INDIAN INSTITUTE of PUBLIC HEALTH GANDHINAGAR

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IIPHG/OW/OCT/10/2024/25
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To,
National Institute of Disaster Management
Ministry of Home Affairs, Government of India
Plot No. 15, Pocket-3, Block-B
Sector-29, Rohini, Delhi-110042

Subject: Submission of Best Practice Entry for Urban Resilience Knowledge Platform

Respected Sir/Madam,

Warm greetings from the Indian Institute of Public Health Gandhinagar (IIPHG)!

The Indian Institute of Public Health Gandhinagar (IIPHG), India's first Public Health University, is dedicated to building a healthier nation; established through an agreement between the Government of Gujarat and the Public Health Foundation of India (PHFI), aims to strengthen public health systems and improve health outcomes. IIPHG develops the public health workforce, advances research, and promotes evidence-based practices

IIPHG is currently working on a project focused on establishing **Green and Climate Resilient Healthcare Facilities in Gujarat**, with the support of the United Nations Children's Fund (UNICEF) Gujarat and the National Health Mission (NHM) Gujarat. This study aims to make selected healthcare facilities climate-resilient. Recognizing the significant threats posed by climate change, particularly under 5 key components: Energy Conservation, Water Management, Smart Building, Green Healthcare Facilities, and Waste management,

We are pleased to submit our entry for the Urban Resilience Knowledge Platform initiated by the National Institute of Disaster Management (NIDM). Our institution is committed to advancing sustainable urban development and enhancing resilience against the impacts of climate change.

This submission focuses on the initiative undertaken by the Indian Institute of Public Health Gandhinagar (IIPHG), with support from UNICEF and NHM Gujarat. We believe our work exemplifies the principles outlined in your call for entries and offers valuable insights for cross-learning and collaboration. We greatly appreciate the collaborative efforts made thus far.

For more information, please contact me at director@iiphg.org or my colleague Dr. S. Yasobant yasobant@iiphg.org/ 9861357331.

Thank you for considering our submission. We look forward to the detailed contribution.

Thanks & Regards

Indian Institute of Public Health ★ Gandhinagar ★ Director

Dr. Deepak B. Saxena
Director
Indian Institute of Public Health Gandhinagar

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Vulnerability to Sustainability: Enhancing Healthcare Resilience in a Changing Climate in Gujarat

CONCEPT NOTE

Sandul Yasobant, Shrankhala Mishra, Princey Verma, Nageshwar Patidar, Jayesh Solanki, J.M. Katira, Deepak B. Saxena

Theme: Disaster Risk Reduction (DRR)

Sub-Theme: Emergency Preparedness

Title: Vulnerability to Sustainability: Enhancing Healthcare Resilience in a Changing Climate in Gujarat

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1. Before Situation

Climate change severely impacts lives and ecosystems, particularly affecting essential services like medical emergency services, hazardous waste management, etc. The goal of achieving universal access to climate-resilient is hampered by a lack of awareness about climate change's threat to overall Public Healthcare facilities and its contribution to greenhouse gas emissions. Floods and extreme weather further disrupt sanitation services, undermining sewage treatment systems (1). Sustainable Development Goal 13 emphasizes urgent action to combat climate change and its effects, recognizing challenges such as rising temperatures and extreme weather (2).

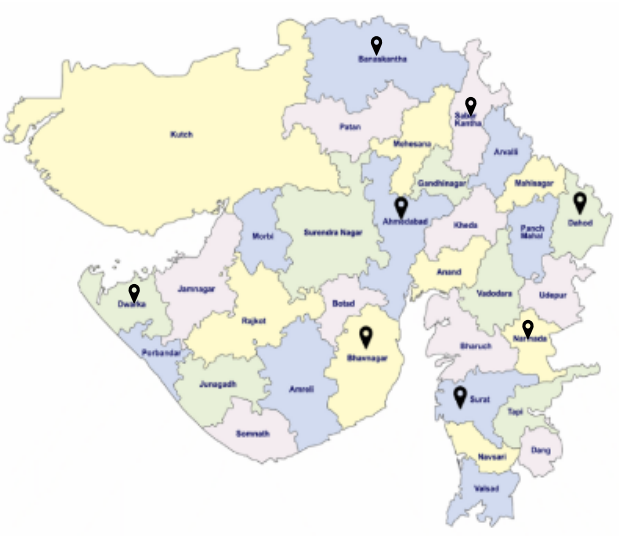
Healthcare facilities are critical in addressing these impacts, influencing greenhouse gas emissions while providing essential services during climate-related crises. However, they also generate significant environmental waste, including harmful pollutants, which pose health risks to communities. Effective management of this waste is essential (1). Low- and middle-income countries are especially vulnerable, facing recurring climate-related disasters despite minimal contributions to global emissions. Strengthening the resilience of healthcare facilities in these regions is crucial for maintaining essential health services during such events(3).

Regarding public healthcare facilities, Gujarat boasts 33 district hospitals, approximately 210 community health centers, 1,800 primary health centers, and over 9,000 sub-centers. This healthcare infrastructure is critical for addressing routine and climate-related health challenges, underscoring the

necessity for robust systems and adaptive strategies to mitigate the adverse impacts of climate change (4). Gujarat is highly vulnerable to climate change, facing extreme weather conditions such as heatwaves, floods, and droughts, which significantly strain healthcare systems. The state's diverse geography, which ranges from coastal to arid regions, exacerbates these vulnerabilities and complicates healthcare delivery. During these events, emergency response mechanisms were often slow and lacked coordination, resulting in inadequate management of health crises (5).

2. Implemented Measure:

To address these challenges, the Indian Institute of Public Health Gandhinagar (IIPHG), with the support of the United Nations International Children's Emergency Fund (UNICEF), developed the assessment toolkit by reviewing global and national guidelines. This toolkit addresses critical areas such as water conservation, energy optimization, and sustainable healthcare practices, utilizing a dichotomous response approach to assess vulnerability levels based on preparedness and response capabilities. The assessment process integrated qualitative methodologies, including stakeholder interviews, to gather insights and provide robust information for subsequent initiatives. A comprehensive assessment was conducted in 31 HCFs across eight districts of Gujarat.



The initiative aimed to identify gaps in climate preparedness and develop facility-level action plans. We focused on essential aspects like water supply, waste management, energy conservation, and disaster preparedness. This evaluation revealed significant gaps in planning and training, highlighting the urgent need for comprehensive strategies to bolster sustainability and resilience within these facilities. A state-level consultation workshop facilitated discussions on the outcomes of the assessments and the development of a Standard Operating Procedure (SOP) and accompanying capacity-building package. This workshop emphasized the relevance of Gujarat's green and climate-resilient healthcare initiatives and encouraged stakeholder engagement to refine the SOP and guidebook.

While refining the SOP and capacity-building package, we conducted field testing at four healthcare facilities, gathering valuable feedback that informed improvements. Notably, staff expressed the need to translate materials into Gujarati to enhance accessibility. Feedback from staff also highlighted the demand for resources related to kitchen gardens, leakage solutions, waste management, and energy conservation. In response, we strengthened the SOP and guidebook by incorporating detailed

information tailored to the specific needs of healthcare facilities, empowering staff with practical guidance for implementing green practices.

The state-level capacity-building workshop aimed to sensitize officials with technical expertise in sustainable construction, energy efficiency, waste management, and water conservation. This workshop included comprehensive sessions on the impacts of climate change on health, the principles of energy efficiency, and the benefits of green infrastructure, alongside discussions on effective waste management practices. The workshop fostered a holistic understanding of sustainable practices, providing actionable strategies for healthcare professionals to develop Facility Action Plans and district-level training initiatives.

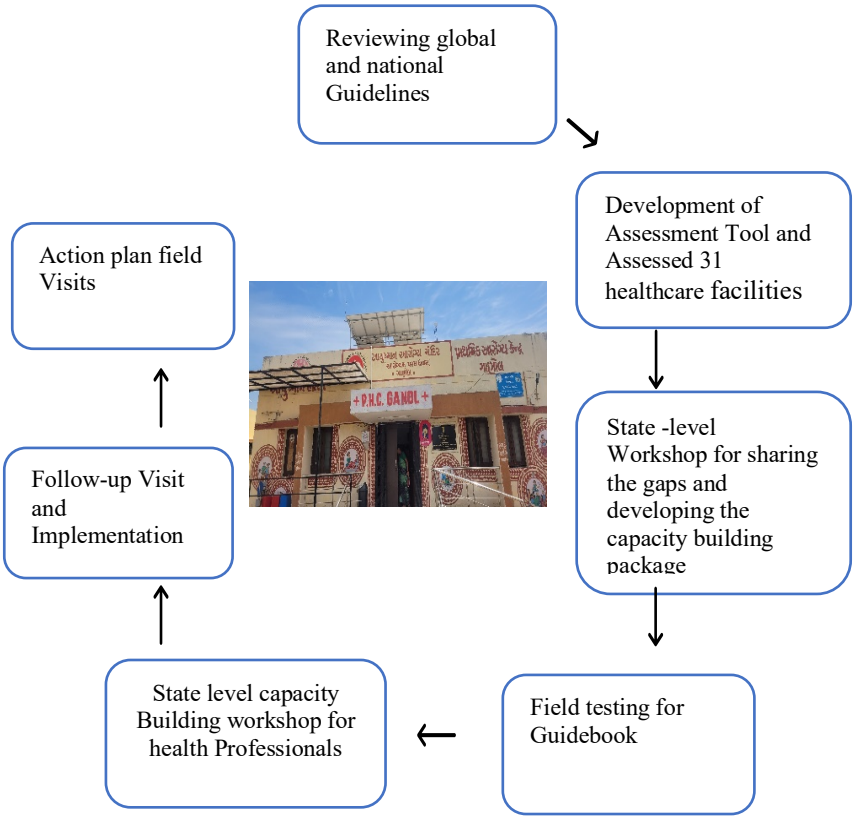


Figure 1 Activities for Green and Climate resilient Healthcare Facility

To ensure effective implementation, our initiative included on-field assistance and hands-on support during site visits. We developed tailored action plans for each facility and maintained concurrent monitoring to assess the execution of sustainable practices. Feedback indicated a positive response from healthcare facilities, with staff motivated to adopt green and climate-resilient interventions. Overall, these measures reflect a committed approach to enhancing the sustainability and resilience of healthcare facilities in Gujarat.

3. Significant impact after implementation

This study focused on key themes such as energy conservation, water management, smart buildings, and green healthcare facilities. Following the interventions, healthcare facilities experienced significant improvements in resilience and operational efficiency. Notable impacts included enhanced preparedness for climate-related disasters, better management of water and waste, and increased energy efficiency. Table:1

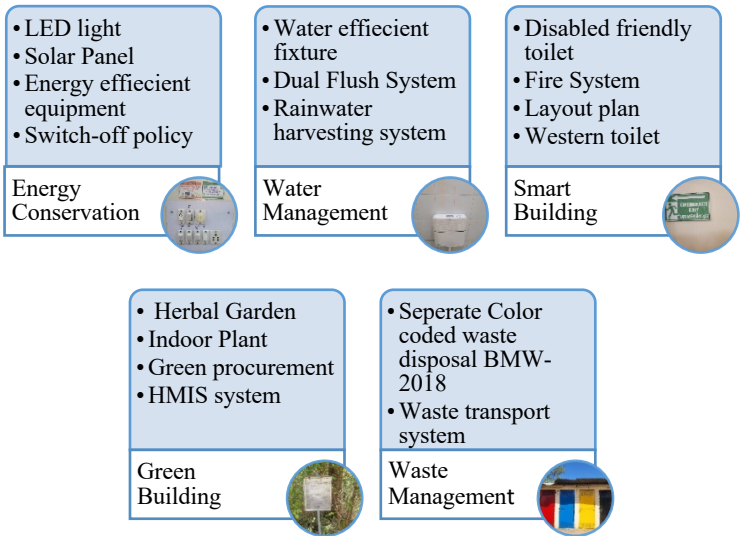


Figure 2 Components of Green and Climate Resilient

Table 1: Impact of implemented interventions

Thematic Area	Interventions	Impact
Energy Conservation	-Completion of 'Switch Off Policy' with finalized IEC strategies -Solar panel -Water alarms in healthcare facilities -Installation of occupancy sensors -Replacement of incandescent bulbs with LED lighting	-Reduced energy consumption and carbon footprint. -Enhanced energy efficiency and operational cost savings
Water Management	-Installation of dual-flush systems -Rainwater harvesting tanks -Water alarms in healthcare facilities -Microfibre mop	-Conserved water resources and reduced wastage. -Improved resilience to water scarcity and sustainable usage
Smart Building	-Introduction of fire safety measures (layout plans, signage) -Installation of disabled-friendly toilets and handrails	-Improved patient safety and operational efficiency. - Provided a more inclusive environment for differently-abled patients.
Green Healthcare Facilities	-Implementation of indoor plant systems and herbal gardens -Coordination with local nurseries for green spaces	-Improved air quality and well-being of patients and staff.
Waste Management Enhancements	-Maintenance of registers for BMW handling -Wastewater management implementation	-Reduced environmental contamination. - Improved environmental health and patient safety, promoting regulatory compliance.
Training and Capacity Building	-Training for staff on energy/water conservation, green infrastructure, and disaster management. -Maintenance of training registers at various facilities.	-Enhanced staff competency in sustainable practices -Ensured long-term adherence to energy and water-saving measures.

3.1 Enhancing Sustainability and Resilience

Before **After**

No fire water tank

Infrastructure Enhancement: The Panthawada CHC has made significant strides in bolstering its infrastructure to ensure safety and resilience. The installation of a fire water tank, coupled with a functional fire system, stands as a testament to the facility's commitment to emergency preparedness.

Fire water tank

No dual flush system

Water Management Optimization: Recognizing the critical importance of water conservation, Panthawada CHC has implemented several initiatives to manage its water resources effectively. The installation of dual flush systems in restroom facilities is a notable step towards reducing water consumption.

Dual flush system installed

No switch off policy

Energy Conservation Initiatives: Panthawada CHC is dedicated to minimizing its carbon footprint through energy conservation measures. The recommendation to implement a Switch Off policy underscores the facility's commitment to reducing energy consumption.

Switch off policy

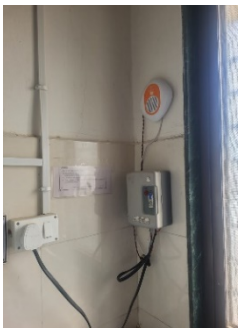
BMW storage area

Waste Management Improvement: In its ongoing efforts to enhance waste management practices, Panthawada CHC has prioritized improvements in waste storage areas. By optimizing waste storage facilities, the facility ensures proper segregation and disposal of waste in accordance with guidelines.

Improved BMW storage area

No water Alarm System

Water Management Optimization: Navarevas has introduced a water alarm system designed to safeguard against both water overflow and excessive water consumption. This innovative system is aimed at providing comprehensive protection by alerting users to potential water overflow situations, thus preventing wastage and potential damage.



Water Alarm System

No switch off policy

Energy Conservation Initiatives: Navarevas PHC is deeply committed to minimizing its carbon footprint by prioritizing energy conservation initiatives. One significant step in this direction is the adoption of a Switch Off policy, highlighting the facility's dedication to reducing overall energy consumption.

Switch off policy

No General Waste

Waste Management Improvement: Navarevas has taken significant steps towards waste management by implementing a system that segregates biodegradable and non-biodegradable waste. This approach ensures that waste disposal is not only efficient but also environmentally responsible.

Improved General Waste

4. Financial Detail

This study was funded by the United Nations International Children's Emergency Fund (UNICEF), which provided essential support for our efforts to enhance climate resilience in healthcare facilities across Gujarat. We at IIPHG sincerely thank UNICEF for their invaluable support in this critical initiative.

References

1. Strategic Framework WASH Climate Resilient Development.
2. Food and Agriculture Organization of the United Nations. The Sustainable Development Goals. 2015.
3. World Health Organization. WHO GUIDANCE FOR CLIMATE-RESILIENT AND ENVIRONMENTALLY SUSTAINABLE HEALTH CARE FACILITIES. 2020.
4. Climate Change Department G of G. Gujarat-State-Action-Plan-on-Climate-Change. 2021;
5. National Disaster Management Authority. Gujarat Flood 2017: A Case Study Prepared by National Disaster Management Authority and Gujarat Institute of Disaster Management. 2017.