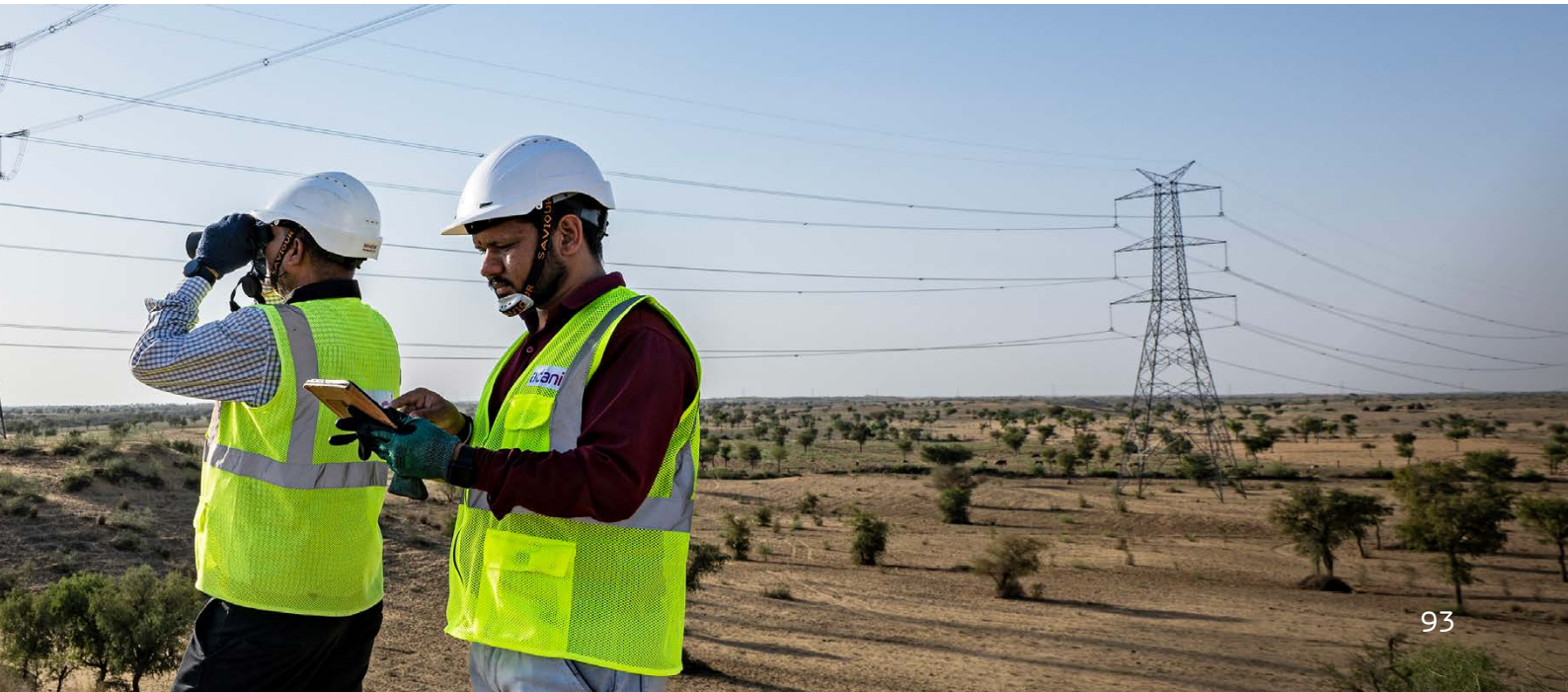
Climate-related Risks and Opportunities

We have identified climate-related risks and opportunities and integrated into our Enterprise Risk Management System (COSO) and HSE Management System. We use the TCFD framework to assess risks and capture opportunities.

Scenario Analysis and Stress Testing

Conducted long-term (2020–2039) assessments to evaluate climate risks and operational impact. Identified IPCC RCP/ SSP and IEA scenarios to shape our climate strategy and business outlook.

Climate-related Scenario	Temperature Alignment	Adaptation Strategy
RCP 4.5 / SSP 2-4.5 (Medium Emission)	Intermediate emissions scenario with global mean temperature expected to rise by 1.1-2.6°C	▪ Strengthen asset and infrastructure resilience ▪ Address risks from rising temperatures, precipitation changes, and extreme weather
RCP 6.0 (High Emission)	High emissions scenario with global mean temperature expected to rise by 3-4°C	▪ Implement water management, recycling, and alternative cooling technologies ▪ Collaborate with policymakers for supportive regulations ▪ Train staff for climate resilience ▪ Engage stakeholders to address climate concerns ▪ Strengthen disaster management and conduct regular mock drills
IEA 2DS / SSP 1-2.6	The 2DS is consistent with a 50% probability of limiting the expected global average temperature increase to 2°C by 2100	▪ Divesting Dahanu Thermal Power Station from the portfolio ▪ Committed to no new thermal power assets
IEA B2DS	Global mean temperature expected to rise beyond 2°C Scenario (B2DS)	▪ Expanding renewable energy share in the power mix
IEA NZE 2050 / SSP 1-1.9	The IEA Net Zero Emissions by 2050 (NZE)	



Business Division and Location-wise Climate Risks

AESL Business Division	Location	Climate Scenario	Coastal Flood	Tropical Storms	Extreme Heat	Water Scarcity	River Flood	Urban Flood	Tsunami
Grid Division	Andhra Pradesh	SSP 1-1.9 / 1.5 OC	3	3	4	3	3	3	2
		SSP 2-4.5 / RCP 4.5	3	4	4	3	4	3	1
		SSP 3-7.0	4	4	4	4	3	3	2
		SSP 5-8.5 / RCP 8.5	4	5	5	5	4	4	3
	Bihar	SSP 1-1.9 / 1.5 OC	N/A	2	4	3	4	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	4	5	3	N/A
		SSP 5-8.5 / RCP 8.5	N/A	4	5	4	5	5	N/A
	Chhattisgarh	SSP 1-1.9 / 1.5 OC	N/A	2	4	3	3	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	4	3	3	N/A
		SSP 5-8.5 / RCP 8.5	N/A	4	5	5	4	4	N/A
	Delhi	SSP 1-1.9 / 1.5 OC	N/A	1	4	4	2	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	4	2	4	N/A
		SSP 5-8.5 / RCP 8.5	N/A	2	5	5	2	5	N/A
	Gujarat	SSP 1-1.9 / 1.5 OC	3	3	4	4	3	3	2
		SSP 2-4.5 / RCP 4.5	3	4	4	3	4	3	1
		SSP 3-7.0	4	4	5	5	2	3	2
		SSP 5-8.5 / RCP 8.5	4	4	5	5	4	4	3
	Haryana	SSP 1-1.9 / 1.5 OC	N/A	2	4	3	3	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	4	2	3	N/A
		SSP 5-8.5 / RCP 8.5	N/A	2	5	5	3	4	N/A
	Jharkhand	SSP 1-1.9 / 1.5 OC	N/A	2	4	3	3	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	3	3	3	N/A
		SSP 5-8.5 / RCP 8.5	N/A	4	4	4	4	4	N/A
	Madhya Pradesh	SSP 1-1.9 / 1.5 OC	N/A	2	4	3	3	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	4	3	3	N/A
		SSP 5-8.5 / RCP 8.5	N/A	3	5	5	4	4	N/A
	Maharashtra	SSP 1-1.9 / 1.5 OC	3	3	4	3	3	3	2
		SSP 2-4.5 / RCP 4.5	3	4	4	3	4	3	1
		SSP 3-7.0	4	5	5	5	3	4	3
		SSP 5-8.5 / RCP 8.5	5	5	5	5	4	5	4

AESL Business Division	Location	Climate Scenario	Coastal Flood	Tropical Storms	Extreme Heat	Water Scarcity	River Flood	Urban Flood	Tsunami
	Punjab	SSP 1-1.9 / 1.5 OC	N/A	2	4	3	3	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	4	3	3	N/A
		SSP 5-8.5 / RCP 8.5	N/A	2	5	5	4	4	N/A
	Rajasthan	SSP 1-1.9 / 1.5 OC	N/A	2	4	4	2	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	5	5	2	3	N/A
		SSP 5-8.5 / RCP 8.5	N/A	4	5	5	3	4	N/A
	Tamil Nadu	SSP 1-1.9 / 1.5 OC	3	3	4	3	3	3	3
		SSP 2-4.5 / RCP 4.5	3	4	4	3	4	3	1
		SSP 3-7.0	4	5	4	5	4	4	3
		SSP 5-8.5 / RCP 8.5	5	5	5	5	4	5	4
	Telangana	SSP 1-1.9 / 1.5 OC	N/A	2	4	3	3	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	4	3	3	N/A
		SSP 5-8.5 / RCP 8.5	N/A	4	5	5	4	4	N/A
	Uttar Pradesh	SSP 1-1.9 / 1.5 OC	N/A	2	4	3	4	3	N/A
		SSP 2-4.5 / RCP 4.5	N/A	4	4	3	4	3	N/A
		SSP 3-7.0	N/A	4	4	4	5	4	N/A
		SSP 5-8.5 / RCP 8.5	N/A	4	5	5	5	5	N/A
	West Bengal	SSP 1-1.9 / 1.5 OC	3	3	4	3	4	4	2
		SSP 2-4.5 / RCP 4.5	3	4	4	3	4	3	1
		SSP 3-7.0	4	4	4	5	5	5	2
		SSP 5-8.5 / RCP 8.5	5	5	4	5	5	5	4
Retail Electricity Division	Mumbai, Maharashtra	SSP 1-1.9 / 1.5 OC	4	3	3	3	3	4	2
		SSP 2-4.5 / RCP 4.5	4	3	3	3	3	4	2
		SSP 3-7.0	5	4	5	4	4	5	3
		SSP 5-8.5 / RCP 8.5	5	4	5	4	4	5	3
	Mundra, Gujarat	SSP 1-1.9 / 1.5 OC	3	3	4	4	3	3	2
		SSP 2-4.5 / RCP 4.5	3	3	4	4	3	3	2
		SSP 3-7.0	4	4	5	5	4	4	3
		SSP 5-8.5 / RCP 8.5	4	4	5	5	4	4	3

1	2	3	4	5	
Very Low	Low	Moderate	High	Very High	N/A: Not applicable

Climate Change-related Risks

Physical

R1

Acute

Capitals Impacted

Strategies Linked

S2 S6

Likelihood of Occurrence

More likely than not

Time span

Medium-term

Description

- Acute physical risks from extreme weather events (cyclones, hurricanes, heatwaves, earthquakes) threaten operations
- Assets in climate-prone zones (Rajasthan, Gujarat, Maharashtra, Bihar, Madhya Pradesh, Haryana, Uttar Pradesh, Chhattisgarh, Jharkhand) face heightened risk

Impact on Value

- Cyclones, hurricanes, heatwaves, and earthquakes can damage infrastructure, disrupt operations, and increase costs
- Supply chain disruptions may cause delayed material deliveries, impact restoration, productivity, and expenses
- High repair costs, downtime, revenue loss, legal risks, and investor confidence decline affecting the business

Mitigating Measure

- Identify vulnerable assets using historical data, climate models, and geography
- Design for extreme weather, integrate redundancies, and deploy Emergency Restoration System (ERS)
- Implement site-level emergency response plans
- Build trust with customers, investors, regulators, and communities on climate risk initiatives

Physical

R2

Chronic

Capitals Impacted

Strategies Linked

S2 S3 S6

Likelihood of Occurrence

More likely than not

Time span

Medium-term

Description

Long-term climate disruptions affect asset performance. Rising temperatures impact transmission and distribution efficiency, causing energy losses.

Impact on Value

- Increased maintenance and operational costs
- Capital required to upgrade or replace inefficient assets
- Revenue loss due to unscheduled downtimes
- Market perception of climate risk management affects stock performance
- Stringent compliance requirements may demand additional financial resources

Mitigating Measure

- Increase renewable energy generation
- Develop High Voltage DC transmission lines and adopt low-carbon technologies
- Integrate climate resilience in asset design
- Use monopoles, insulated cross arms, and high-grade concrete for durability
- Design infrastructure to withstand adverse conditions
- Deploy two Emergency Restoration Systems (ERS) for rapid recovery
- Embed climate resilience in policies, planning, and workforce training