

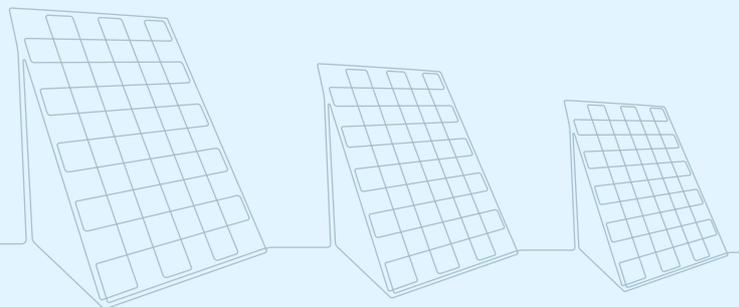
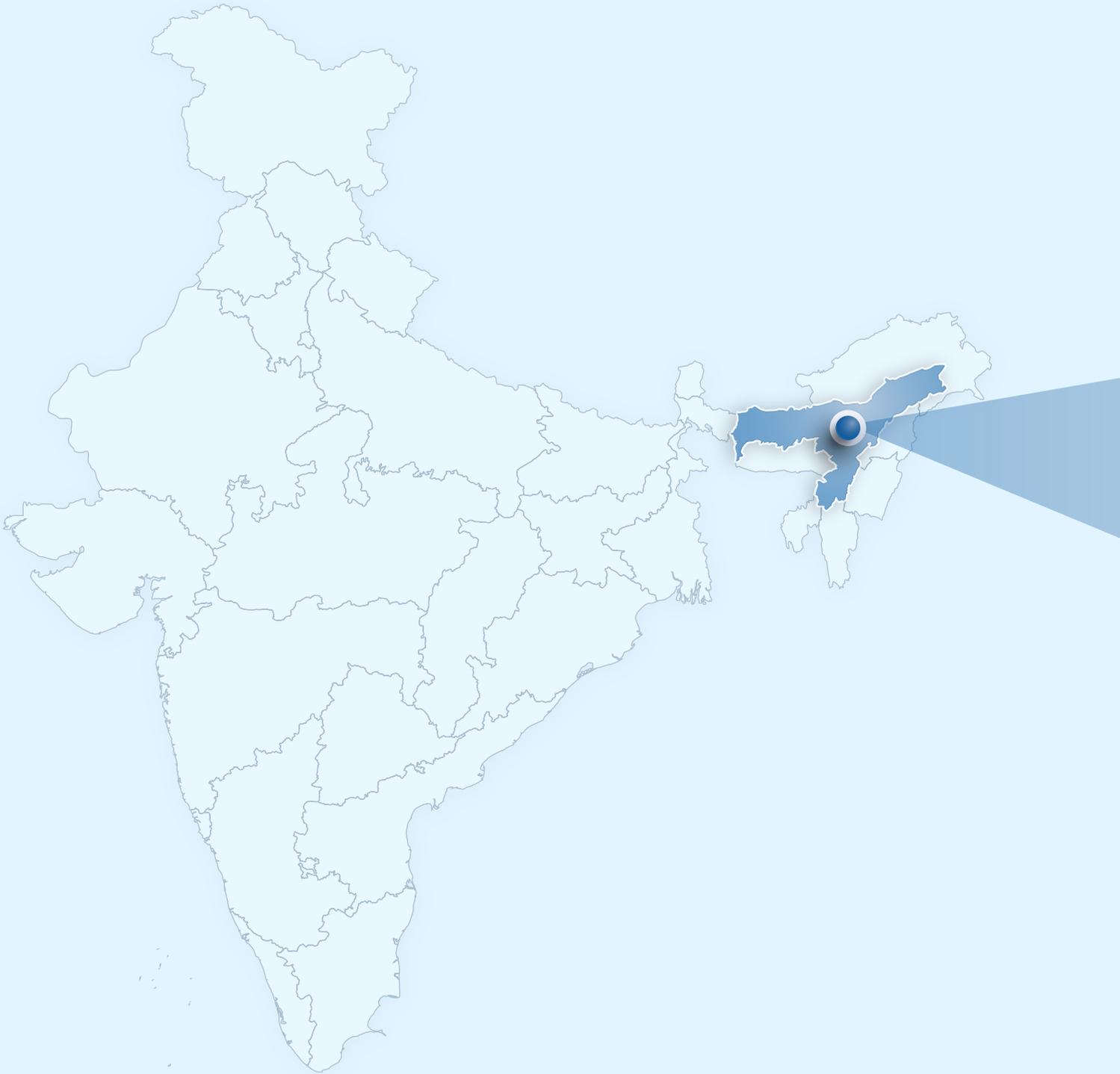
Decarbonising Assam

Trends, Policies and Recent Developments

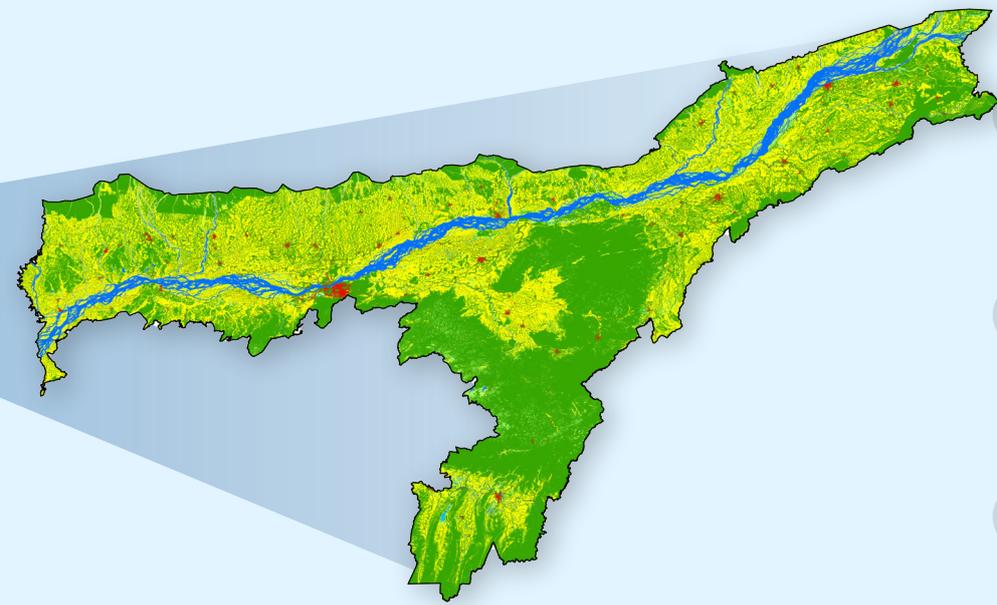


Decarbonising Assam

**Trends, Policies and Recent
Developments**



Assam's Key Indicators



- Forest
- Scrub Land
- Built-up
- Grass Land
- Crop Land
- Waterbodies
- Barren & Waste Land

	FY 12	FY 23
Population	312.05 Lakhs	353.05 Lakhs
Gross GHG Emissions	25.02 Mt CO ₂	32.77* Mt CO ₂
Gross State Domestic Product	₹143.17 Crore	₹281.09 Crore
Forest Area	27,671 Sq. Km	28,680 Sq. Km
Foodgrain Production Yield per Hectare	1704 Kg	2351 Kg
Electric Vehicles	0	62,100
RE Capacity (incl hydro)	130 MW	534 MW
Electricity Consumption per Capita	240 kWh	398 kWh

* Value for 2018

Greenhouse Gas Profile

Economy-wide GHG Emissions

Assam’s economy-wide GHG emissions experienced notable shifts between 2011 and 2018. The gross GHG emissions grew from 28 to 33 Mt CO₂e during this period. The energy sector saw the highest absolute growth, with emissions increasing ~90 percent, from 14 to 23 Mt CO₂e, making it the largest contributor. Furthermore, the share of energy related emissions grew from 50 percent to 70 percent during this period. Emissions from industrial processes and product use surged by 800 percent, rising from 0.2 to 1.8 Mt CO₂e, while waste sector emissions increased by 24 percent to 2.1 Mt CO₂e. In contrast, emissions from agriculture, forestry, and other land use (AFOLU) declined by 45 percent, from 11.1 to 6.1 Mt CO₂e, owing to an increase in land sink through afforestation.

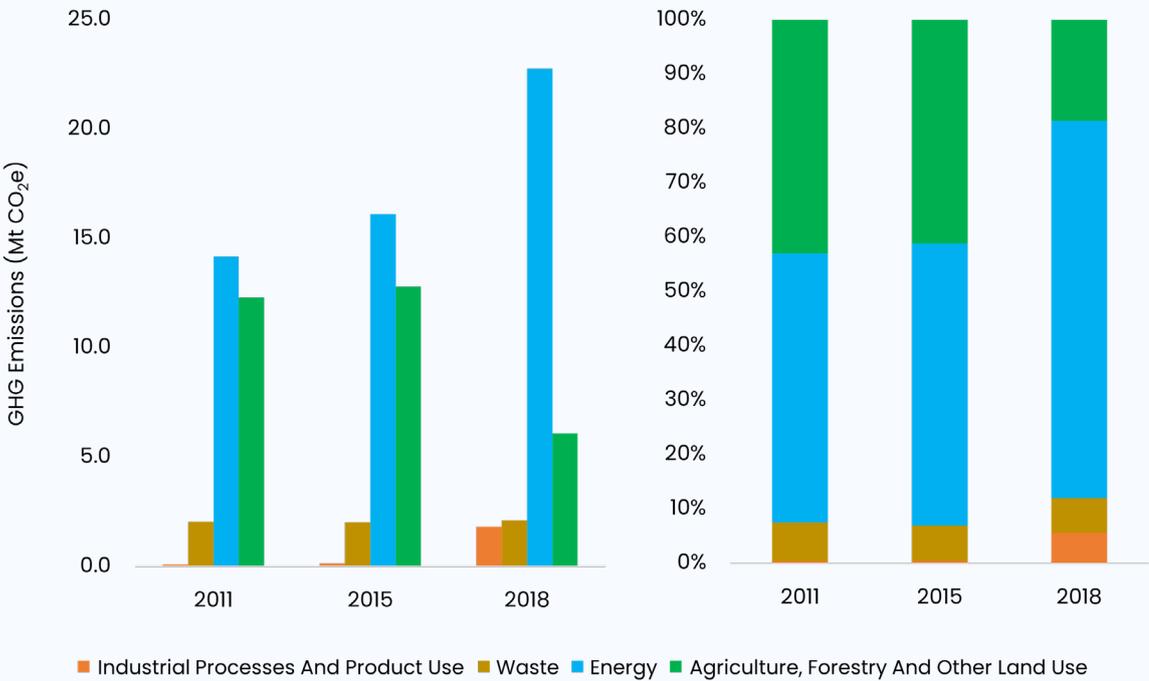


Figure 1 (a): GHG Emission Profile between 2011 and 2018, (b): GHG Emission Share across the Economy-wide Emissions

Energy-related GHG Emissions

The rise in industrial activity and electricity generation was the primary driver of energy-related emissions growth. Between 2011 and 2018, electricity generation accounted for 51 percent of the state’s total increase in energy-related emissions, followed by transport at 37 percent. Coal and gas consumption in the power sector, as well as hydrocarbon exploration was the dominant factor behind this growth. The following sub-section examines the evolution of the state’s electricity sector and its transition over the years.

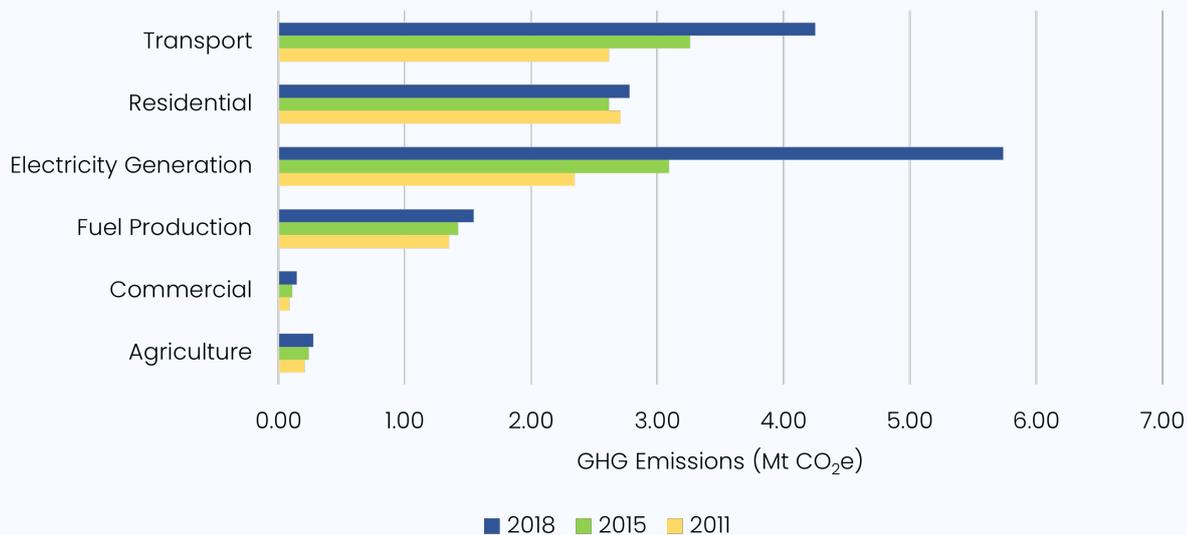


Figure 2: Energy-related GHG Emissions in 2005 and 2018 in Assam

III. The AFOLU sector had also been a major contributor to Assam's total GHG emissions in the past (44 percent in 2005), which was comparable to the energy sector at the time. By 2018, its contribution had significantly declined to 19 percent. This is because the land-based carbon sink has expanded 8 times between 2011 to 2018 to 7 Mt CO₂e. Amongst the emitters, Livestock has been the largest emitter within the AFOLU sector at ~7 Mt CO₂e.



Forest Cover

Assam has a total forest cover of 28,313.55 square kilometres (excluding 240.93 sq.km of scrub), forming 36 percent of the state's total geographical area of 78,440 sq.km.¹ Assam's forests hold immense potential. They are a crucial carbon sink, playing a key role in mitigating climate change. Assam's forests store 272.31 million tonnes (Mt) of carbon. The largest portion is Soil Organic Carbon (SOC) at 154.36 Mt, accounting for more than half of the total carbon stock.²

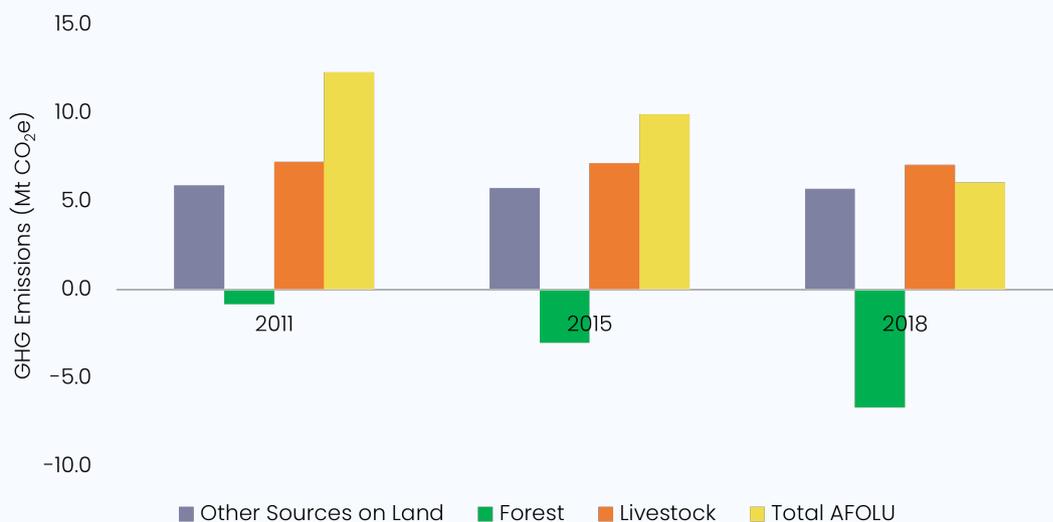


Figure 3: AFOLU Sector GHG Emissions in the State from 2011 to 2018

1 https://fsi.nic.in/uploads/isfr2023/isfr_book_eng-vol-2_2023.pdf

2 https://fsi.nic.in/uploads/isfr2023/isfr_book_eng-vol-1_2023.pdf

Electricity Sector at a Glance



Power Generation Portfolio

The state's installed power capacity increased ~1.5 times, reaching 1.9 GW between 2015-16, and the current year. Coal accounted for the largest share of capacity expansion (64 percent), followed by solar (27 percent). Additionally, coal and gas continue to dominate the generation mix, underscoring the state's reliance on fossil fuels. The state has embarked upon electricity sector expansion, which is expected to accelerate under the recently launched Integrated Energy Policy.



Figure 4 (a): State Installed Capacity and Individual Share, (b): State Electricity Generation and Individual Share

Electricity Demand

The state has experienced a significant rise in electricity demand, driven primarily by the domestic sector, which accounted for 71 percent of total demand growth, increasing at an annual rate of 7.7 percent over the past nine years. This growth aligns with national trends, where rising appliance ownership is driving household electricity consumption. While electricity consumption expanded at an annual rate of 5.9 percent, peak demand grew at a faster pace of 6.2 percent during this period, indicating increasing demand volatility and load concentration.

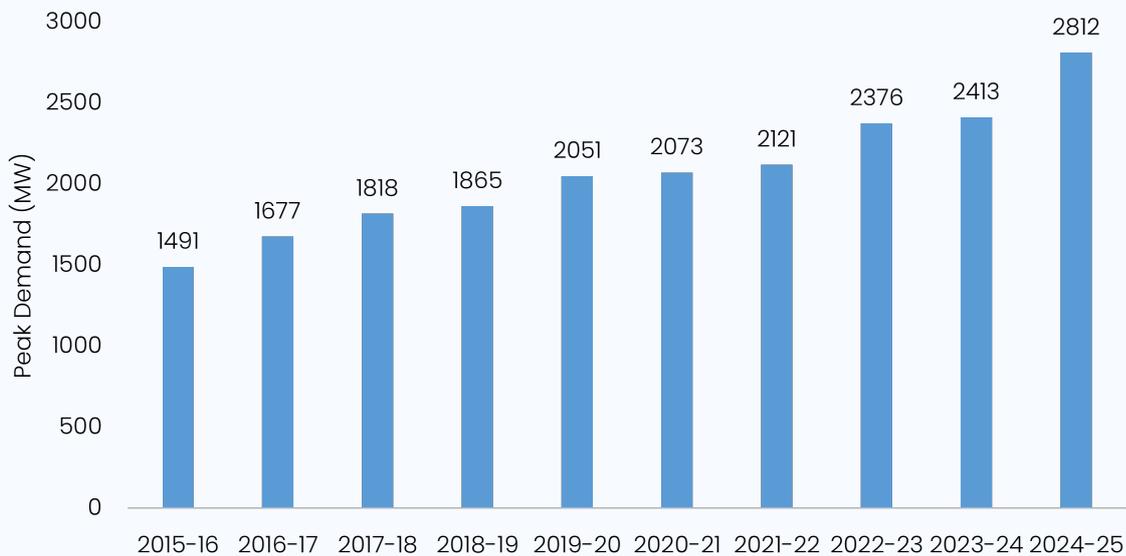
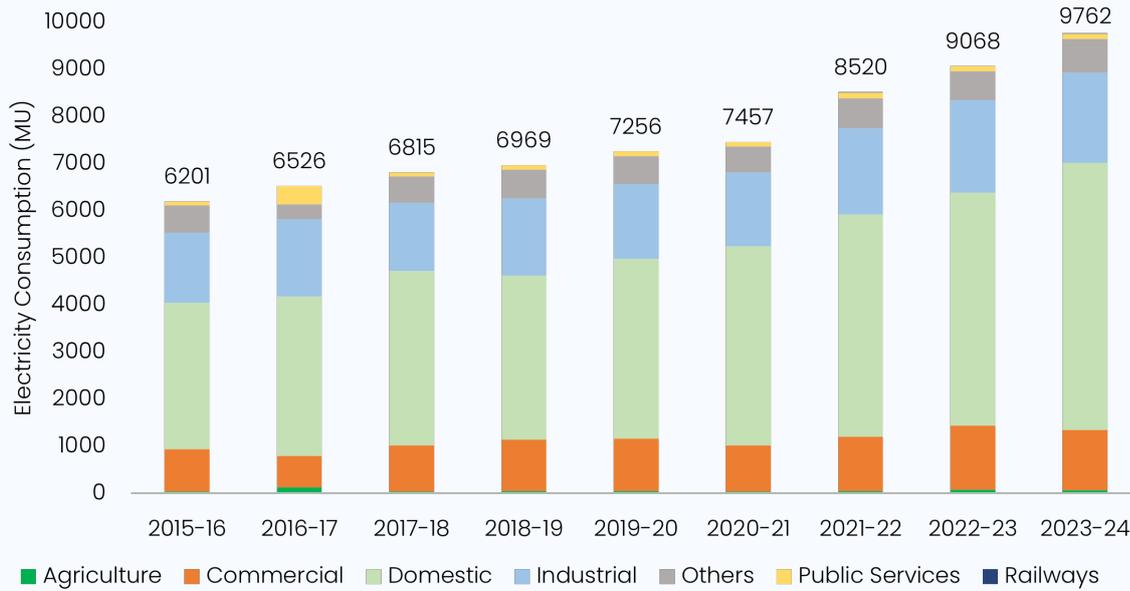


Figure 5 (a): State Electricity Consumption (MU), (b): State Electricity Peak Demand (MW)

Peak Demand Growth

Assam's peak electricity demand occurs primarily in August and September, while March experiences significantly lower demand, reflecting seasonal variations. Peak demand consistently occurs during nighttime hours (8:00–9:00 PM) throughout the year. However, peak demand growth has been irregular, leading to a decline in the state's load factor from 58 percent in 2016 to 54 percent in 2022, indicating increased demand variability. Consequently, the share of the top 10 percent of electricity demand instances has risen from 1.6 percent to 2.3 percent of total annual instances, highlighting a growing concentration of peak load.

Row labels	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2015-16	1396	1385	1391	1491	1416	1437	1404	1387	1319	1341	1340	1341
2016-17	1448	1497	1512	1598	1658	1616	1677	1532	1395	1466	1404	1396
2017-18	1417	1649	1749	1671	1727	1773	1818	1515	1500	1535	1506	1471
2018-19	1528	1621	1775	1857	1829	1865	1784	1547	1442	1491	1420	1542
2019-20	1712	1756	1846	1840	2051	1980	1770	1508	1380	1366	1381	1467
2020-21	1419	1720	1798	1839	1943	2073	1987	1724	1437	1461	1485	1747
2021-22	1913	1952	2062	2104	2096	2104	2121	1636	1475	1505	1499	1901
2022-23	1796	2146	2140	2231	2376	2342	2312	1714	1590	1643	1572	1670
2023-24	2013	2219	2307	2390	2353	2413	2226	1931	1553	1538	1634	1814
2024-25	2012	2405	2392	2524	2617	2812	2266	1850	1537	1577	1644	1911

Summer/Monsoon peak

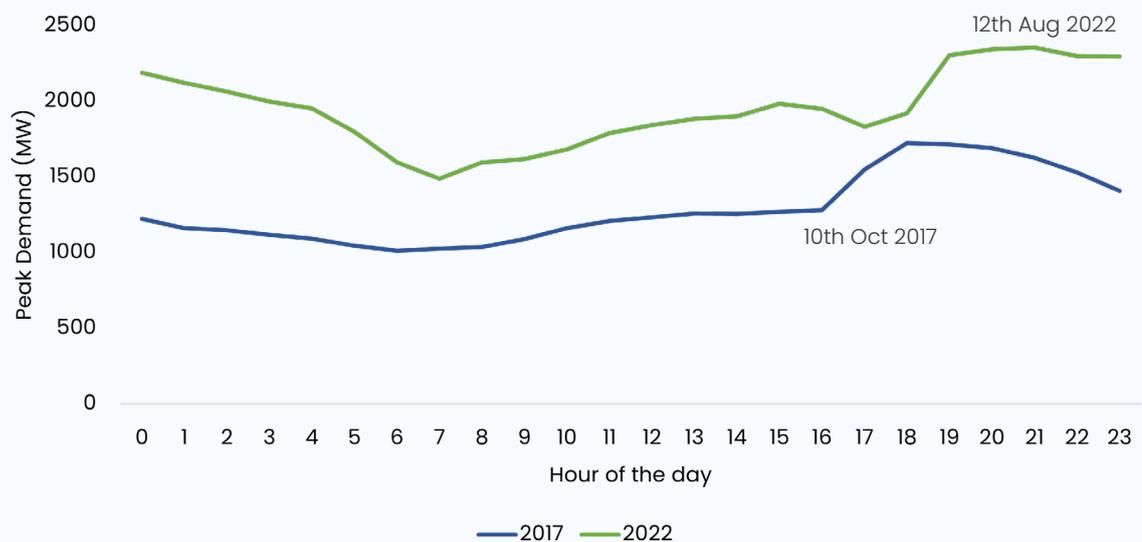


Figure 6 (a): Monthly Comparison of Peak Demand in the State (MW), (b): Load Curve on Peak Demand Day in 2017 and 2022

Industry Profile of Assam

Assam's industrial sector is diverse, with key industries including tea production, oil and gas extraction, and agro-based industries like food processing and bamboo-based products. Assam produces nearly 700 million kg of tea annually as of today and accounts for around half of India's overall tea production. The contribution of the mineral sector (Coal, Petroleum, and natural gas) to State Domestic product (SDP) stands at ~15 percent of total SDP³. Thereby, the secondary sector contributes ~25 percent of the gross state value added.

Oil and Gas Sector

Upstream, Midstream and Downstream Operations

I



Assam contributes 15 percent of India's crude oil and 10 percent of natural gas production. Crude oil output in the current fiscal year from the state stands at ~4.5 MMTPA, while natural gas production is at 3.4 bcm.

II



Assam is set to double crude oil availability and increase natural gas production from 3.2 to 6.3 billion cubic meters (BCM) by 2030.

III



In the oil exploration and production sector, the major players in Assam are Oil India Limited (OIL) and Oil and Natural Gas Corporation Limited (ONGC). Assam has an extensive pipeline network for crude oil and gas transportation.

IV



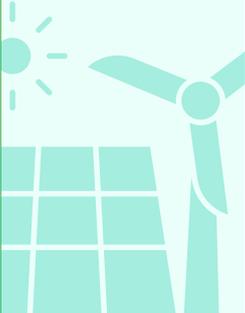
OIL's 1157 Km fully automated trunk pipeline with a capacity of 9.65 MMTPA transports combined crude oil production in the Northeast to the refineries.

V



Downstream operations in Assam focus on refining, petrochemicals, and city gas distribution (CGD). CGD networks in 12 geographical areas to supply CNG and PNG are currently in place.

Key Policies and Announcements

Theme	Policies/ Interventions/ Announcements	Description
Renewable Energy 	Assam Integrated Clean Energy Policy, 2025 ⁴	<ul style="list-style-type: none"> ▶ Aims to develop 11.7 GW of additional RE with or without ESS, including up to 2 GW of RTS projects by 2030. ▶ To produce 2000 kTPA Green Hydrogen and derived products for meeting demand of industries.
	Assam Solar Power Generation Promotion Policy 2025	<ul style="list-style-type: none"> ▶ Targets achieving 3.5 GW of solar power by 2030. ▶ Mandates solar power for all new government buildings, promotes grid-connected rooftop solar system, and supports development of 250 MW solar power and solar park infrastructure.
	Joint Venture between APGCL and Oil India	The Assam Cabinet approved the 620 MW of RE projects under a joint venture between APGCL and Oil India. ⁵
	Hedge ⁵ Manufacturing Solution MoU ⁶	₹500 crore investment for renewable energy and compressed biogas (CBG) projects in Assam.
	NGEAL Announcement	NGEAL is developing renewable energy projects in Assam, starting with a 250 MW / 500 MWh Battery Energy Storage System (BESS) to support peak demand, under a JV between OTPC & APDCL for phased implementation.
	Advantage Assam 2.0 Investment and Infrastructure Summit 2025	The Tata Power Company Ltd. pledged ₹30,000 crore to establish 5,000 MW of renewable energy projects, including solar, wind, hydro, and energy storage solutions ⁷ .
		Hindustan Power: Investment of ₹620 crore ⁸ for cutting-edge power and battery energy storage projects by signing a Memorandum of Understanding (MoU) at the Advantage Assam 2.0 Investment and Infrastructure Summit 2025.
APGCL Renewable Energy Projects (proposed)	Solar and hydrokinetic projects planned to reduce carbon emissions and enhance energy security.	

4 https://www.apdcl.org/website/docs/acts_and_rules/Assam_%20ICEP_2025.pdf

5 <https://www.mercomindia.com/assam-approves-620-mw-renewable-energy-projects>

6 <https://chemindigest.com/hedge5-partners-with-assam-government-for-renewable-energy-and-cbg-projects/>

7 <https://www.tatapower.com/news-and-media/media-releases/tata-power-signs-landmark-mou-with-assam-government-to-develop-and-tie-up-upto-5000-mw-of-renewable-and-clean-energy-with-rs-30000-crore-investment-at-advantage-assam-2-0>

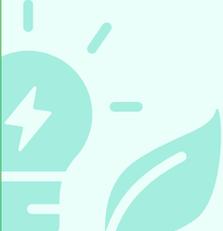
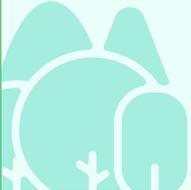
8 <https://www.indiatodayne.in/assam/story/hindustan-power-signs-mou-with-assam-government-for-rs-620-crore-re>

Theme	Policies/ Interventions/ Announcements	Description
Electric Mobility 	Assam State Electric Vehicle Policy, 2021	Aims for 25 percent BEV adoption by 2026, provides a 2 percent motor vehicle tax subvention and registration fee exemption for EV users. ⁹
	Vehicle Recycling 	Vehicle Scrappage Policy of Assam, 2022 ¹⁰
Climate & Sustainability 	Assam Agroforestry Policy 2024	Aims to increase forest cover, mitigate climate change, and boost farmers' incomes by integrating tree cultivation into agriculture, strengthening the State Agroforestry Board, and promoting sustainable land use practices.
	Assam 2030: Our Dream, Our Commitment	Aligns Assam's development with UN SDGs, focusing on sustainable resource use and governance.
	Green Budget 2025-26	After becoming the first north eastern state in the country to have dedicated green budget, allocating funds specifically towards environmentally sustainable initiatives, Assam continues its commitment towards sustainability by releasing its Green Budget 2025-26. While the details are yet to be made available in public domain, it may have allocations similar to those made in the previous two Green Budgets (12 percent of total budgeted expenditure in 2023-24 and 10 percent in 2024-25)
	Mission Amrit Sarovar Assam	Aims to rejuvenate and develop water bodies across the state.
	Amrit Brikshya Andolan (2023)	Mass afforestation drive aiming to plant 1 crore saplings across Assam, with financial incentives and digital monitoring to enhance green cover and carbon sequestration.

newable-energy-projects-1178720-2025-03-04

9 https://industries.assam.gov.in/sites/default/files/swf_utility_folder/departments/industries_com_oid_4/portlet/level_2/draft_electric_vehicle_policy_2021_version_2_-_copy_0.pdf

10 <https://morth.nic.in/sites/default/files/Vehicle%20Scrappage%20Policy%20of%20Assam%202022.pdf>

Theme	Policies/ Interventions/ Announcements	Description
Energy 	Exemption from Electricity Duty on Green Energy	One-year exemption for renewable energy used for captive consumption.
	OIL Sustainability Initiatives	<p>OIL targets net-zero emissions by 2040, with a ₹25,000 crore investment in renewables, green hydrogen, biofuels, and CCUS.</p> <p>Additionally, OIL is developing compressed biogas (CBG) plants in Assam, designed to process 125 tonnes per day of municipal solid waste, producing 2 tonnes of biogas per day for blending into the city gas distribution (CGD) network.</p>
	Biofuel Initiative	Assam Bio Ethanol Private Limited (ABEPL), a joint venture of Numaligarh Refinery Limited (NRL) and other private agencies, have commenced fuel-grade ethanol production with an annual capacity of 48,900 metric tonnes, marking the first phase of its biofuel initiative.
	MoU between ACCMS and partner organisation	To support the development of a Cooling Action Plan specifically for Assam, and to create a dynamic Greenhouse Gas (GHG) platform to monitor emissions and guide climate actions.
	MoU between ACCMS & partner organisation	To initiate a Cookstoves Carbon Project and REDD+, focusing on deploying fuel-efficient cookstoves to reduce emissions and improve energy efficiency across Assam. Ensuring clean finance, and REDD+ investment and complement the local environmental policies.
Forestry & Carbon Sequestration 	The Assam Agroforestry Development Board	To promote sustainable development for vulnerable communities in Assam through agroforestry.
	Agroforestry Board's initiative	Encourages tree planting on non-forest lands, simplifies registration, and promotes industrial use of farm-grown trees.
	MoU between ACCMS & partner organisation	Technical support on climate resilience, forest conservation, disaster risk reduction, climate finance, and green jobs.
Biotechnology & Green Finance 	MoU between DBT and the Govt. of Assam under the BioE3 Policy	A Centre-State partnership to accelerate high-performance biomanufacturing in Assam. ¹¹

