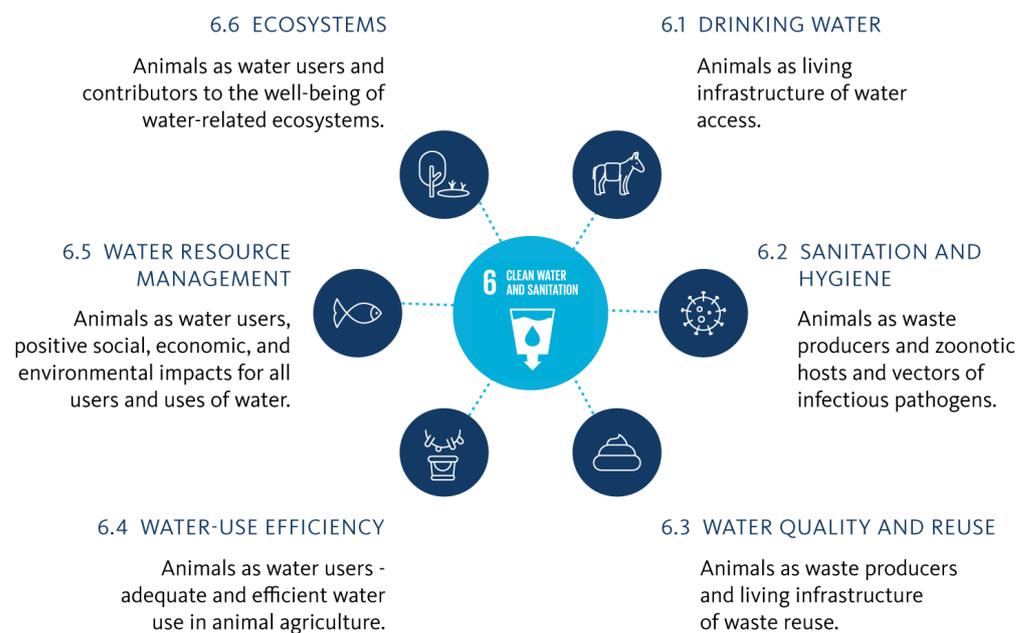


Figure 1: Illustration of the intersections between animal water roles and the achievement of the Sustainable Development Goal for water, sanitation, and hygiene.

- **As water users**, livestock have an impact on the quantity of water available for human drinking needs. In contexts where water is in short supply, water withdrawals for livestock system operations directly and indirectly compete with human needs. Not only do feedlots use water for animals to drink, water is also used to regulate temperature and flush waste.²² On a global scale, estimates show that livestock feed production is one of the primary users of freshwater, consuming about 41 percent of total agricultural water use.²³

- **As waste producers**, livestock globally produce 4-5 times as much faeces as humans²⁴ and represent a significant source of zoonotic pathogens and parasites, especially in low and middle-income countries.²⁵ Water pollution and its impacts on human and ecosystem health are major concerns when considering the disposal, or runoff, of large quantities of animal excreta.²⁶ The growth of concentrated animal feeding operations and aquaculture presents a great risk to water quality in those specific locations, due to the increased volumes of waste and contaminants that may be present. Antimicrobial supplements in animal feed and other veterinary drugs add to agrochemicals that are used and have harmful effects on both environmental and public health.^{27,28} Further, soil degradation²⁹, wildlife and stray or feral animals living close to humans can also contribute to the dissemination of antibiotic resistance among different hosts and ecosystems as antibiotic-resistant microorganisms become more widespread in the environment.³⁰⁻³² On the other hand, nutrients and organic matter in animal manure are valuable resources, improving a range of different soil properties, such as water holding capacity when reused with other sustainable agriculture practices.³³
- **As living infrastructure of water access, water reuse, and waste management** - working animals involved in water provision in low- and middle-income countries are vital for accessing safe water. By alleviating a burden that otherwise tends to fall on women and children³⁴, and by providing the means to generate household income, these animals access and transport essential water resources for household and community use, and for other livestock's needs.^{35,36} This requires animals to be healthy, with adequate water supplies of their own to complete this work. In many parts of the world, agriculture and sanitation are integrated and involve other species such as insects, fish, shellfish, or pigs as wastewater processors.
- **As part of shared ecosystems**, animals support the healthy functioning of watersheds and the well-being of freshwater ecosystems on which WASH services depend, including in silvo-pastoral systems, where livestock, forage, and trees are integrated.

Widening the scope of issues addressed in WASH interventions to encompass animals thus provides a new practical entry point on which to begin tackling issues of inequity of access, water quality, mismanagement of water sources, water insecurity, and vulnerability to climate-induced changes in the water cycle.

Interactions at the animal-human-water interface matter to the achievement of several other SDGs

Interactions at the animal-human-water interface bring WASH to the fore as a key lever of action to achieve multiple targets across SDGs.

Water functions are the connectors between a multiplicity of human activities in which animals take part (see figure 2). As the sector responsible for the delivery of safe drinking water, access to sanitation, and hygiene, including animals in WASH is an adequate pathway to achieve impacts in a constellation of related fields of practice or SDGs, in which animals have a stake.

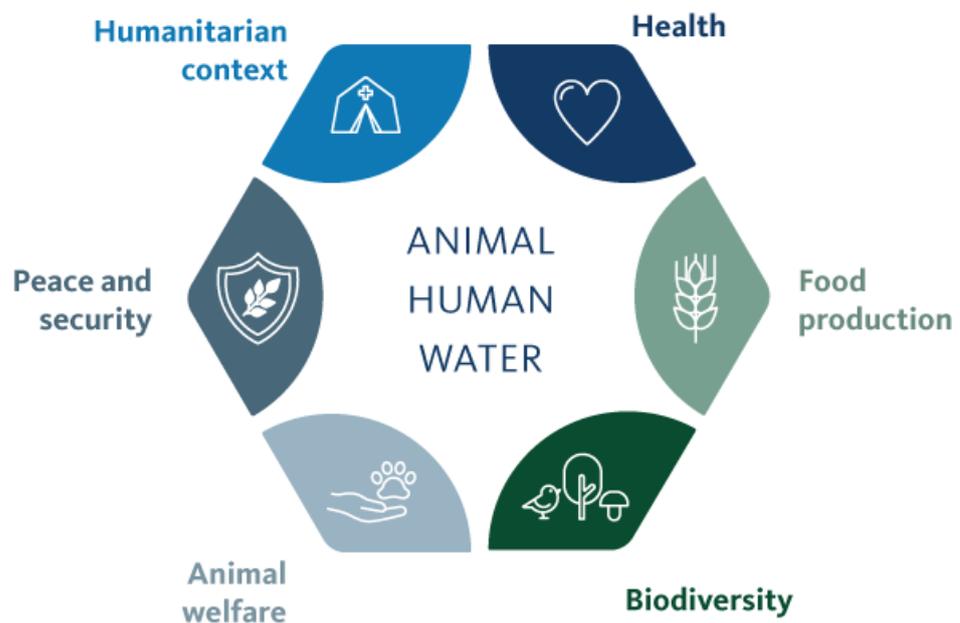


Figure 2: six integrated approaches to animals and WASH

Including animals in water and sanitation helps bridge the gaps between the fields of public health, animal health, the environment, agriculture, and sustainability. Improving water security for populations, while accounting for their companion species, is not only about managing health risks (SDG 3). Because of animals' importance in food production systems, a greater consideration for the water well-being of livestock is also a powerful pathway to safeguard food security (SDG 2) and to alleviate poverty (SDG 1). It can also contribute to a greater participation of women in society (SDG 5), as the task of animal care in many societies is often left to women.

Including animals in WASH contributes to political stability (SDG 16).

Competition for increasingly uncertain sources of water and contamination issues often involve animal agriculture, as in the case of conflicts between sedentary farmers and nomadic pastoralists^{37,38}. Problems of weak governance play a critical role in these

water-related conflicts. In addition, including livestock water needs in humanitarian water responses links the short-term supply of water needed for the survival of communities during crises to their long-term recovery needs.

Including animals in WASH contributes to greater integration of WASH and environmental conservation. Whether below water (SDG 14), or on land (SDG 15), biological diversity depends on healthy water systems. Aquatic and terrestrial ecosystems are increasingly degraded by human action. A growing body of research shows that inadequate sanitation and wastewater management negatively impacts all water bodies, including sensitive coral reef systems.³⁹⁻⁴⁴ This adds to the impacts of animal agriculture on water quality and the quantity available for wildlife. In this regard, WASH development and planning needs to address the growing competition over access to freshwater sources, one of the triggers of human-wildlife conflicts.⁴⁵

SDG 1- NO POVERTY

- Integrating animal concerns into WASH would help to preserve the health and welfare of livestock and working animals involved in water supply services, and support animals' contributions to poverty alleviation.

SDG 2 - ZERO HUNGER

- Adequate distribution of water benefits humans and animals. Ensuring water is free from pathogens contributes to food security, nutrition, and sustainable agriculture.
- Safe and adequate reuse of animal excreta in agriculture contributes to the productivity and sustainability of food systems, while reducing direct pollution of water bodies

SDG 3 - GOOD HEALTH AND WELL-BEING

- Water is a contamination route of pathogens for both human and animal faeces. It is a major contributor to the emergence and spread of anti-microbial resistance.
- An increase in mosquitoes is also linked to water and sanitation.

SDG 5 - GENDER EQUALITY

- As primary providers of water to the household, and carers of animals, women are often more vulnerable to changes in animal health or working capacities. The water well-being of these animals is key to many women's participation in society.

SDG 14 - LIFE BELOW WATER

- Better WASH services have a key role to play alongside industry stakeholders in safeguarding the health, welfare, and safety of aquatic animals, on which millions of people rely as their main protein source.

SDG 15 - LIFE ON LAND

- Freshwater ecosystems, on which all species depend, are affected by poor water and sanitation services, as well as by poor management of animal excreta.

SDG16 - PEACE, JUSTICE AND STRONG INSTITUTIONS

- Wildlife, aquatic species, and livestock are increasingly protagonists in human conflicts over water sources. Improved water and sanitation can contribute to addressing these challenges.

Figure 3: Synthetic summary of intersections between the animal-human-water interface and the achievement of other SDGs

Policy recommendations for integrating animals into WASH

Driving positive change in multispecies WASH communities will require cross-sector action, as well as the creation and improvement of the evidence base. Policymakers, WASH practitioners, and researchers seeking strategies for effective inclusion of animals in WASH can draw on the following recommendations:

For policymakers

There is a clear need for international, national, and local level policymaker leadership to champion ecosystem approaches to WASH systems that include animal issues.

Expand the understanding and use of the human right to water beyond access to drinking water, to include immediate domestic and cultural needs, in which animals play a role.

Why? The human right to water extends beyond access to safe drinking water.

The right to safe drinking water is recognized in the 2003 General Comment 15⁴⁶ as derived from the right to an adequate standard of living and health. Although priority in the allocation of water must be given to the right to water for personal and domestic uses, article 11 of the International Covenant on Economic, Social and Cultural Rights states that “Water is required for a range of different purposes, besides personal and domestic uses, to realize many of the Covenant rights. For instance, water is necessary to produce food (right to adequate food) and ensure hygiene (right to health). Water is essential for securing livelihoods (right to gain a living by work) and enjoying certain cultural practices (right to take part in cultural life).”

Animals play key roles in many of these water uses that are essential for human life.

How? Recognize that water issues involve multiple, equally valid ways of understanding water, in addition to technical and efficiency-oriented solutions. Seek insights from anthropology, sociology, and other social sciences to design solutions that include experiential and traditional knowledge practices, such as those of local, rural, urban, and indigenous populations, and various cultural and religious values that include animals.

Take biological and cultural diversity into consideration when planning water development. Various strategies can be implemented that support different life forms according to their needs. This might include the development of green infrastructure, such as water features that give space to water needs of other animal species, include wildlife access to water, or the implementation of sustainable soil management practices that improve soil biodiversity and water quality. They may also place limits on the use of antibiotics in livestock production systems. Measures to protect cultural diversity include: recognising worship rituals, specific hygiene needs, ways of washing clothes, animal watering, general household consumption, fishing, transportation, and small-scale industry, specific use of sacred lands, and the cultural importance of wildlife and ecosystem protection.

Support processes of dialogue and negotiation that are conducive to animal-inclusive WASH actions. The purpose is to create a problem definition that includes different aspects of animals' WASH contributions, needs, and impacts. This can be done by drawing from the various perspectives of stakeholders who are dependent from, or in contact with, animals (livestock caretakers, herdsman and women, fishermen and women, hunters, game wardens, beekeepers, conservationists, scientists, veterinarians, pet keepers, public health officials, ecosystem and wildlife managers, among others). Consultations should be carefully facilitated to solicit animal-informed, place-specific expertise for equitable and resilient water and sanitation solutions.

Strengthen national policies and action plans that align WASH and animal-related strategies to other sectors.

Why? WASH policies are not the only critical leverage points to ensure access to safe and accessible water and sanitation services to all. Also critical are policies in sectors that address issues linked to animals, humans, and water, such as environmental and agricultural policies, strategies to address anti-microbial resistance (AMR) and zoonoses.

How? **Review WASH and water policies** to examine if they address the most challenging dimensions of animal-related problems. Are zoonoses, AMR, environmental pollution and nutrient losses linked to both human and animal excreta addressed in WASH policies? In the case of livestock- and aquaculture-dependent communities and that of working animals involved in water provision, are the roles and contributions of animals acknowledged and supported in national and subnational WASH policy frameworks?

Ensure that One Health policies, strategies, and plans that are being developed include WASH. One Health is a coordinated approach across sectors that aims to achieve optimal and sustainable health outcomes for people, animals, and ecosystems. WASH must be involved in the design, implementation, and monitoring of these policies and legislation, as well as in programmes and research that are related.⁴⁷⁻⁴⁹

Ensure that animal-informed WASH is included in national policies and action plans. These might include economic development, the environment, biodiversity conservation, climate adaptation and resilience, disaster risk reduction, tackling deforestation, infrastructure planning, human and animal health, agriculture, and food security, both as problem prevention and treatment tools, and as the means to maximise synergies and benefits across these distinct, but interlinked areas. Ensure these policies and plans are underpinned by appropriate budget allocations for implementation, monitoring/reporting, and evaluation.

Support the production and adoption of guidelines that protect the welfare of animals served by water supply systems also serving humans.

Why? The adoption of policies does not automatically translate to quality implementation of the policies. Strategies to integrate animals into WASH practices must set standards for effective and respectful practices, cultivate community and cross-sectoral engagement, and support positive behaviour change.

Standards and guidelines inform, provide directions, and incentivise WASH stakeholders to implement animal-sensitive interventions and ensure that the interests of human and non-human stakeholders are acknowledged and accounted for in water supply services.

How? **Implement standards streamlining animal welfare into emergency WASH interventions.** Chapter 5 of the Livestock Emergency Guidelines and Standards⁵⁰ includes technical standards on water for the specific needs of livestock-dependent communities affected by humanitarian crises, including severe water deficits or extreme wet conditions. The Guidelines also offer recommendations on how to link short-term supply of water for the survival of communities during humanitarian crises to their long-term recovery needs.

Support the adoption and implementation of standards that protect the welfare of animals involved in water supply systems and provide commensurate budgetary allocations for their implementation. Efforts should be made to spread and implement the basic welfare standards for working equids (horses, donkeys, and mules) published by the World Organisation for Animal Health⁵¹, including through policies supporting the implementation and development of more specific standards based on the context in which the animals work.

Plan and manage WASH for biodiverse water ecosystems

Why? Freshwater ecosystems are a critical source of drinking water supply, and investments in their conservation are crucial for WASH programming. Reciprocally, increasing the treatment, recycling, and safe reuse of wastewater (SDG 6.3) and improving water use efficiency (SDG 6.4) can help reduce the burden on aquatic ecosystems.

In addition, transformations in water accessibility without regard to other species' needs can lead to increased human-wildlife interfaces and ultimately, human-wildlife conflicts.

How? **Develop WASH governance mechanisms at the watershed level, and through Landscape Sustainability approaches.** This can help to proactively integrate complementary approaches and explore biodiversity-related metrics that measure WASH success.

Develop models for effective treatment and the safe reuse of animal excreta. These models can contribute to healthy water ecosystems.

Improve the management of water-related human-wildlife conflicts. By including well-informed, holistic, and collaborative processes that consider the WASH context and underlying social, cultural, and economic contexts, conflicts are less likely to occur.⁵² Effective watershed management techniques that address the needs of humans, farm and working animals, and wildlife, have been suggested as a potential sustainable pathway to minimise those conflicts.

Realise the potential of nature-based solutions for WASH and animals. Nature-based solutions use or mimic natural processes to enhance water availability, improve water quality, and reduce risks associated with water-related disasters and climate change.⁵³ As such, they not only contribute to the achievement of water-related goals and targets of the 2030 Agenda for Sustainable Development, but also directly contribute to meeting several other interdependent goals and targets, including the preservation of other species' habitat.

Support community-led initiatives to promote dialogues and prevent water related farmer-herder and herder-herder conflicts

Why? The frequency, intensity, and geographical scope of conflicts that pit nomadic and semi-nomadic herders against each other and against farmers have increased in the past decades in. Cattle raiding and resource competition are increasingly deadly, and connected to organised crime. Violence has intensified due to governance failures in dealing with water scarcity and contamination, insecurity, and social and environmental injustices.

How? **Peacebuilding mechanisms need to include local rural communities.** These must include the community elders in areas that have been most affected by conflict. This should add to increased international community investments for climate adaptation and resilience, asset creation, electronic tagging of livestock, and livelihood activities that enhance communities' natural resource base and economic opportunities⁵⁴, and steps to be taken by state authorities to address the environmental factors that drive conflicts.

In contexts where water tensions involve livestock or wildlife, WASH governance for peace should be animal-sensitive. This means being informed about, and addressing, animal issues, and reducing risks for animals.

For WASH practitioners

WASH programmes applied simultaneously to human and animal populations are likely to provide better results than those centred only on humans. Thus, water, sanitation, and hygiene professionals need to be more aware of animals in their working environment.

Integrate WASH and One Health

Why? Household water is almost universally used for multiple purposes, both domestic and productive, including for livestock watering. Appropriate water service provisions need to respond to these integrated water needs.

In many contexts, the presence of livestock in the domestic environment entails specific health risks that need to be addressed through sanitation and hygiene interventions.

Applying a One Health approach to WASH builds on a broader conceptualisation of health that combines the approaches of veterinary, human, and water health, and addresses shared risks at the human, animal, and water interfaces.⁵⁵⁻⁵⁷

Animal-sensitive and/or animal-specific WASH interventions in contexts where livestock and humans live in close proximity help to prevent and control infections and antimicrobial resistance, and to enhance environmental health.

How? **Better consider the water uses for livestock and other animals in water system planning, designing, and management by supporting the implementation of Multiple use water services (MUS) schemes.** MUS is a participatory water services approach that takes into account people's multiple water needs – including watering livestock - as a starting point for planning.⁵⁸ Recognising the important and distinctive role of working animals in MUS is key, as they often underpin water access for other human and animal users.

Better consider livestock presence at homesteads through environmental sanitation approaches.⁵⁹ Environmental sanitation calls for delivering integrated interventions that improve health, and include vector control, solid waste, and safe animal excreta management and drainage.^{59,60} The emerging Animal inclusive Community Lead Total Sanitation (A-CLTS) method shares commonalities with this type of

approach. The method encourages the separation of animals and their excreta from human living environments, hygienic practices along the food chain, drainage, and waste management that includes waste related to livestock feeding, agriculture, and slaughtering.⁶¹ There are also some ecological sanitation solutions that utilize both toilet waste and livestock manures.⁶² Another example is the Baby WASH approach, which takes a holistic perspective on infant health, including the presence of animals in the household.⁶³ Approaches in line with Participatory Hygiene and Sanitation Transformation (PHAST), offer promising avenues for this type of standard-setting. The PHAST approach is a participatory learning methodology introduced by the World Health Organisation (WHO) that seeks to empower communities to improve hygiene behaviours, reduce diarrhoeal disease, and encourages effective community management of water and sanitation services, and environmental sanitation. It uses a participatory approach to community learning and planning that follows a seven-step framework.⁶⁴

Add the animal dimension to WASH sustainability and resilience frameworks

Why? The achievement of WASH goals requires moving to a broader and more complex understanding of WASH contexts. These contexts necessarily include animals.

Just like the agricultural and veterinary sectors need to be more aware of WASH, water, sanitation, and hygiene professionals need to become more aware of the animals in their working environments. This will help all sectors to better tackle issues of water insecurity and control hazards, and contribute to building peaceful, sustainable, and resilient communities that are better able to anticipate, prepare for, and adapt to changing climate conditions.

There are clear linkages between animals, people, water, and climate resilience. The connections exist both in terms of adaptation – animal health and welfare being a condition for human health, such as in a community’s capacity to resist and recover from shocks – and in terms of mitigation, through the adequate treatment and reuse of animal excreta.

How? Include animals’ different roles in relation to WASH in assessments of risks to the sustainability and resilience of WASH services.

Engage animal caretakers, especially women, in the process of researching, designing, and the monitoring of animal-inclusive WASH interventions

Why? Lessons from the Covid-19 pandemic demonstrate the importance of implementing measures that address complex issues, such as multiple transmission pathways, at both household and collective levels. Working with animal water issues, a topic not generally considered part of the WASH mandate, demands the active involvement of local actors with technical expertise, relevant skills, and the understanding of local contexts.

Engaging animal carers and people with traditional knowledge of wildlife can also help to support conservation processes and strengthen buy-in for integrated watershed management.

How? **Identify and facilitate opportunities to engage animal caretakers and legitimise their voices in water system planning, design, and management.**

Monitor and document initiatives

Why? Key to the success of integrative interventions is applying rigorous monitoring indicators that generate evidence of effectiveness. These indicators need to be recognized by multiple sectors to enable joint monitoring by the environmental, agricultural, WASH, and health sectors. Interventions need to apply evidence-based improvements.

How? **Define monitoring indicators that are recognised across sectors.**

Collect detailed and disaggregated data and report through relevant channels

For researchers

Political commitments and WASH actions must be reinforced by strengthened expertise. Significant empirical and conceptual gaps remain, despite increasing evidence of the multiple interrelations at the animal-human-water interface and their implications for water, sanitation, hygiene, and beyond.

Advance the evidence base through multisectoral collaborations

Why? Researchers inform WASH investment decisions through the evidence that they generate. However, knowledge gaps remain on the risks and opportunities for WASH that is associated with sharing water sources with different types of animal species. Academic literature on this interface remains largely fragmented by sectors, mirroring the fragmentation of the sector more broadly. A substantial proportion of the literature on animals and WASH tends to focus primarily on negative human health impacts. As such, this risks deterring potentially transformative shifts towards broader benefits for WASH and beyond, for animals, and for joined-up work in the field.

The WASH community needs to revert to more integrated perspectives on animal-inclusive WASH systems and what they concretely mean for WASH practitioners. This will help determine whether, how, and under what circumstances, WASH interventions can deliver sustainable improvements to the well-being of an increased number of stakeholders across species boundaries. This requires multi-disciplinary methods and collaboration across sectors to generate, interpret, and act upon evidence of impact.

How? **An example of integrated and cross-disciplinary work is provided by the Whole Genome Sequencing**, a surveillance technology piloted by the FAO and FDA to inform farmers and producers of safe water.⁶⁵ The technology offers a better understanding of the connections between water quality and food safety, how to safeguard human health, implement sustainable agriculture, and improve environmental outcomes.

Further research is needed to explore how animal sensitive initiatives, such as One-Health programmes, might support social stability and resilience, and create conducive conditions for improving animal welfare, and/or improve human-animal relationships.

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