



Solve Challenge: Strengthening Healthcare Waste Management in Nepal



Winnovators

Developing skills, ideas, futures



The Challenge

Design innovative solutions for strengthening healthcare waste management in Nepal for safer health facilities and healthier communities to reduce infection risk, environmental contamination and occupational hazards.

Despite the availability of National Health Care Waste Management (HCWM) standards and Standard Operating Procedures (SOPs), implementation is weak or limited in most Healthcare Facilities (HCFs) including birth centres. Nepal is facing significant gaps in HCWM especially at primary healthcare facilities.



Summary

In most HCFs, awareness of the national HCWM standards and SOPs is limited, especially regarding healthcare waste segregation. Unsafe practices remain in common, including open burning, mishandling of sharps, poor waste segregation, poor infrastructure and limited waste treatment capacity and inadequate storage. These practices continue to expose health workers, waste handlers, patients and communities to infection risks and environmental contamination.

Evidence shows a high needle-stick injury prevalence (21.3%) among clinical staff. Strengthening HCWM systems is critical to improve infection prevention and control, occupational safety, environmental health, and climate resilience in Nepal.



Summary Cont'

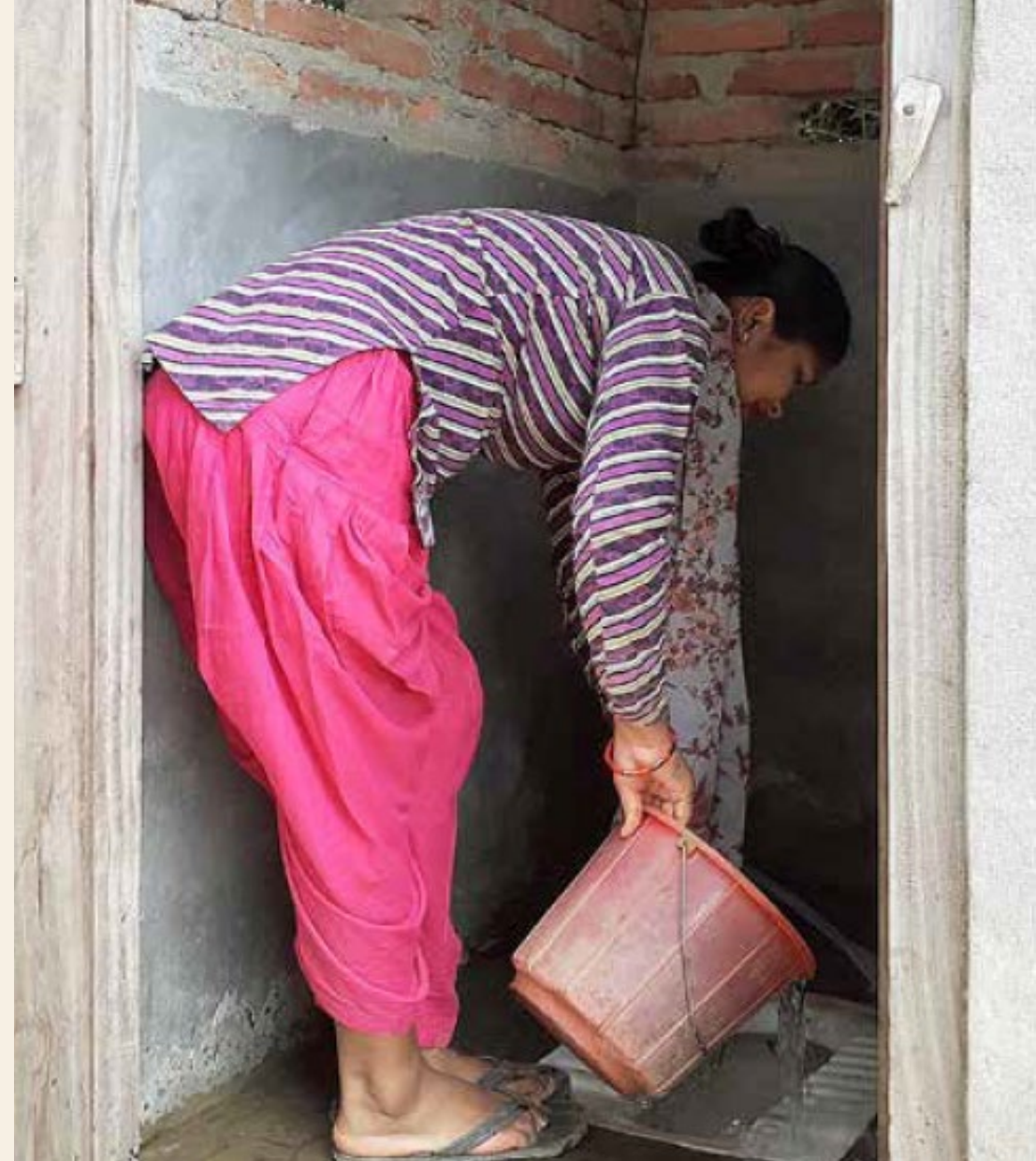
Despite national standards and growing government commitment, implementation remains inconsistent. There are significant gaps between the national HCWM standards and actual practice at HCF level.

This challenge seeks innovative and practical solutions across the full HCWM pathway, starting from waste segregation at source, safe handling and storage, waste treatment to final healthcare waste disposal leveraging technology, behaviour change and system strengthening to protect health workers, patients, communities and the environment.



Background

In alignment with committed conventions and reaching the Sustainable Development Goals (SDGs) timely, the Ministry of Health Population (MoHP) formulated the National HCWM standards and SOPs (2020) aligned with WHO global guideline. However, most of the HCFs including birthing centres are lacking awareness on national SOPs which leads to poor waste segregation, unsafe handling and improper disposal of healthcare waste. Many HCFs are lacking resources such as trained personnel, functional waste treatment technologies, proper storage areas and appropriate waste segregation bins and containers. Therefore, HCWM remains one of the major public health and environmental concerns in Nepal.



Background Cont'

Evidence shows that, Nepal is generating 0.178-1.608 kg of healthcare waste per day in primary healthcare facilities and 1.818-3.3 kg per bed per day in hospitals¹. This demonstrates the growing burden that healthcare waste places on the health system, particularly where safe segregation, treatment of hazardous waste and safe disposal mechanisms are absent.

Additionally, successful national immunisation services is generating increasing volume of waste, such as vaccine vials, used syringes, needles, safety boxes and packaging materials, contributing to the existing wider HCWM challenges. Due to lack of proper knowledge and unsafe handling practices of waste increase the risk of needle-stick injuries, infection and environmental exposure for healthcare workers, HCFs staff including waste handlers and surrounding communities.

¹ Health Care Waste Management Practice in Health Care Institutions of Nepal. Joshi et al. 2017



The key challenges include:

1. Unsafe waste handling and disposal

- Despite government guidance discouraging the practice, open burning is common at most of the healthcare facilities, releasing toxic pollutants including dioxins and furans.
- Autoclaves are only being used for sterilising equipment and are rarely used for treatment of infectious healthcare waste.
- Poor segregation of waste results in infectious and hazardous waste being mixed with general waste.
- In many facilities, immunization waste such as used syringes, needles and vaccine vials is not consistently segregated or safely disposed of.

2. Inadequate resources and infrastructure

- Lack of functional needle cutters, personal protective equipment (PPE), dedicated HCWM zones, trained staff and colour-coded bins as of national standards and protocol.
- Segregated HCW is often mixed up with general municipal waste and disposed in open landfill sites.
- Lack of appropriate waste treatment technologies at HCF/ Local Government.



The key challenges Cont':

3. Environmental and occupational health risk

- Unsafe handling practices and lack of PPE increase the risk of needle-stick injuries, infections and occupational exposure among healthcare workers and waste handlers.
- Emissions from open burning of healthcare waste contribute to air pollution and environmental harm.
- Soil and ground water contamination from poorly constructed waste pits.

4. Infrastructure and system readiness

- Many HCFs lack sharp pits, HCWM zones, waste storage areas and clear waste management workflows.
- Lack of targeted intervention at HCF level, such as training, infrastructure support, supportive supervision & routine monitoring.



Topline areas for HCWM gaps framework:

1. Institutional readiness

- Lack of designated human resources for HCWM.
- Inadequate infrastructure including waste zone, treatment technologies, segregation bins, PPE, sharp pits etc.

2. Capacity building of HCF staff on HCWM

- Insufficient or lack of training to HCFs including waste handlers and support staff.

3. Hazardous HCW treatment and storage

- Lack of proper storage bags/ containers and designated storage area.

4. Governance aspect

- The National HCWM guideline does not adequately address immunisation waste management.
- Supervision & monitoring of HCW is neglected.
- Alignment with private sector for potential recyclable healthcare waste items.



What will you submit

A solution in the form of **one or more** of the following:

- 💧 1,000-word report (excluding appendices, which should not exceed five pages)
- 💧 A3 poster/board
- 💧 5-minute video
- 💧 10-slide PowerPoint

Final submissions are due by Wednesday 30 September 2026.



What can you win



Best Solve – Strengthening healthcare waste management in Nepal

Best Solve – Addressing chemical water quality challenges in groundwater in Nepal

For the judging rubric, refer to the ‘Final submission instructions and information’



If your team excels in the Solve and Fund Challenges, you will win the title of:

Winnovators Overall Champion



How WaterAid supports you

- 💧 A Resource Library hosting case studies, background documentation and submission of winning teams of previous years will be available at the Winnovators website.
- 💧 Webinars at the launch and mid-way through the program will be organised for an opportunity to meet with representatives from the Nepal team and our Program team and talk through the Solve challenges.
- 💧 Each team's work will be assessed by an expert panel. Various awards are up for grabs as teams compete with each other.



What are the next steps

- ◆ Start thinking about the framework of your selected 'Solve' challenge.
In no more than 500 words, prepare an outline and send to WaterAid at auswinnovators@wateraid.org.au. This is not part of the submission judging but is meant to help you establish a clear framework from the start and allow WaterAid to provide feedback on your initial direction and thinking.
- ◆ Check out the Submission Examples in the Resource Library on the website for ideas on the scope and format of submissions.
- ◆ Don't forget to capture your journey! Remember to take photos during your meetings, discussions, and activities, and share them with WaterAid to document your Winnovators experience.
- ◆ Contact the Winnovators team at WaterAid with questions – we're here to help: auswinnovators@wateraid.org.au.





Photo: WaterAid/Mani Karmacharya

Thank you