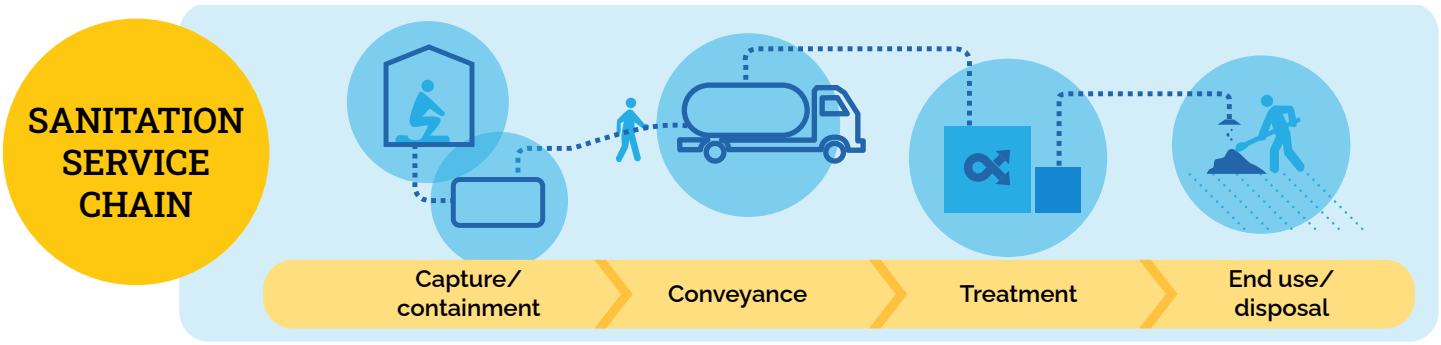
A Quick Guide to Sanitation, Health & Climate

World Health Organization
REGIONAL OFFICE FOR South-East Asia

Climate impacts on sanitation are likely to have wide-ranging impacts on health. The time to act is now.

The ongoing push in countries of South-East Asia to improve sanitation services must include climate-sensitive planning to safeguard systems against floods, droughts and other impacts. This guide provides an overview of ways that health advocates and decision-makers can take action.

How will climate change affect health and sanitation in South-East Asia?



Health risks: Increased cholera and other diarrhoeal diseases; more parasitic infections; malnutrition in children, especially stunting; more foodborne illness such as salmonella

Overarching risk: People are exposed to faecal pathogens

CLIMATE RISKS	Capture/ containment	Conveyance	Treatment	End use/ disposal
More tropical storms and extreme rainfall > flooding	• Toilets overflow, break • Pits, septic tanks and trenches flood, collapse	• Sanitation workers unable to work • Transportation disrupted • Sewer damage • Sewage backflow	• Floodwater disrupts treatment • Effluent runs into groundwater • Damage to facilities	• Improperly treated sewage contaminates groundwater • Damage to reuse pipes
Drought and higher temperatures	• Increased open defecation as flushing becomes impossible • Damage to pits, septic tanks	• Blockages in transit pipes • Moving soil cracks pipes	• Effluent leaks from cracked tanks,pits • Temperature extremes disrupt composting toilets	• Increased reuse of untreated effluent
Rising sea levels	• Salt water corrodes, collapses pits, septic tanks	• Corrosion, shortened lifespan of pipe network	• Reduced effectiveness of treatment	• Increased salinity of waste reduces suitability for reuse on crops



PARTNERSHIPS ARE KEY

Planning for climate-resilient sanitation requires collaboration of health and public works officials, as well as specialists in climate, engineering, hydrology and disease surveillance. Community participation will maximise impact.



CLIMATE CHANGE AND TOILET SYSTEMS

Across the region, all toilet systems are vulnerable to climate change. The most vulnerable communities are in areas where the provision of sanitation services is already difficult. Climate change will make those challenges harder to manage, especially in these areas:

- Coastal areas
- Along river banks, and
- In high-density, urban informal settlements

People particularly at risk include:

- Lower socio-economic groups are less able to climate-proof sanitation facilities
- Children, the chronically ill and the elderly are likely to suffer severe health effects from diarrhoeal disease and infections
- Women and girls are at risk of infection due to lack of water and poor hygiene, and psychosocial stress

What can we do?

Climate resilience on health and sanitation requires planning to assess risks, determine priorities and manage action. The actions below will both prepare for disasters and improve everyday operations.

Improve design

- Develop climate-resilient sanitation safety plans
- Integrate management of land and water resources
- Strengthen disaster preparation

Choose appropriate sites

- Locate facilities away from areas prone to floods and saltwater intrusion

Improve services

- Safe, regular pit emptying, especially before seasonal flooding
- Regular monitoring and inspection of infrastructure, operations, temperatures and site conditions
- Treatment management plans addressing flood, drought and temperature risks
- Disposal of waste away from drinking water sources and productive land
- Early warning and emergency response systems

Pursue innovation and alternative approaches

- Alternative water sources for flushing (e.g. saltwater, greywater)
- Affordable latrine options, including low-cost, temporary facilities that can easily be moved or rebuilt
- Smaller, decentralised wastewater systems (DEWATS)
- New technologies, such as sewer mining and salt-tolerant microorganisms for wastewater treatment
- Subsidy programs that encourage households to improve their toilets

Engage communities in the solutions

- Localised disaster planning addressing sanitation risks
- Household and community campaigns on: disaster preparedness, water conservation, hygiene, water storage and reuse and latrine maintenance
- Community-managed, timed flushing initiatives

WHO resources to inform action

- Compendium of WHO and other UN guidance on health and environment Chapter 3: WASH
- WHO SEARO Health-Climate Advocacy Toolkit