

SAMPLE REPORT · GEOSPATIAL ANALYTICS

Climate & ESG Exposure Report

Physical Climate Risk Screening — Infrastructure Portfolio

Systematic physical climate risk screening for a sample portfolio of 8 infrastructure assets across North India under IPCC SSP2-4.5 and SSP5-8.5 scenarios to 2050. Hazards covered: flood, heat, drought, water stress and wind.

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SECTION 1

Scenario & Methodology Framework

Climate scenarios	IPCC AR6 SSP2-4.5 (central) and SSP5-8.5 (high-end)
Time horizons	Baseline 1995–2015, Near-term 2021–2040, Mid-century 2041–2060
Climate models	CMIP6 ensemble (22 models); bias-corrected to IMD observational grid
Flood hazard	SWAT hydrological model; return-period analysis per asset catchment
Heat hazard	WBGT index; cooling degree days; Wet Bulb Globe Temperature exceedance
Drought	SPI-6, SPI-12; Palmer Drought Severity Index (PDSI)
Water stress	Aqueduct 4.0 (WRI) — baseline + projected 2030, 2050
Alignment	TCFD physical risk; EU Taxonomy climate proofing guidance

SECTION 2

Portfolio Physical Risk Heat Map

Asset ID	Flood (2050)	Heat (2050)	Drought (2050)	Water Stress	Overall
I-01 (Power plant)	HIGH	HIGH	MEDIUM	HIGH	HIGH
I-02 (Road corridor)	MEDIUM	HIGH	LOW	MEDIUM	MEDIUM
I-03 (Water treatment)	LOW	MEDIUM	HIGH	HIGH	MEDIUM
I-04 (Cold storage hub)	HIGH	HIGH	LOW	LOW	HIGH
I-05 (Solar farm)	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM
I-06 (Grain silo)	MEDIUM	HIGH	HIGH	HIGH	HIGH
I-07 (Data centre)	LOW	HIGH	LOW	MEDIUM	MEDIUM
I-08 (Pumping station)	HIGH	MEDIUM	HIGH	HIGH	HIGH

SECTION 3

Key Climate Projections — Study Region

Indicator	Baseline	2030 (SSP2-4.5)	2050 (SSP2-4.5)	2050 (SSP5-8.5)
Mean annual temp. (°C)	25.4	26.1 (+0.7)	27.2 (+1.8)	28.4 (+3.0)
Days >40°C / year	12	17	26	41
Annual precip. change (%)	—	+3%	+7%	+12%
1-in-100yr peak flow change	—	+8%	+18%	+34%
Water stress index	0.52	0.61	0.74	0.88
SPI-12 drought frequency	1 in 7 yr	1 in 5 yr	1 in 4 yr	1 in 3 yr

Adaptation Recommendations

Asset	Recommended Adaptation Measure	Investment Horizon
I-01	Elevated cooling water intake + emergency generator flood-proofing	Near-term (2025–2028)
I-04	Raise floor level 1.2m; install backup refrigeration power	Near-term (2025–2027)
I-06	Drainage upgrade + drought-resilient supply chain contingency	Medium (2026–2030)
I-08	Flood bund + drought-reserve storage capacity +30%	Near-term (2025–2028)

Projections carry model uncertainty (±15–25% on precipitation extremes). Outputs are intended for strategic planning and TCFD disclosure support, not engineering design. Site-specific hydrological studies are required for capital investment decisions.