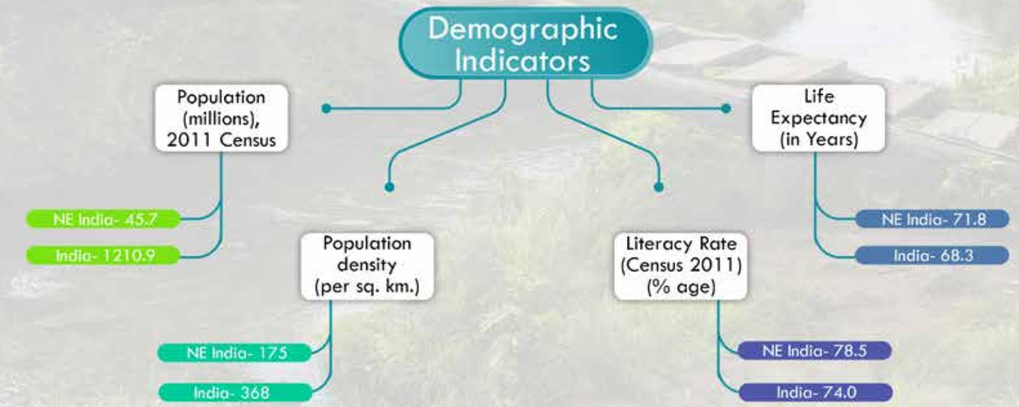
MINISTRY OF DEVELOPMENT
OF NORTH EASTERN REGION

Sector Profile
ENERGY

RISING NORTHEAST
INVESTORS SUMMIT 2025

North East Overview

The North-eastern Region (NER), which includes the eight States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura, is the easternmost region of India. Since each state has a border with at least one of the five nations to the east of the country, this area serves as a gateway to Southeast Asia and is of great strategic importance. Furthermore, the NER is widely recognized as one of the most diverse regions in Asia, characterized by a rich tapestry of ethnicities and languages. Each state within NER boasts a unique blend of distinct cultures and traditions. The Northeast region of India is a well-known biodiversity hotspot that is also home to a rich mix of cultures. In addition, the region is blessed with abundant natural resources that are yet to be fully explored and exploited. The region also holds a significant stake in the country's 'Act East Policy,' which is aimed at promoting economic, political and cultural ties with Southeast Asia. With a wealth of natural resources, human resources and potential for agriculture and horticulture, the region is rapidly emerging as a hub for sustainable manufacturing and service industries. Additionally, the region's rich ethnic, religious, linguistic and cultural diversity makes it a highly attractive destination for tourists, offering significant potential for growth and development in the tourism sector. With an area of 2.6 lakh sq. km, the NER accounts for about 7.98 per cent of the total geographical area of India while being home to 3.78 per cent of India's total population. The region is characterised by a mixed topography of hills and plains, with hills occupying 70 per cent of the land area. With a significant tribal population accounting for around 54 percent of its total population, especially in the hilly areas, the Northeast region of India is unique in its diversity. The region is home to approximately 135 Scheduled Tribe groups out of a total of approximately 705 across India. With plentiful natural resources, agro-horticultural and forest resources, hydroelectric potential, oil and natural gas and mineral deposits, the northeast region is well poised for investment and economic growth.



NORTHEAST OVERVIEW

The North-eastern Region (NER), which includes the eight States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura, is the easternmost region of India. Since each state has a border with at least one of the five nations to the east of the country, this area serves as a gateway to Southeast Asia and is of great strategic importance.

Furthermore, the NER is widely recognized as one of the most diverse regions in Asia, characterized by a rich tapestry of ethnicities and languages. Each state within NER boasts a unique blend of distinct cultures and traditions.

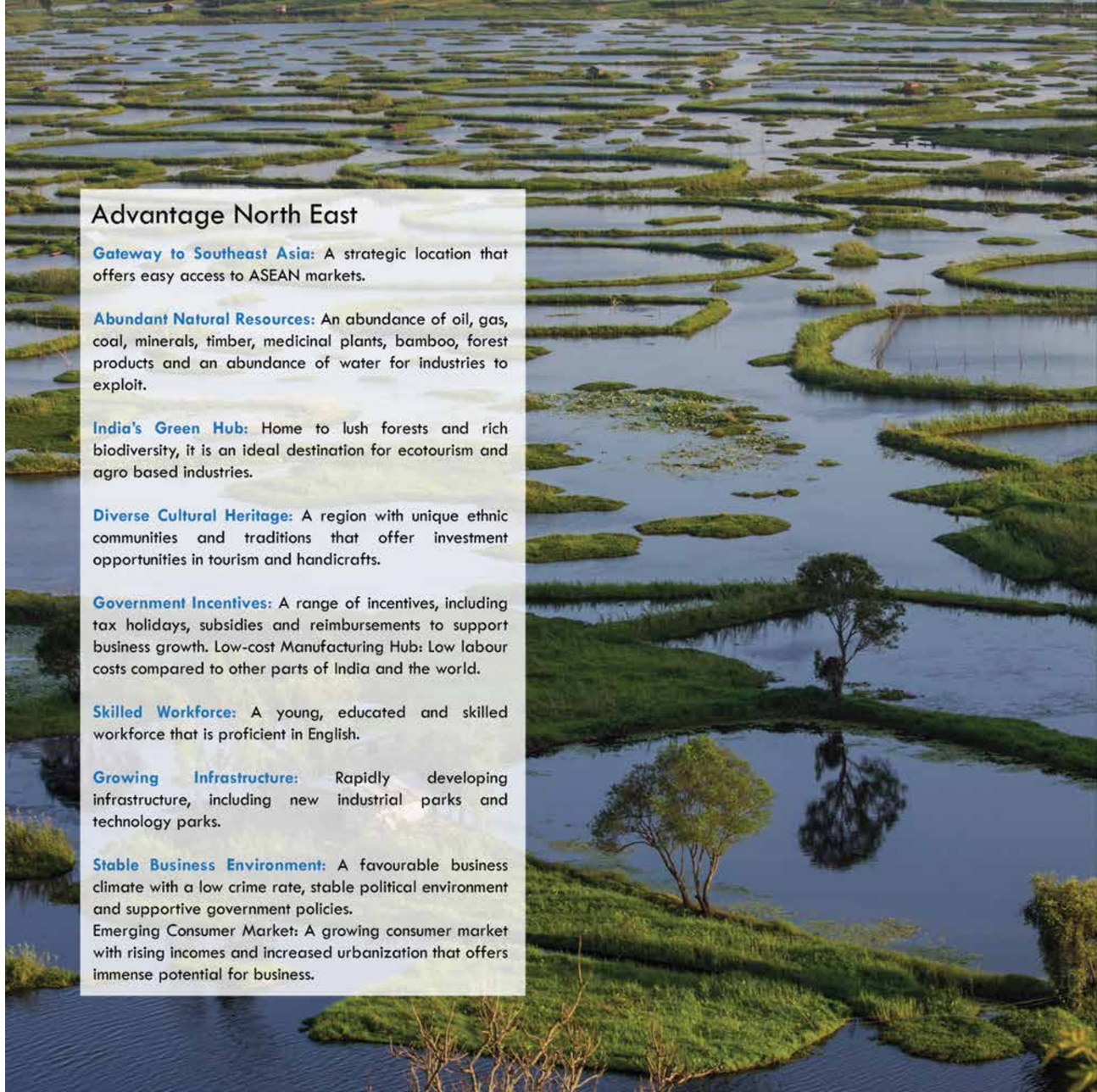
Key Economic Indicators

- The Region's GSDP at current prices is INR 9.26 lakh crore in FY 2023-24
- Compounded Annual Growth Rate (CAGR) of GSDP of North-eastern States grew at 8.17% from FY2015 to FY2022.
- Infrastructure: The region has a total of 16,125 km of national highways.
- Infrastructure: 20119 Km of state highways, and 2,657 Km of major district roads
- The average road density per 1000 Sq Km of area is 2258.5 Km against the national average of 1926.02 Km

Snapshot of NER

States/Parameters	Airports	State High ways (Km)	National Highways (Km) (2022)	Waterways (Km)	Railway (Km)	International Border (Km)	GSDP 2020 -21 (lakh cr)	Per Capita	Population (2011)	Literacy rate (%)	Area (Sq. Km)	Availability of Power (Crore Units)
Arunachal Pradesh	4	13500	4285.39	311	12	1866	48028	1,99,992	1,383,727	65.4	83,743	55
Assam	7	2530	4076.91	2024	2519	530	570243	1,19,308	31,205,576	72.2	78,438	605
Manipur	1	781	1840.34	44	13	398	45558	1,11,853	2,855,794	76.9	22,327	54
Meghalaya	1	768	1155.60	90	9	443	47381	1,23,896	3,366,755	74.4	22,429	161
Mizoram	1	170	1498.67	216	2	722	39356	2,15,144	1,097,206	91.33	22,081	38
Nagaland	1	650	1670. 47	276	11	215	45422	1,45,537	1,978,502	79.6	16,579	54
Sikkim	1	663	709.07		0	351	46773	5,20,466	610,577	81.4	7,098	45
Tripura	1	1057	888.61		265	856	84127	1,57,364	3,673,917	87.2	10,486	108
Total	17	20119	16,125.06	2961	2831	5533			46172054		263901	1113

***At current price base 2011-12**



Advantage North East

Gateway to Southeast Asia: A strategic location that offers easy access to ASEAN markets.

Abundant Natural Resources: An abundance of oil, gas, coal, minerals, timber, medicinal plants, bamboo, forest products and an abundance of water for industries to exploit.

India's Green Hub: Home to lush forests and rich biodiversity, it is an ideal destination for ecotourism and agro based industries.

Diverse Cultural Heritage: A region with unique ethnic communities and traditions that offer investment opportunities in tourism and handicrafts.

Government Incentives: A range of incentives, including tax holidays, subsidies and reimbursements to support business growth. Low-cost Manufacturing Hub: Low labour costs compared to other parts of India and the world.

Skilled Workforce: A young, educated and skilled workforce that is proficient in English.

Growing Infrastructure: Rapidly developing infrastructure, including new industrial parks and technology parks.

Stable Business Environment: A favourable business climate with a low crime rate, stable political environment and supportive government policies.
Emerging Consumer Market: A growing consumer market with rising incomes and increased urbanization that offers immense potential for business.

Connected North East

Accessibility: The Indian government has undertaken several initiatives to upgrade the existing road infrastructure and build new highways, bridges and tunnels to enhance connectivity within the region and with the rest of the country

Road Connectivity: The Indian government has undertaken several initiatives to upgrade the existing road infra - structure and build new highways, bridges and tunnels to enhance connectivity within the region and with the rest of the country. One of the most significant projects is the ongoing construction of the 3,000-km long Trans Arunachal Highway, which will connect all the districts of Arunachal Pradesh, the easternmost state of India. Another noteworthy project is the Dhola-Sadiya bridge, which is the longest bridge in India and spans over the Brahmaputra River in the state of Assam. Moreover, the Indian government has also launched the Bharat Mala Pari yojana, a flagship highway development program that aims to construct 35,000 km of highways across India. Under this project, several highways are being constructed in the North East region, which will further improve connectivity and promote regional development.

Air Connectivity: New airports have been constructed and existing ones have been modernized and upgraded with state-of-the-art facilities, making air travel a more comfortable and convenient option for the people of the region. The government has also introduced various incentives to attract airlines to operate in the North East, such as reduced landing and parking fees, which has led to an increase in the number of flights to the region. With better air connectivity, the North East is now more accessible to tourists and businesses from other parts of India and the world. This has not only helped to boost the local economy but has also contributed to the growth and development of the region.

Rail Connectivity: The Indian Railways has taken steps to preserve the cultural and natural heritage of the region by introducing special trains that showcase the unique beauty and diversity of the North East. This has not only helped to promote tourism in the region but has also generated awareness about the rich cultural and natural heritage of the North East. The introduction of new trains and the extension of existing ones has also contributed to increased connectivity in the region. With better rail connectivity, the North East is now more accessible to tourists and businesses from other parts of India and the world. This has not only helped to boost the local economy but has also contributed to the growth and development
of the region

Energy Sector in India – Industry Overview

India's infrastructure and logistics sector has experienced significant growth, positioning the country as a global economic powerhouse. The sector encompasses a vast network of roads, railways, ports and airports, facilitating seamless movement of goods and passengers. Strategic initiatives like the PM Gati Shakti National Master Plan and the Bharat Mala Pari yojana have been pivotal in driving this development.

Leading Practices

Integrated Planning: The PM Gati Shakti National Master Plan, launched in 2021, integrates various ministries, including Railways and Roadways, to ensure coordinated execution of infrastructure projects. This holistic approach enhances connectivity and reduces travel time.

Public-Private Partnerships (PPP): Encouraging private sector participation has led to efficient project execution and innovation in infrastructure development.

Technological Adoption: Implementing digital solutions and advanced technologies has improved project monitoring, maintenance and service delivery in the logistics sector.

Energy Sector in North East India – Industry Overview Leading Practices

- **Hydropower Projects**
  - India is the first G20 country to achieve the goals of the Paris Agreement by tripling the non-fossil fuel energy capacity.
  - Balance of large-scale projects along with smaller, sustainable projects, considering sediment management and addressing environmental impacts, while also striving for social equity and economic benefits for local communities
  - India's installed utility-scale hydroelectric capacity was 46,000 MW
  - Promotion of solar-powered irrigation in agriculture

- **Recent Development Projects**
  - 42 hydro power projects with an aggregate capacity of 18,034 MW are under construction and 30 hydro power projects with an aggregate capacity of 21,810 MW have received concurrence from the Central Electricity Authority (CEA) which can be taken up for construction.
  - The National Green Hydrogen Mission, launched in 2023, aims to position India as a global leader in hydrogen energy, with investments exceeding ₹8 lakh crore.

- **Leading Companies**
  - National Hydroelectric Power Corporation (NHPC)
  - Satluj Jal Vidyut Nigam (SJVNL)
  - NTPC-Hydro

- **R&D in the sector**
  - National Institute of Solar Energy (NISE): Focuses on solar energy research.
  - Central Power Research Institute (CPRI): Engages in research on power systems.

- **Policy/ Schemes Support**
  - Scheme for Flexibility in Generation and Scheduling of Thermal/Hydro Power Stations: This scheme allows thermal and hydro power stations to adjust their generation schedules based on renewable energy variability for better integration of solar and wind power into the grid. The scheme enhances grid reliability, reduces power curtailment and improves efficiency supporting India's transition towards a sustainable and flexible energy mix.
  - National Institute of Solar Energy: Institute is dedicated to solar energy research and technology development and plays a key role in policy support, skill development and innovation in the solar sector by conducting testing, certification and training programs to promote solar adoption facilitating large-scale deployment of solar energy solutions across India.
  - Central Power Research Institute: Institute supports in research and testing on power systems and electrical equipment by developing standards, ensuring grid reliability and advancing power technologies. It also supports innovation in transmission, distribution and renewable energy integration for a robust power infrastructure.

Energy Sector in North East India – Industry Overview Leading Practices

Northeast India has immense hydropower potential (~58,000 MW).
Key projects include:

- **Hydropower Projects**
  - Subansiri Lower Hydroelectric Project
  - 2,880 MW Dibang Multipurpose Hydroelectric Project of Arunachal Pradesh will be India's highest dam generating generate more than 11,000 million units of Hydro power every year

- **Solar Energy Initiatives**
  - Assam Integrated Clean Energy Policy, 2025: The aim is to achieve an additional 11,700 MW of renewable power projects in the state up to 2029-30.
  - Tripura's Floating Solar Project at Dumbur Lake: The National Thermal Power Corporation has proposed a groundbreaking 130 MW floating solar power plant on Dumbur Lake in Tripura's Gomati district. This initiative aims to significantly bolster the state's renewable energy capacity.

- **Wind and Biomass Energy**
  - States like Meghalaya and Nagaland are actively exploring wind and biomass energy to enhance rural electrification. These renewable sources help in providing sustainable and decentralized power solutions to remote areas while contributing to energy security and reduced carbon footprint.

- **Recent Development Projects**
  - 3,097 MW Etalin project in Arunachal Pradesh is expected to be operational in 2026.
  - 240 MW Heo Hydro Electric Project in Shi Yomi District of Arunachal Pradesh is under construction with an investment of Rs. 1,939 crore.
  - Subansiri Lower Hydro Electric Project, a 2000 MW run-of-the-river hydroelectric project is under construction on the Subansiri River on the border of Arunachal Pradesh and Assam
  - 500 MW Teesta Stage-VI and 300 MW Panan HEP in Sikkim
  - The 600 MW Kameng Hydro Power Project in Arunachal Pradesh was inaugurated in 2022, making the state power surplus.

- **Leading Companies**
  - Northeast Electric Power Company (NEEPCO)

- **R&D in the sector**
  - NEEPCO's Initiatives: Exploring non-conventional energy sources like solar and wind.

- **Policy/ Schemes Support**
  - Development of Solar Parks and Ultra Mega Solar Power Projects under Ministry of New & Renewable Energy National Solar Mission Division
  - Pradhan Mantri Urja Suraksha evam Utthaan Mahabhiyaan (PM-KUSSUM)
  - PM Surya Ghar Muft Bijli Yojana
  - National Bioenergy Programme
  - Scheme for Flexibility in Generation and Scheduling of Thermal/Hydro Power Stations through bundling with Renewable Energy and Storage Power.

Competitive Advantage for Energy Sector in North East

The North Eastern Region is endowed with vast energy resources, both conventional and renewable and has the potential to play a crucial role in India's green energy transition. In addition to hydropower and solar, NER is witnessing a shift towards wind energy and biomass. Locations such as Gangtok, Bomdila and Dibrugarh have been identified as viable sites for wind energy generation, while Mizoram has significant biomass reserves that can be tapped for sustainable energy production. The region is also expanding its energy storage and transmission capabilities, with cross-border power trading initiatives underway with Bangladesh, Bhutan and Myanmar. The Northeast is on track to become a self-sustaining green energy hub, reducing dependence on fossil fuels and contributing significantly to India's net-zero emissions goal by 2070.

Renewable Energy Potential in the North Eastern Region

Present scenario
- With improved connectivity under the North Eastern Region Power System Improvement Project (NERPSIP), the states are better integrated into the national grid.
- Assam, Manipur and Mizoram are focusing on expanding solar parks.
- With improved connectivity under the North Eastern Region Power System Improvement Project, the states are better integrated into the national grid.

Hydropower Potential
- 40% of India's untapped hydroelectricity potential lies in the Northeast.
- The region has a combined 62,000 MW of solar energy and 56,480 MW of hydropower capacity yet to be harnessed.
- Arunachal Pradesh, Sikkim and Meghalaya are actively developing large hydropower projects.
- Sikkim and Meghalaya have been actively promoting small hydro projects (<25 MW).

Solar Energy
- NER region receives decent solar insolation (~4-5 kWh/m²/day).
- MNRE estimates ~63 GW solar potential in the NER
- States like Assam, Tripura and Meghalaya are promoting rooftop solar, floating solar and solar parks.

Biomass and Bioenergy
- Abundant biomass from agriculture and forestry residues.
- Tripura, Assam and Manipur have significant potential for biomass-based power and bio-CNG projects.

Wind Energy
- Limited but identified in high-altitude regions like Sikkim and Arunachal Pradesh.
- Mizoram and Nagaland have also been surveyed for small wind-hybrid systems.

Government Policies & Investments in NER

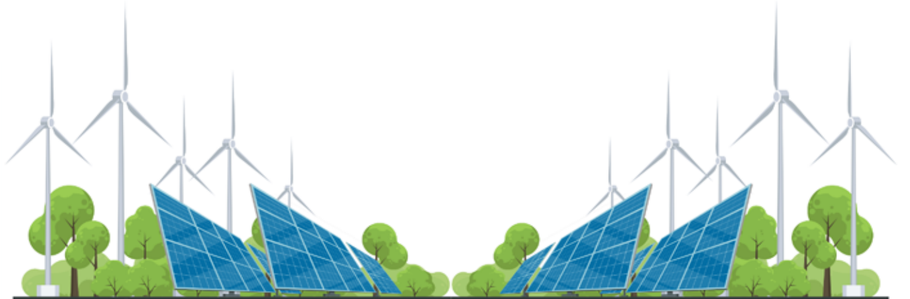
Policy Initiatives
- Small Hydropower Policy in Arunachal Pradesh and investor-friendly power policies in Sikkim encourage private investment.
- A capital grant of INR 22.5 million per MW is available for small hydro projects.

Major Investments & Infrastructure Development
- £980 million earmarked for upgrading power infrastructure across all eight North Eastern states.
- Viability Gap Funding scheme under the Ministry of New and Renewable Energy (MNRE) aims to scale up solar rooftop capacities by 2,700 MW.
- Assam has implemented grid-connected solar rooftop systems with a 70% subsidy from the central government, making solar energy more accessible and affordable.

Estimated potential of Renewable Energy in the North Eastern Region

#	States	Wind Power (MW)	Small Hydro Power (MW)	Bio-Energy (MW)	Solar Power (MW)	Large Hydro Power (MW)	Total (MW)
1	Arunachal Pradesh	274	2064.92	8	8650	50064	61060.92
2	Assam	246	201.99	220	13760	650	15077.99
3	Manipur	0	99.95	15	10630	1761	12505.95
4	Meghalaya	1	230.05	13	5880	2298	8402.05
5	Mizoram	0	168.9	3	9090	2131	11392.9
6	Nagaland	0	182.18	10	7290	1452	8934.18
7	Sikkim	0	266.64	2	4040	4248	9456.64
8	Tripura	0	46.86	5	2080	0	2131.86
	Total (MW)	**521**	**3261.49**	**276**	**62300**	**62604**	**128962.49**

**As of April 2022*



Highlights of Ease of Doing Business in North East

Implementation of single window clearance portal in all the states of North East for providing G2B services in a seam□less timebound manner

- As a measure to provide a conducive business eco system, the states of North East India have implemented one stop single window system for all G2B permits and permissions required for any business activity
- Among many other features of the single window systems, a notable functionality in the system is Centralised Inspection Module which helps in random allocation of inspection inspectors and joint site inspection thereby reducing the time, procedure and cost of many G2B services

Integration with NSWS
The North Eastern states have onboarded or are in the process of onboarding their G2B services in the National Single Window Portal. This will enable investors to easily apply for business clearances for their investments in the region.

Industrial Policy for attracting investment in the region
To attract investment in the NER, the states have proactively implemented Industrial Policies which offer state specific incentives

Preferential land allotment policy through creating of Industrial Land Banks
Each state in the North East has developed industrial land banks for ease of land allocation
Sector specific Industrial Zones like Plastic Park, Textile Parks and IT Parks have been developed in the region

Reducing Compliance Burden
NE States have undertaken an exercise to reduce compliance burden through a process of rationalisation and decriminalizing minor offences.

A robust feedback and grievance redressal mechanism
The states have put in place robust feedback and grievance redressal mechanisms to further improve ease of doing business

Investment Opportunities in the Energy Sector in Northeast India

Renewable Energy Expansion

The North-East region holds an unrealized potential of over 62,000 MW in solar energy and over 62,000 MW in hydro power presenting significant opportunities for investment in clean energy projects. With increasing national emphasis on green energy, investors can explore:

- **Large-scale Solar Parks** in Assam, Manipur and Mizoram, harnessing vast open land and underutilized spaces.
- **Floating Solar Parks:** Potential in reservoirs and wetlands.
- **Large and Small Hydropower Plants** in Arunachal Pradesh and Sikkim, leveraging the region's perennial river systems for sustainable power generation.
- **Bamboo based Bioenergy:** Abundant bamboo resources in the NER support biomass pellet production and biomass gasification technologies.

Battery and Energy Storage Manufacturing

The push towards electric mobility and energy storage presents major investment prospects:

- **Battery manufacturing units** leveraging India's exemption of basic customs duty on key materials like cobalt powder and lithium-ion battery waste.
- **Development of non-lithium battery ecosystems** to support diversified energy storage solutions.
- **Establishing Energy Storage Systems** growing demand for battery storage solutions to support solar and wind to stabilize the grid and enable renewable integration.

Hydrocarbon and Gas-Based Power Plants

The Government of India's Hydrocarbon Vision 2030 aims to transform the North East into a dominant hydrocarbon hub. Investment opportunities include:

- **Compressed Bio-Gas Plants** utilizing the region's rich natural gas reserves for clean energy generation.
- **Bottling Plants:** Expansion and automation of bottling units.

Transmission Infrastructure & Cross-Border Power Trading

The North-East is strategically positioned for regional energy trade with neighbouring countries, providing investment avenues in:

- Cross-border power transmission with Bangladesh, Bhutan and Myanmar to establish the region as a clean energy export hub.
- Upgradation of intra-state transmission networks to ensure reliable energy distribution.
- Smart grid projects to enhance grid stability and efficiency.

Green Jobs and Skill Development

- PM Surya Ghar Free Electricity Scheme is creating new skills in the solar sector, fostering investment in workforce training.
- Growth in green job opportunities linked to solar, wind, hydro and bio-energy projects.
- Expansion of energy service ecosystems, enhancing local employment in installation, maintenance and manufacturing.

Policy Support and Incentives

The government has implemented various investment-friendly policies

- Relaxed exploration timelines for challenging hydrocarbon blocks.
- Operationalization of HELP & OAL schemes for North Eastern oil and gas fields.
- Fiscal incentives and subsidies to promote solar and hydro projects.
- Implementation of the National Critical Minerals Mission, ensuring a robust supply chain for battery manufacturing.

G20
भारत 2023 INDIA

सत्यमेव जयते
MINISTRY OF DEVELOPMENT
OF NORTH EASTERN REGION

RISING NORTHEAST
INVESTORS SUMMIT 2025

Investment Facilitation Partner

INVEST INDIA

Industry Partner

FICCI