

ATACH Technical Meeting Summary:
Waste and WASH actions for Low-Carbon, Sustainable and Resilient Health Care Facilities

19 March 2026, 09:00 and 15:30 Geneva time

[Session 1 recording](#)

[Session 2 recording](#)

Introduction and background:

Waste and water, sanitation and hygiene (WASH) are areas of interest and opportunities for health systems seeking to lower their greenhouse gas emissions, become more sustainable, and resilient to climate change. As expressed by ATACH country members during the June 2025 Technical meeting on Introduction to Action Planning for Low-Carbon Sustainability in Health Systems & Facilities and in country needs and priorities identified in ATACH, waste and WASH are a priority for many health systems.

Meeting objectives:

- ATACH member countries will increase their knowledge and understanding of the World Health Organization (WHO) guidance around waste and WASH for health systems and facilities, in relation to climate change mitigation and adaptation
- ATACH member countries will learn from each other on actions that have already been taken by some countries to decarbonize, increase resilience, and/or sustainability – and how they are measuring gains
- ATACH member countries will share challenges and lessons learned – and what additional guidance might be needed in the near future to address waste and WASH issues in their systems for low-carbon, sustainability and resilience to climate change.

Summary of discussions:

Key points discussed
<ul style="list-style-type: none"> • The WHO guidance for climate resilient and environmentally sustainable health care facilities (CRESHCF) framework provides a comprehensive basis from which to implement low-carbon and sustainable WASH and waste interventions • A number of practical interventions exist including installing on-site back-up water supplies, raised water storage, raising toilets/latrines, reducing and recycling waste, and installing non-burn waste treatment technologies • Countries include services through a climate approach. • Efforts are most successful when coupled with national policies and funding • Interventions at the facility level provide direct economic savings (e.g. in Brazil over 18,000 USD saved/month) in fixing leaking pipes in one hospital and nationally costs are relatively modest compared to domestic health spending • Analyzing needs, climate risks, etc. is important for prioritizing investments and interventions

- A large amount of health care waste can be reduced (e.g. by selecting reusable products, unnecessary disposals for surgery and non-indicated PPE) and recycled.
- Non-incineration healthcare waste management techniques offer emissions reductions

Country needs / priorities identified (if any)

- Scaling up interventions with a comprehensive approach; including addressing basic gaps in services
- Procurement and waste management guidelines may need updating to facilitate uptake of low-carbon products and technologies and practices
- Enhanced monitoring and enforcement of existing standards is indicated

Proposed next steps

- Continue to support collaboration between WASH, waste and climate communities on effective interventions within health care facilities
- Document and share country examples of overcoming roadblocks and success stories. Country case studies can be developed using the ATACH template available here: <https://www.atachcommunity.com/our-impact/case-studies/call-for-case-studies>

Key resources/tools for implementation

- Costing analysis of WASH and waste interventions in the least developed countries: <https://iris.who.int/items/2fa859e2-17b7-49c5-b75d-6ae0eda1fb63>
- List of water treatment technologies that meet WHO performance standards: <https://iris.who.int/items/2fa859e2-17b7-49c5-b75d-6ae0eda1fb63>
- Safe management of health care waste <https://www.who.int/publications/i/item/9789241548564>
- Overview of treatment technologies for health care waste: <https://www.who.int/publications/i/item/9789241516228>
- WHO/UNICEF global knowledge portal on WASH and waste in health care facilities: www.washinhcf.org
- Global data on WASH and waste services in health care facilities: www.washinfo.org
- Waste management tracking tools <https://global.noharm.org/health-care-waste-trackers-interactive-toolkit>
- Climate Impact Checkup Tool <https://www.atachcommunity.com/resources/resource-repository/measuring-greenhouse-gas-emissions-in-health-systems/>
- Climate Impact Checkup course: <https://global.noharm.org/news/online-course-climate-impact-checkup-tool>
- Reusable Textiles: training course and tool <https://global.noharm.org/news/textiles-course>
- Smart Buys: High-Value Actions for Health Sector Adaptation: <https://www.atachcommunity.com/resources/resource-repository/smart-buys-high-value-actions-for-health-sector-adaptation/>

ANNEX: Meeting Agenda

First Session: 09:00-10:30 CET

Meeting Chair: Dr. Megha Rathi, WHO (introductions), Dr. Amy Savage, WHO (discussion moderation)

Time	Agenda Item	Speaker
09:00 - 09:05 <i>5 min</i>	Welcoming remarks	Dr. Diarmid Campbell-Lendrum, WHO
09:05 - 09:20 <i>15 min</i>	Technical presentations <ul style="list-style-type: none"> • WHO Tools on Building Climate-resilient and low-carbon health care facilities • Climate-resilient, sustainable and low-carbon WASH in Health Care Facilities • Reducing carbon emissions from health care waste management interventions 	Elena Villalobos Prats, WHO Dr. Maggie Montgomery, WHO Ruth Stringer, Health Care Without Harm (HCWH)
09:20 - 10:00 <i>40 min</i>	Country experiences Lao PDR, Nepal and Ethiopia	Lao PDR- Dr Viengkhan Pixay, Deputy Director General, Department of Hygiene and Health Promotion, Ministry of Health, Lao PDR and Lkhasuren Oyuntogos, WHO Lao PDR Office Nepal - Dr Sudan Raj Panthi, WASH, Water Quality, Environmental Health Officer, WHO Nepal Ethiopia - Misganaw Tewachew, Climate and Health Focal Point, Ministry of Health
10:00 - 10:25 <i>25 min</i>	Discussion and Q&A	Dr. Amy Savage, WHO
10:25 - 10:30 <i>5 min</i>	Closing remarks / next steps	Dr. Diarmid Campbell-Lendrum, WHO
<i>End of meeting</i>		

Second Session: 15:30-17:00 CET

Meeting Chair: Diana Picon Manyari, Health Care Without Harm (HCWH) International Climate Senior Director

Time	Agenda Item	Speaker
15:30 - 15:35 <i>5 min</i>	Welcoming remarks	Diana Picon Manyari, HCWH
15:35 - 15:50 <i>15min</i>	Technical presentations <ul style="list-style-type: none"> • WHO Tools on Building Climate-resilient and low-carbon health care facilities • Climate-resilient, sustainable and low-carbon WASH in Health Care Facilities • Reducing carbon emissions from health care waste management interventions 	Elena Villalobos Prats, WHO Lindsay Denny Naughton, UNICEF Ruth Stringer, HCWH
15:50 - 16:30 <i>40 min</i>	Country experiences: Nigeria, Belize and Brazil	Belize, Dr. Isani Chan, Ministry of Health and Wellness, Belize Nigeria, Chiranjibi Tiwari, Climate Change & WASH Manager, UNICEF Nigeria Brazil, Fernando Lira, Sustainability Coordinator, Santa Casa da Bahia
16:30 - 16:55 <i>25 min</i>	Discussion and Q&A	Diana Picon Manyari, HCWH
16:55 - 17:00 <i>5 min</i>	Closing remarks / next steps	Diana Picon Manyari, HCWH
<i>End of meeting</i>		

Q&A- responses to common questions during the webinar

1. *How can WASH systems in health facilities be designed to be both climate-resilient and low-carbon while ensuring patient safety?*

Climate-resilience and low-carbon designs should be considered at the start of any WASH in Health Care Facilities (HCF) intervention, taking into account the unique climate-related risks

and vulnerabilities at the HCF. All recommended interventions – ensuring a reliable water source, providing on-site water treatment when quality is unknown or poor, sufficient water storage, desludging of pit latrines, installation of backflow protectors, repairing pipes – will ensure that the HCF can operate as continuously as possible while making limited impact on the environment. These measures reduce the need, for example, of water trucking, which is highly carbon intensive and costly. Other recommendations, like water quality testing, preventative O&M, and sanitary inspections, are not only important for CRESHCF but also for basic functioning of WASH services. -chlorination one of simplest and cheapest treatment options; WHO also tests low cost treatment technologies, some of which are applicable for health care facilities, just launched latest report, of 51 technologies, 8 fail to meet WHO standards (or performance undetermined), multiple barrier technologies (e.g. filter + disinfection) often most effective.

2. *What are the options for waste and wastewater management for low-carbon facilities?*

It is important to ensure all fecal material is contained and all liquid effluent are treated on-site and infiltrated to soil through leach filed or discharged to sewer, treated and safely disposed. If it is not possible to infiltrate effluent after treatment, it should be disinfected in a baffle tank providing adequate contact time before releasing into the environment beyond the health facility. Low cost sanitation treatment that provides at least secondary treatment that includes: septic tanks, anaerobic baffle reactor, anaerobic filter, waste stabilization ponds (need to be careful about mosquitoes and other vectors), constructed wetlands, sufficient space, infiltration capacity and desludging services (septic tank 3-5 years, anaerobic baffle reactor 1-3 years). One might consider treatment with high concentration chlorine or lime (30%) in cholera outbreak settings. It is important to prevent standing water (wastewater, greywater or rainwater) which can become breeding grounds for mosquitoes and risks associated with malaria, dengue, zika and other mosquito borne diseases that are increasing worldwide.

3. *What are the low-carbon health care waste treatments in a healthcare setting? and what are the advantages of non-burn/ low-carbon waste treatment systems?*

The process of incineration aims to convert all carbon in the waste to carbon dioxide; hence it will inevitably be a high-emission technology. As a large percentage of healthcare waste is plastic, when it is burned it leads to emissions of furans.

Steam based waste disinfection technologies like autoclaving and microwaving offer a lower carbon footprint, especially if they are supplied by electricity from renewable sources. They do not generate toxic emissions.

Autoclaves need to heat water to high temperatures and pressures, and that can often require three phase power supplies, which may not be available in all settings. Waste microwaves, especially those without shredders, can require less power and may be better suited to low

remoter or off-grid settings. It is important that after waste is treated by autoclaving or microwaving that is clearly marked as non-hazardous and it can enter the normal waste stream, ideally in an engineered, controlled landfill.

Low-tech incinerators also create and emit toxic chemicals like dioxins and furans to the local environment. High-tech incinerators, designed to meet the guidelines of the Stockholm Convention, cost many millions of dollars to construct and are costly to operate. They run 24-hours a day, typically process tens of tonnes of waste each day and need large quantity of energy to operate. Whereas, the non-burn technologies such as microwaves and autoclaves are much smaller and take less space and resources to install.

4. *What are the Principles of HCWM and low-carbon technologies- advantages and benefit including cost analysis*

- Examples of cost-effectiveness of WASH and waste interventions?
 - Additional water storage for up to 72 hours
 - Pipe repair, install backflow protectors
 - Rainwater harvesting
 - Clear drainage
 - Chlorinate water source (on-site)
 - Raise latrines/toilets above flood level
 - More frequent emptying of septic tanks in the rainy season
 - Routine water quality testing and sanitary inspections
- Interventions that promote equity, particularly for vulnerable populations?
 - For WASH, all climate-resilient interventions can promote equity but again this needs to be considered during the design phase:
 - For example: Climate-resilient sanitation interventions need to take into account disability access and Menstrual Hygiene Management (MHH), such as raised toilet blocks with a suitable ramp.

5. *What about cost effectiveness and financing?*

It is important to include climate-resilient and sustainable services as part of costed and financed national plan (e.g. Ethiopia). And there is a need to encourage leaders to invest; basic WASH and waste services are affordable, costing 6.5-9.6 billion USD **from 2021-2030** in the 46 LDCs to achieve universal basic services; **0.60 USD/capita/year** or about of the 10 USD/capita LDC government spending on health (6% of existing health budgets) ; waste management nearly 50% of costs in part because of high treatment costs, thus reflecting need even more for waste reduction, good segregation, and more centralized treatment.

[https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(22\)00099-7/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(22)00099-7/fulltext)