



An environmental intelligence network for early warning

Sensor nodes with on-device AI that detect landslides, floods, fires and pollution, and warn people before risks become disasters. They keep working without internet or mobile signal.

Edge AI

LoRa

Multi-hazard

Works offline

Built in Darjeeling



In pilot testing with the Indian Army

An early BHU-Rakshak landslide monitoring unit has been in pilot testing at an Indian Army camp in Assam since July 2026, running continuously.

July 2026

Since

Assam

Location

None

Downtime so far

7

sensing channels per node

7

hazards in one rule engine

0

cell towers needed on site

1.2%

forecast error, controlled validation run



The platform, end to end

Seven building blocks, and where each one stands today. Working Piloting In simulator Next

Capability	What it does and its status	
01 Distributed smart sensor nodes	Working Tilt, vibration, soil moisture, smoke/flame, gas, pressure, GPS	Next Water level, rainfall, PM2.5/PM10, solar power
02 On-device AI analytics	Working Adaptive per-site baselines, trend forecasting, evidence fusion, fully offline	Next TinyML traffic-vs-movement model
03 Multi-hazard early warning	Piloting Landslide	Working Forest fire; heat, gas, water quality in the base-station engine In simulator Flash flood, air pollution
04 Regional risk mapping	Working Live map of nodes and risk levels	Next Regional hotspot and trend maps
05 Community and authority notification	Working On-site siren, web dashboard, public live page, web push, severity + confidence on every alert	Next Android app
06 Cloud and edge hybrid	Working Edge decisions, base-station forecasting and data export	Next State-level analytics
07 Scalable, low-cost deployment	Working LoRa radio and Wi-Fi	In simulator Multi-node corroboration Next LoRaWAN, NB-IoT, 5G

How the warning works

- **Sense:** nodes sample 50 times a second and learn each site's normal.
- **Decide:** risk is scored on the device; no cloud is needed.
- **Corroborate:** the gateway requires independent channels to agree.
- **Forecast:** inverse velocity (Saito 1965, Fukuzono 1985) estimates time to slope failure.
- **Warn:** siren on site, dashboard and alerts, with severity and confidence.

Thresholds from Indian standards

- Air: CPCB National AQI (PM2.5 Poor 91 / Very Poor 121 $\mu\text{g}/\text{m}^3$)
- Water: BIS IS 10500 (turbidity, dissolved solids, pH)
- Rain and heat: IMD categories and heat-wave criteria
- Gas: occupational exposure limits for CO, NO₂, NH₃
- No alarm on one signal; a missing sensor is reported as unknown, never safe.

See it live, watch the 3D walkthrough and get in touch

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