Addressing **Communicable Diseases** in the Face of **Climate Change** in **Odisha**



SELCO Foundation

This document examines how Odisha can address its growing disease burden through a three-pronged lens:

1



Understanding the **communicable disease burden** in **Odisha**

2



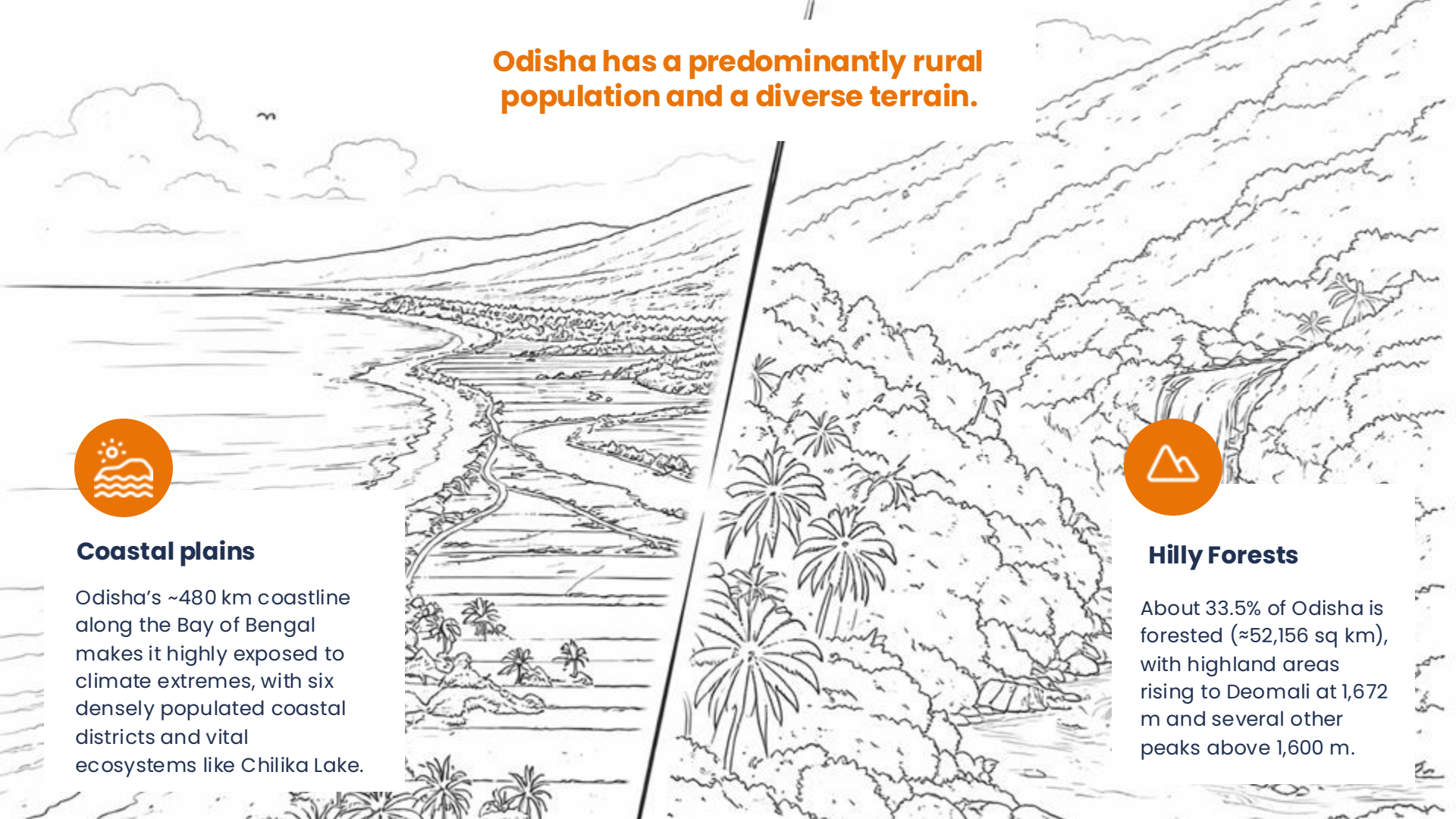
Recognizing how **climate change** exacerbates these burdens, **creating a perfect storm** of health risks.

3



Exploring innovative, **portable medical technologies** for **last-mile** healthcare delivery

Odisha has a predominantly rural population and a diverse terrain.



Coastal plains

Odisha's ~480 km coastline along the Bay of Bengal makes it highly exposed to climate extremes, with six densely populated coastal districts and vital ecosystems like Chilika Lake.

Hilly Forests

About 33.5% of Odisha is forested (≈52,156 sq km), with highland areas rising to Deomali at 1,672 m and several other peaks above 1,600 m.

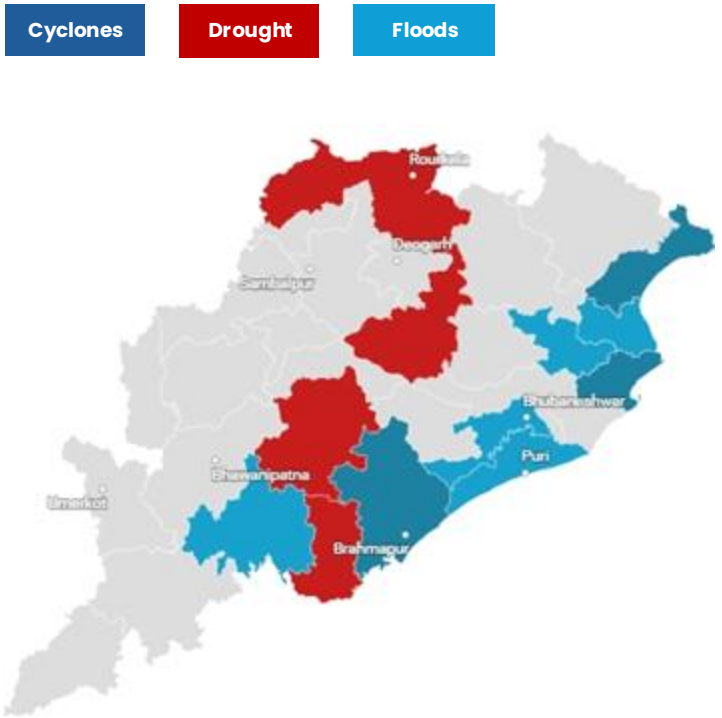
These regions face distinctive climate challenges

Coastal Areas

- Severe **cyclone and storm-surge** exposure leading to recurrent flooding, infrastructure damage, and livelihood disruptions.
- **Saline intrusion and coastal erosion** degrading farmland, freshwater sources, and coastal habitats.

Hilly Forests

- **Erratic rainfall and extended dry spells** reducing soil moisture, stressing forests, and undermining traditional agriculture.
- **Landslides and slope instability** triggered by intense rainfall, damaging roads, villages, and forest ecosystems.



Odisha's Disease Burdens

Communicable Diseases



Premature deaths from communicable diseases account for 34.77% of Odisha's total disease burden



7.6% of Total Disease Burden is attributed to diarrhea



Tuberculosis Affects 114 of 100,000 population annually

Non-Communicable Diseases



27.19 % of Odisha's population is affected by non-communicable diseases, which is significantly higher than the national average of 11.63%



Odisha reports higher rates of tobacco and alcohol use, compared to the national average.



Out-of-pocket expenditure for NCD treatment is higher in Odisha (85%) than the national average (81%)

Maternal & Child Care



Pregnant women, infants, and young children in tribal and interior areas are vulnerable to malnutrition, disease, and disrupted healthcare



MMR stands at 153 against the national average of 88



NFHS-6 reports that **26.8% of Odisha children under five are stunted** and **31.6% are underweight**

Odisha faces a significant communicable disease burden, driven by endemic pathogens, environmental factors, and climate-linked transmission dynamics.



Extended Transmission Seasons during Monsoons and Post-Monsoons



Public Health Challenges from Extreme Weather Events



Ecological shifts increasing disease burdens

Extended Transmission Seasons during Monsoons and Post-Monsoons

- Monsoon rains (June–September) create breeding sites for mosquitoes, prolonging malaria/dengue seasons.
- Post-monsoon humidity (October–November) sustains scrub typhus.
- Rising temperatures expand mosquito habitats into highland districts like Kandhamal and Koraput.



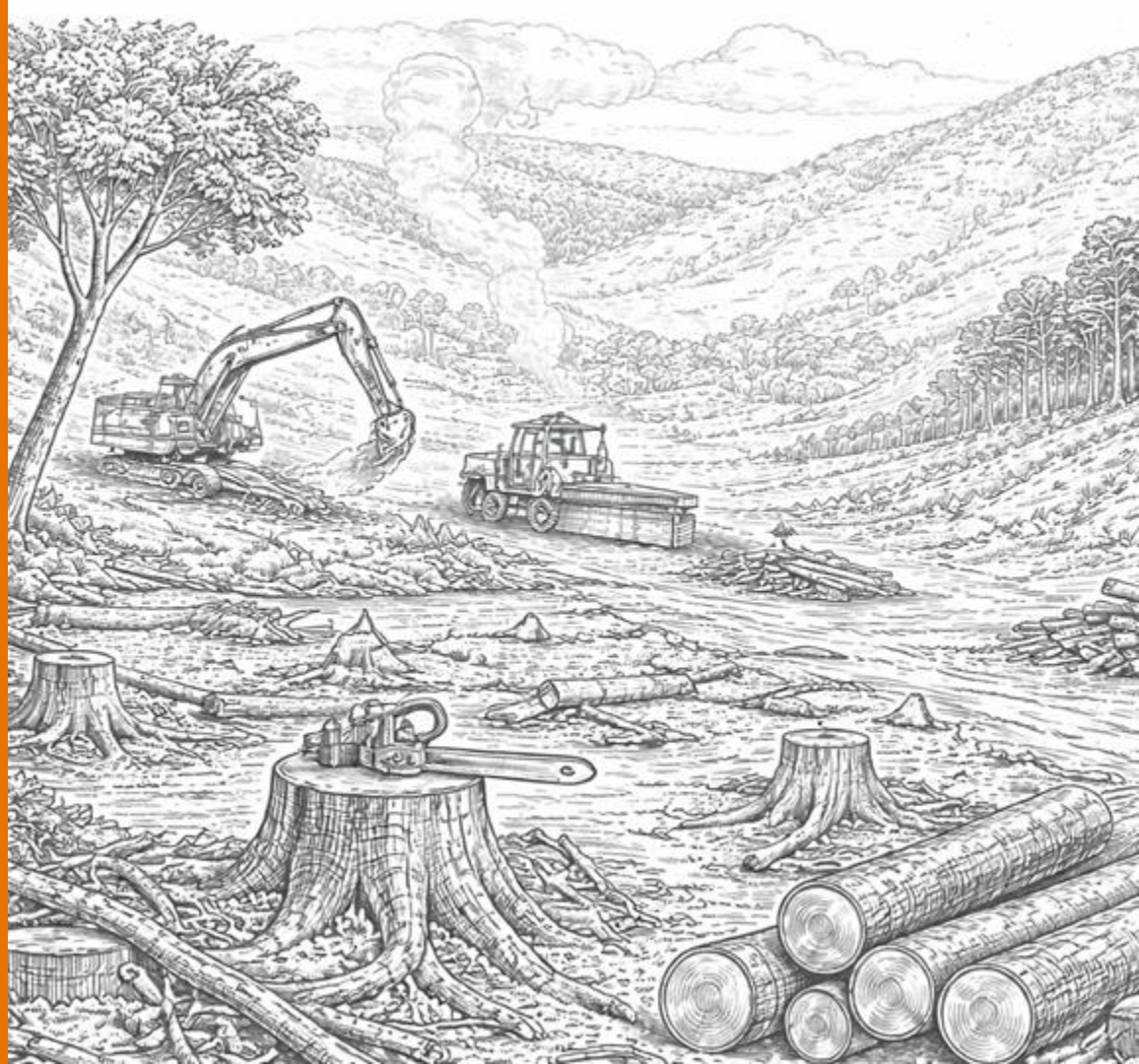
Public Health Challenges from Extreme Weather Events

- Cyclones and floods contaminate water supplies, increases stagnant water increasing malaria, diarrheal and hepatitis outbreaks .
- Heatwaves (>45°C in June) stress healthcare systems during overlapping disease peaks



Ecological shifts increasing disease burdens

Deforestation and agricultural expansion in western Odisha (Bargarh, Sambalpur) increase human-mite/rodent contact, raising scrub typhus risk.





Accessibility to healthcare at the last mile remains a challenge

127 PVTG (Particularly vulnerable groups) habitations (23.5%) are completely inaccessible, and **61 villages** have health sub-centers located over **10 km away**.

Residents often trek 5–80 km through forests and hills to reach community or district health centers, with emergencies frequently resulting in deaths enroute.

Public Health Impacts of Communicable Diseases in Odisha

Mortality & Morbidity

- Premature deaths from communicable diseases account for **34.77%** of Odisha's total disease burden .
- **Vulnerable groups include children (<5 years) and outdoor laborers.**

Systemic Strain

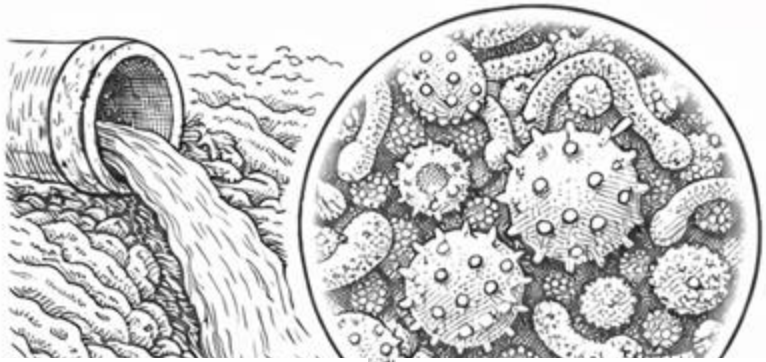
- Seasonal outbreaks overwhelm facilities, e.g., over 30 scrub typhus cases in 2023.
- **Diagnostic limitations delay treatment, especially in rural areas lacking ELISA/PCR kits**

Long-Term Complications

- **Malaria and JE** survivors often face neurological deficits.
- Untreated melioidosis leads to organ failure, with a 40–60% mortality rate without antibiotics

Common Diseases

Water-Sanitation Linked Illness



7.6%

Diarrheal Diseases make up 7.6% of Odisha's total disease burden

Hepatitis A/E
Spread through contaminated water, with coastal districts like Puri and Cuttack reporting high cases



Common Diseases

Airborne & Bacterial Infections





Tuberculosis
Affects 114 of 100,000 population annually

Melioidosis
Emerging bacterial infections (*Burkholderia pseudomallei*) peaks during monsoon season (June-November), linked to soil moisture (200–420 L/m³) and temperatures (24–31°C).

Common Diseases

Vector Borne Diseases





Scrub Typhus: Caused by *Orientia tsutsugamushi*, transmitted by chiggers in agricultural/forest areas.



Recent outbreaks in Bargarh and Sundargarh districts linked to **mites favoring low temperatures (23–29°C) and high humidity**



Malaria: Remains endemic, with 9 annual deaths reported. Plasmodium falciparum thrives in Odisha's tropical climate, transmitted by Anopheles culicifacies mosquitoes.





Dengue and JE: Caused 4 and 1 deaths, respectively. Aedes aegypti mosquitoes proliferate in stagnant water during monsoons.





The government has launched targeted efforts, supported by national health missions and local data, to strengthen surveillance, vector control, and community outreach.



Patients and healthcare providers can benefit from technology that enable better screening and diagnosis as well as follow-up mechanisms.

These technologies can be deployed at different points of care to bring health services closer to people.

VECTOR-BORNE DISEASES

National Vector Borne Disease Control Programme (NVBDCP)

- ✓ Targets malaria, dengue, and Japanese encephalitis **through rapid diagnostic kits, insecticide-treated nets, and awareness campaigns**.
- ✓ Malaria deaths reduced to 9 annually due to improved surveillance

DAMaN

Mass screening and treatment of vector borne diseases with:

- ✓ RDT(Rapid diagnostic Test),
- ✓ Long Lasting Insecticidal Nets (LLINs) distribution
- ✓ IRS(Indoor Residual Spraying)
- ✓ Community mobilization

To be implemented in 21 districts in 2025-26

Technologies for diagnosis and screening of vector-borne diseases



Microscopy with AI assistance:
Enabled slide reading accuracy.



Rapid Diagnostic Tests (RDTs)
Field-level detection of Plasmodium spp., Dengue NS1, etc.



Molecular tests (e.g., Truenat)
Sub-patent malaria detecion at PHC level



Serological assays
IgM/IgG testing for JE and Dengue



Immunochromatographic tests
Filaria antigen detection

DIARRHEA

Intensified Diarrhoea Control Fortnight: A nation-wide campaign implemented annually in Odisha to reduced diarrhea mortality through preventive measures and community health worker training

STOP Diarrhea - launched to reduced childhood morbidity and mortality associated with diarrhea through preventive measures and early treatment (eg. Distribution of ORS, Zinc tablets)

TUBERCULOSIS

Revised National TB Control Programme: Achieved **85% treatment** success rate.



AI-enabled Chest X-ray (Pneumonia, TB)

- Deployment: CHC/ District Hospital
- Operator: Technician, Telemedicine Specialist

Supportive infrastructure can bring diagnosis and treatment closer to people



Mobile health units – Equipped for screening, treatment, and awareness drives



Cold chain equipment – Reliable vaccine storage for JE in remote areas



Telemedicine Consultations For specialist consultations in remote areas

Why the Last Mile Matters

In Odisha, the rising burden of communicable diseases is shaped not just by pathogens, but by where people live.



Remote terrain, climate shocks, and limited access turn preventable diseases into life-threatening risks.



Floods, heatwaves, and seasonal outbreaks repeatedly disrupt care, forcing communities to travel long distances for basic diagnosis and treatment.



Addressing rising disease burden requires bringing resilient, **portable healthcare closer to people—where systems are weakest and risks are highest.**

Please get in touch for more information:

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This document is part of a wider series on state level public health burdens -

- Improving **Maternal and Child Health Outcomes** in the changing climate of **Assam**
- Addressing the Growing Burden of **Non-Communicable Diseases** in an Urbanising, Heat-Stressed **Karnataka**

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