

Towards win-win solutions for sanitation policy and climate action



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The IPCC's Fifth Assessment Report (AR5) states with "very high confidence" that the most effective measures for reducing vulnerability to the health impacts of climate change in the short-term include "programs that implement and improve basic public health measures such as provision of clean water and sanitation". The report also notes that addressing deficits in essential services, including sanitation, can "significantly reduce hazard exposure and vulnerability to climate change" in urban areas "especially for those who are most at risk or vulnerable".

However, to date the role sanitation has played in climate action has been negligible. At the same time, sanitation policy and practice frequently overlook important climate considerations – around both adapting sanitation services to climate impacts, and mitigating the greenhouse gas (GHG) emissions linked to service provision.

This policy brief sets out the evidence for increasing synergies between climate adaptation and sanitation development while minimizing related GHG emissions, and makes a set of recommendations.

Sanitation services are one of the most effective ways to reduce vulnerability to climate change, according to the International Panel on Climate Change. This brief describes some key links between climate action and sanitation services, and suggests routes to more coherent climate and sanitation policies.

Sanitation and adaptation: a missed opportunity

Nationally determined contributions (NDCs) under the Paris Agreement, while non-binding, are still expressions of countries' priorities in their responses to climate change. Using the data underlying the NDC-SDG Connections tool developed by SEI and the German Development Institute, it is possible to see that only 2% of activities listed in the NDCs that relate to Sustainable Development Goal 6 (Clean Water and Sanitation) are about sanitation (SDG target 6.2) and 3% are about wastewater management (SDG target 6.3). Furthermore, those that do exist are concentrated in a handful of countries.

Similarly, while climate finance could potentially make up some of the large shortfall in funding to reach SDG targets 6.2 and 6.3 by 2030, through sanitation-focused climate action, it has not done so to date. A study of all project proposals approved by the Green Climate Fund (GCF) board up until 1 April 2019 revealed that GCF funding for sanitation-related work represented less than 0.025% of all approved project budgets. And in 2017, only 3% of climate-related official development assistance (ODA) for the water supply and sanitation sector went to projects targeting mitigation and adaptation related to basic sanitation and large sanitation systems.

IMAGE (ABOVE): Dry toilet in flood, Bangladesh
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When sanitation is considered in the context of adaptation, investments tend to be in hardware "add-ons" to existing systems – such as "flood-proofing" toilets or

separating stormwater and domestic wastewater to avoid systems being overwhelmed during heavy rains.

This is reinforced by the eligibility criteria for climate finance. Concrete technological investments are easier to justify as being additional than are “soft” adaptation measures such as improved planning, institutional and regulatory arrangements, capacity building, monitoring, public awareness or behavioural responses. However, these soft measures can often have a much greater positive impact on the climate resilience of sanitation services, and of the communities they serve, for a much smaller investment.

In addition, integrating these soft and hard adaptation measures with work to extend and improve sanitation services can mobilize additional funds for sanitation, while significantly reducing vulnerability and other health and socio-economic disadvantages in underserved communities.

Sanitation service planning and climate mitigation

Another interaction between sanitation and climate action concerns GHG emissions from sanitation services. Human waste, being largely organic, is a major potential source of greenhouse gases as it decomposes. In particular, anaerobic decomposition of faeces and wastewater produces the potent GHG methane. Furthermore, the transport and treatment of human waste within a sanitation system also often demand significant amounts of energy – another driver of emissions.

For instance, in China, urbanization and associated growth in the number of wastewater treatment plants led to an increase in domestic wastewater GHG emissions of 400% between 2000 to 2014, while emissions due to the increased production and treatment of wastewater and sludge are projected to make the metropolitan area of Santiago account for around half of Chile's national emissions by 2027.

GHG emissions from sanitation services cannot be ignored by the sanitation and wastewater sector, even when it comes to decentralized and on-site systems. They also provide another argument for directing more climate finance towards sanitation, as the design and operation of sanitation systems offers many opportunities to mitigate or avoid emissions.

As an example, on-site sanitation systems are likely to play a large role in expanding sanitation service access in many unserved areas. The default on-site technology for programmes in most low- and middle-income countries is the pit latrine. These produce significant amounts of methane, especially as the pit fills up. In areas where the water table is high, pit latrines tend to produce even more methane. An alternative, on-site composting toilets, produce less methane, while also creating safe and effective agricultural fertilizers and soil conditioners. Methane production in septic systems also can be reduced by more regular emptying.¹

Sanitation and wastewater systems at all scales can even be adapted to produce biogas, potentially increasing energy access and substituting wood or fossil fuels. Systems can be designed to use gravity to reduce the energy input needed to transport waste. In some topographies, gravity can even be used to generate power from waste flows.

¹ In a new study, McNicol et al. estimate that another alternative, off-site composting of faeces, could mitigate 3.97 Tg of methane a year, if extended to all today's slum residents worldwide – between 13% and 44% of all sanitation-related methane emissions (McNicol et al. 2020).

Steps towards coherence in climate and sanitation policy

There are strong reasons to give sanitation a more prominent role in climate action, and to give both climate adaptation and mitigation greater consideration in the development of sanitation services. Given the much greater financial resources available to climate action, it also makes sense to mobilize climate finance to support greater provision of essential services, including sanitation, which are known to play a key role in increasing climate resilience and reducing vulnerability and poverty. As the World Health Organization states in its “Manifesto for a healthy recovery from COVID-19”, resilience to future pandemics would be an important co-benefit of providing better water and sanitation services (WHO 2020). To date, however, the response to COVID-19 has rarely included promoting sanitation, particularly for vulnerable households not connected to a sewerage network (Giné et al. 2020).

Below are some suggested steps that could improve coherence between climate and sanitation policy and action.

Research and knowledge development

Sizeable knowledge gaps are both a symptom of and a contributing factor in the scant attention that has been paid to the connections between sanitation development and climate. Future research programmes could aim to:

- increase knowledge on how climate change impacts are mediated by sanitation conditions. This should include a more detailed understanding of the links to health, such as emerging diseases like COVID-19, increases in antimicrobial resistance, and changes in the prevalence and distribution of waterborne and vector-borne diseases.
- more systematically assess the GHG emissions from different sanitation technologies, to better inform decision-making in the sector, whether it involves selection of on-site technologies in low-income countries or upgrading of wastewater treatment plants in high-income countries.
- develop and improve tools to measure and monitor emissions from sanitation systems. In particular, tools are needed that are tailored for systems beyond the jurisdiction of water and wastewater utilities. For example, the Energy Performance and Carbon Emissions Assessment and Monitoring (ECAM) tool (www.wacclim.org/ecam/) could be adapted for decentralized or on-site sanitation systems.
- provide a more comprehensive understanding of the role of essential services, including sanitation, in climate adaptation.

Operationalizing and testing frameworks to inform planning

A number of planning frameworks for sanitation and WASH more broadly could be adapted to better cover climate-sanitation links. Evidence generated with these tools can then be used to inform planning decisions.

- Adapt existing planning frameworks to be stronger on climate and sanitation links, and operationalize and evaluate them for different development contexts. The Strategic Framework for WASH Climate Resilience developed by the Global Water Partnership and UNICEF could be adapted to better cover climate mitigation options linked to sanitation.
- Expand the WHO Sanitation Safety Planning approach (SSP) to include climate considerations more comprehensively.
- Promote use of new evidence to effectively integrate climate change into sanitation policy, planning and programming.

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Capacity development

Developing the capacity of stakeholders in the water and sanitation sector about links between sanitation and climate action could not only support more climate-friendly practice and decision-making around sanitation, but also help them to spot opportunities for integration with climate action and to mobilize climate finance.

- Provide guidance to sanitation and wastewater sector decision-makers on how to address the growing challenges for sanitation and wastewater presented by climate variability and change, identifying areas in need of further support and articulating costed and prioritized plans.
- Raise awareness among key sanitation and wastewater stakeholders of connections between sanitation and climate mitigation and adaptation. Raise their capacity to apply for climate finance particularly in least-developed countries and for projects that ensure equitable access to sanitation through resilient and low-emission systems.
- Encourage cooperation between stakeholders in climate, sanitation and wastewater sectors in order to include more sanitation-related actions in NDCs.

References

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