

JULY 2021

YOJANA SUMMARY

AN INITIATIVE BY THE PRAYAS INDIA

THE PRAYAS IAS





Summary of Yojana

July 2021

Theme: North East

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Governance in NER

North East India – An Overview

- The North East India, comprising of eight States, is an area blessed with abundant potential and opportunities.
- The region is populated by a number of different communities, with diverse cultures, languages and customs.
- It is also marked by difficult terrain, backward areas, and limited connectivity.
- The region is connected to mainland India only through a narrow stretch of land (about 22 km wide) in West Bengal called the ‘Siliguri Corridor’, sometimes known as the “Chicken’s Neck”.
- The entire north eastern part of the country is bounded by international borders.
- The strategic position of the land entails a numbers of advantages as well as challenges.

Institutional Support

- The Department of Development of North Eastern Region (DoNER) was established in the year 2001. It became full-fledged Ministry of the Government of India in 2004.
- It deals with matters related to the socio-economic development of the eight States of Northeast India.
- Also, the North Eastern Council (NEC) is a statutory regional planning body for North East India constituted under the North Eastern Council Act, 1971. All the Governors and the Chief Ministers of the eight States in the North East are members of the NEC, with the Union Home Minister being the Chairman.

Mizoram - Introduction

- Mizoram literally translates as “Land of the Mizo people”. The word “Mizo” is an umbrella term for a number of tribes and clans, such as *Lusei* (formerly Lushai), Lai, Mara, Hmar, Paite, etc.
- The area was known to the British as the Lushai Hills.
- Mizoram became a full-fledged State within the Union of India in 1987.



Culture and Religion

- Before the coming of the British, the tribes were primarily animistic. They practiced primitive farming.
- The British annexation was followed by the arrival of Christian missionaries, who invented a script and an alphabet for the Mizo language.

Mizo Insurgency (1966-1986)

- In 1959, the Mizo Hills, which was then a District under the State of Assam, was hit by a famine known locally as 'Mautam'.
- The Mizo National Famine Front was formed by Laldenga, which later got transformed into a political party called Mizo National Front (MNF).
- The MNF launched an armed uprising against the Union of India, which got swiftly suppressed. Soon after, the MNF retreated and continued its operation from erstwhile East Pakistan and Burma (Myanmar).
- Finally, the Mizoram Peace Accord was signed in 1986, within the framework of Indian Constitution.

International Borders

- Mizoram shares a 318 km – long hard border with Bangladesh on its western side, which is guarded by the Border Security Force (BSF).
- Along the eastern side of the State, the 404 km border with Myanmar is being manned by the Assam Rifles, a paramilitary force.
- Under normal times, India agrees to a Free Movement Regime (FMR) with Myanmar, allowing residents within 16 km on either side of the border to travel freely without visa restrictions for 72 hours.
- Mizoram has the strategic advantage of acting as a 'land-bridge' between the two countries. It has a real potential to become India's 'Gateway to the South East Asia' under the Act East Policy.

Minorities and Backward Areas

- Under the Sixth Schedule to the Constitution of India, there are three Autonomous District Councils (ADCs) in Mizoram for Lai, Mara and Chakma tribes – the major tribes found in the state.



Economy of Mizoram

- The tertiary or service sector constitutes a share of about 43.28% of the total Gross State Value Added. While the industry sector contributes about 30.64% large factories or industries are more or less absent.
- While more than half of the population derive their income from agriculture, the contribution of agriculture and allied sector to GSVA is only 26.08%.

Agriculture

- So Mizoram is primarily an agrarian State.
- The Mission Organic Value Chain Development (MOVCD-NER) has been implemented since 2017 in Mizoram for the promotion of organic farming.
- It aims to replace traditional subsistence farming with market-oriented farming, following cluster approach for high valued crops such as turmeric, chillies, ginger and tea.
- The Sub Mission on Seeds and Planting Material (SMSP) aims to ensure production of high yielding seeds of all crops.

Horticulture

- Horticulture is one sustainable land-based activity in Mizoram due to favourable agro-climate conditions. For example, cultivation of cabbage, dragon fruit, Mandarin Orange etc.

Socio-Economic Development Policy (SEDP)

- The SEDP is a flagship policy of the current ministry in Mizoram. The SEDP is envisaged to bring about sustainable development with both short-term and long-term implications.
- The Administrative policy within it seeks the extensive use of Information & Communication Technology for effective governance.
- The core focus points of the Economic policy include self-sufficiency in Agriculture.
- The Social Development policy lays emphasis on Manpower Development, Education, Social Security, etc.

Mizoram – Strengths

- Mizoram is the best State in India in terms of forest cover.



- It has the third highest literacy rate in the country.
- It has potential oil and natural gas reserves, while significant solar potential and bamboo stock.

Vibrant Community

- There is the presence of a classless society in Mizoram. The important role played by the community is evident during the Covid-19 pandemic.
- The Local Level Task Forces were constantly making efforts towards providing financial aid and essential items to the poor and needy families most affected by the lockdowns.

Mizoram - Challenges

- Being a landlocked State, connectivity in all its dimensions remains a challenge for Mizoram.
- It has only one airport, only one railhead and is connecting to only two National Highways.
- Also, Mizoram is unfortunately plagued by high incidences of cancer and HIV.

Mizoram - Potential

- The state has immense potential in terms of agriculture, horticulture and allied activities. An overwhelming majority of farmers still practice shifting cultivation (Jhumming).
- The agriculture sector is also plagued by problems like small landholdings, uneducated farmers, difficult topography etc.
- Modern and scientific farming is the urgent need of the hour.
- Infrastructure such as cold storage, agriculture link roads, and easily accessible markets should be priorities.
- Tourism, specifically eco-tourism and rural tourism, is another sector with massive potential. However, for tourism to really take-off, the Inner Line Permit (ILP) system, which restricts entry of non-tribals into the State, may be a slight inconvenience.
- Handlooms and Handicrafts is another industry with potential in Mizoram, due to the indigenous textiles culture of the State.



Kaladan Multi-Modal Transit Transport Project (KMMTTP)

- KMMTTP is a massive connectivity project being undertaken by the Government of India to connect Haldia in West Bengal to Sittwe Port in Myanmar, which will enter India through the southern part of Mizoram.
- The KMMTTP is expected to be a game-changer by providing a valuable alternate source of connectivity, while considerably reducing the long distance currently travelled via the Siliguri Corridor.

Conclusion

- In the midst of challenges, expectations and optimism, all the stakeholders have to play their part.
- It is a fact that the region is riddled with challenges and problems. However, in the words of Albert Einstein, “In the middle of a difficulty lies opportunity.”
- It is up to the people of the region to grab these opportunities with both hands.

India's Asset, Threat and Growth Driver

The eight states of the Northeast form a very integral and inseparable part of India since time immemorial.

Cultural Links and Rich Treasure

- There are innumerable pieces of evidence to show that our brothers and sisters from Northeast India were known and were assimilated in the immense body of Mother India from 10th-8th Century BCE.
- The Mongoloids were known as Kiratas. Yajurveda and Atharva Veda both mention Kiratas.
- Mahabharata describes Shiva and Uma disguising as Kirata couple to test Arjuna's penance.
- In Ramayana (Kishkindhakanda) Kiratas are mentioned as rich in gold, gems, expert in cloth making and tying hair in pointed knots.
- A school of Tantra is attributed to Minanatha and belongs to Kamrupa.
- Assam witnessed a great sage, Sankaradeva (1449 to 1669 AD) who relentlessly pursued mission of spreading Vaishnava bhakti.
- Khunbao, a leader of Noctes of Tirap district in Arunanchal Pradesh, became a disciple of Ram Ata of Bali satra. He is well known as Sant Narottam.
- The tale of ever spreading, all-absorbing waves of Bhakti will not be complete without the episode of Buddhist tides.
- Buddhist occupy a significant part of Arunanchal Pradesh. Monpa, Sherdukpen in Tawang follow Mahayana Buddhism and Khampti, Singpho in Dibang district follow Hinayana Buddhism.



- The grand Lama (the Jewel in the lotus) is said to sage Padmasambhava. He is considered as an originator of the systems of worshipping which is followed by many even now from Ladakh to Lhasa.

Driving India's Growth Engine

- What is needed today is “Development through culture” not development versus culture. Development problem has to be seen in the light of Indian culture and her inseparable links with local cultures, indigenous faiths, ethnic diversity, biodiversity and such unique but eco-friendly things of this vast and unique area.
- Cultural and developmental renaissance of the Northeast area will give us an elevation to be once again a dominant soft power in Southeast Asia and Northeast Asia.
- Almost all eight Northeastern states are growing in double digits now. From organic food to renewable energy.
- The latest initiative is a North East Special Infrastructure Development Scheme (NESIDS) entirely funded by the central government for infrastructure projects like water supply, power and connectivity.
- With its heavenly natural beauty, scenic and stunning locations and unique flora, fauna, archaeological sites, loving people and pleasant climate, Northeast has great tourism potential and so it is specially been promoted in recent times and aided now by much-improved infrastructure.
- More attention is also given now to primary and secondary education and health.
- NESID is promoting a lot of industrialization in the region, in the manufacturing and service sectors.
- The Northeastern Development Finance Corporation Opportunity Scheme for Small Enterprises (NoSSE) is specially formed to help first-generation entrepreneurs.
- The Act East Policy emphasized the development of the infrastructure of the region by building roads and highways, expansion of air connectivity, an extension of railway networks, the opening of trade routes etc.
- There has been a clear emphasis on skill development initiatives amongst the youth in the region.
- Development also needs a careful balance with environmental and cultural heritage preservation.
- Development through culture is the mantra for the Northeast and that will surely make us winners in our Look East and Act East vision.



Agriculture and Sustainable Development

- The NER has a total geographical area of 262230 sq. km which is nearly 9.12% of the total area of the country with more than 46 million population. About 35% area in the region is plain except Assam where plains account for 84.44% of its total geographical area.
- Net sown area is highest in Assam followed by Tripura. Arunachal Pradesh has lowest net sown area in the region, while cropping intensity is highest in Tripura.
- Out of 4.0 million hectare net sown area of the region, roughly 1.3 million hectare suffers from serious soil erosion problem. The region receives an annual rainfall of 2000 mm accounting for around 10% of the country's total precipitation.
- The soil of the region is acidic to strongly acidic in reaction. The soils are however rich in organic matter.
- The society in NER is largely agrarian and depends on agriculture and allied sector for livelihood and other support.
- Around 56% of the area is under low altitude, 33% mid altitude and the rest under high altitude.
- Agriculture production system is by and large CDR type. The system is characterized by low cropping intensity (114%) subsistence level and mono-cropping.
- There are topographical disadvantages in the region. Land use pattern is also relatively faulty for which annual loss of top soil is much higher than all India level. There is also lack of proper water harvesting measures in place.
- Fertilizer consumption the region is also very low.
- Farming is predominantly rice based with little exception in the state of Sikkim where Maize is a dominating crop. Mixed farming system is the order as most of the farmers want to produce their household food and nutritional need without having to depend on outside sources.
- The system, therefore, supports horticulture and animal husbandry partly due to preference for non-vegetarian food.
- Agriculture and allied activities are the main source of livelihood for the people of North East region and any attempt to reduce poverty as well as to place the region in developmental paradigm shall have to base on system wise eco-regional planning of agriculture development.

Transformation of the Region

- The ongoing economic reform process has thrown up several opportunities as well as challenges.



- There is a need to reorient their development strategy within the overall macro-economic framework. This is essential to achieve the broader developmental goals because stronger states make stronger nation.
- In recent years, the central and state governments have undertaken several initiatives to stimulate regional economy and promote agricultural growth.
- There is the existence of a large number of production possibilities of a wide range of fruits and vegetables, flowers and herbs, spices and plantation crops (i.e. tea, coffee, rubber) in the region, much of these could be processed and gainfully traded in the rest of the country and worldwide.
- At the regional level, Assam occupies the highest share accounting for 78% of the total cultivable area. Among the crops the cereals occupy, on an average 74% of the gross cropped area.
- But the existing rice based production system failed to provide adequate household income support.
- On the whole, agriculture in the NER is characterized by:
 - Diversity, uneven land, high and variable rainfall pattern and ethnicity.
 - Domination of rice with low productivity and risky production.
 - Limitation of geo-physical features in expansion of land
 - Various combinations of crop-livestock-fish-silk are followed in the region but such diversification contribution negligently.
 - Preponderance of small and marginal (S&M) farmers is an important feature of the region.
 - Vulnerability to natural calamities such as floods, submergence as well as droughts, deteriorating the rural life and rural poverty becoming rampant.

Self Sufficiency in Rice & Food Grain Production

- Deficit in food grains especially rice in the NER is increasing over the years with the increasing population. Some of the important reasons for the deficit in rice production are use of low productive local cultivars, low seed and variety replacement rates, inadequate irrigation facilities, use of outdated techniques, low fertilizer use efficiency and lack of adoption of modern techniques.

Horticulture and Livestock Sectors in NER

- Organised cultivation of crops like Kiwi, Passion fruit, off-season vegetables, Anthurium, cut flowers (rose), Patchouli, Geranium etc. has started in recent years.
- White food grains are grown in the valleys (plain and gentle slopes), horticulture crops are cultivated on higher hill slopes.



- There is also huge potential for milk production, meat production and thereby livestock contribution in the NER economy.

Policy Perspectives

- Despite the abundant natural resources, congenial climate and rich human capital, the NER has failed to reap the benefits of huge opportunities for societal welfare.
- In effect, the agricultural economies are falling back into the vicious cycle of low productivity, unemployment, low income and poverty and continue to limp, and this has increased the social threat perceptions.
- Therefore, a synergy is needed among the inter-disciplinary research community, policy planners and implementers, along with civil society to deal with the multifaceted situation.
- In a situation of extreme diversities regionally differentiated strategies for development of agriculture and allied sectors are required.
- In the rice dominated areas, improved rice plus strategy (rather than rice alone), is suggested. The flood escaping production system is required, in flood prone areas, where Boro rice is a promising crop enterprise.
- High value crops (such as Kala joha, Pachauli, Passion-fruits, etc.), numerous aromatic and medicinal plants can be practiced with low-cost and resource conserving practices (zero-tillage, system for rice intensification, etc.) to meet the growing domestic as well as international demand.
- Another strategy like agriculture plus is required. That is, crop production should coexist with livestock, plantation, floriculture, medicinal crops and sericulture systems.
- Existing low input agriculture should be converted to opportunity as it is environmentally benign. Also, market for organic product may be explored.
- Agro-processing sector hitherto is a neglected area but it has high potential to add value and reduce post-harvest losses.
- The innovation on energizing and sensitizing the rural institutions is yet another new thrust. Capacity building through wide scale knowledge initiatives, contract farming, reviving/revitalizing the village institutions such as Field Management Committees and traditional village panchayats/ councils is important.
- Financial Institutions such as NABARD, NEDFI, SIDBI, IDBI, etc., may use community-based institutional collaterals for effective credit delivery.



- Continuous R&D support system for generating small and marginal farmers' friendly new agriculture technology should be given.
- An agricultural database must be streamlined properly on a priority basis by taking the help of electronic revolution. Basic tool of e-governance is necessary in this regard.

Long-term Peace & Development

- From Mishmi hills of Arunanchal Pradesh to the Mizo hills, not to mention of Imphal Valley and broad plains of the two valleys of Assam, the young, educated and confident entrepreneurs are coming up slowly changing the landscape of Assam.
- Pushing the boundaries of the conventional enterprises, they are venturing into the world which is considered unthinkable even a decade ago. The primary reason is the long term peace.
- In the past decade, there has been long term peace all over the region and that is why the ideas are flourishing and that is the reason a venture capitalist could dream of funding something in Nagaland or Assam.
- There are sporadic incidents, slow pace in achieving a Naga solution, but the peace has taken an irreversible stand and today in front of the mighty desire of peace for all the people of the region has forced even the toughest of hard nuts in the militant camp to think otherwise.
- The emerging challenge is to invent new ways of ensuring the participation of states in the formulation of national policies and motivating them for effective implementation in key development areas.
- The basic idea behind the turn of cooperative federalism is the sharing of powers and responsibilities between the three levels of government which involves participative policymaking.
- This further involves empowering the interested council created under Article 263 and mandated to deal with coordination between states and initializing the structural changes in the same light.
- To be socially and economically sustainable, India's growth has to be inclusive. However, the country's North East has been experiencing a comparatively slower pace of industrialization and socio-economic growth.
- Though the region is blessed with abundant natural resources for industrial and social development, they haven't been utilized to their full potential.



- But that is fast changing, thanks to the big-ticket infrastructures in the surface transport. .The two single biggest fast-moving projects is the 1500 kilometer long Trans Arunachal Highway from Sessa north of Tezpur to Naharkatiya near Nagaland through Arunachal Pradesh.
- Moreover, no less than five major bridges over Brahmaputra, along with the world's longest bridge at Dhubri-Phulbari are in the various stages of construction which are going to unlock the North East India completely.
- The resource-rich North East with its expanses of fertile farmland and huge talent pool could turn into one of India's most prosperous regions.

North-East Implementation Agency

- There has been an issue of the implementation agencies not being in sync with the well-intended plans. It is therefore of pertinent importance that we develop a plan to strengthen the implementation capacity.
- This can be best achieved by setting up a North-East Regional Project Implementation Authority, which will not only handle the funding of the projects, but also put together a team for hands-on monitoring of each project, coordinating with state governments and all other relevant agencies, which will implement and monitor each vertical with select private sector partners.
- The emphasis on the comparative advantages which lie in horticulture, handlooms and handicrafts, rural industries should not distract one from the need to boost manufacturing and create urban jobs.
- In fact, 'Make in the North-East' – the North-East's trade with South-East Asia needs further development.
- These are processed and re-imported to India as stone chips and cement. There still exists scope for value addition and cross-border collaboration. There is potential for horticulture to progress as the region produces quality turmeric and ginger, exotic fruits like kiwi and passion fruit, that grow easily.
- But this segment is languishing because marketing arrangements are inadequate. The absence of efficient cold storage chains exposes cultivators to market fluctuations.
- Tourism, too, has not made much headway due to poor infrastructure development. There are uncoordinated and fragmented efforts by individual states.
- The long tourism journey can start with simple, doable steps such as: creating a North-East platform for coordinated action, developing destinations etc.
- Today, the North East is insurgency free. Occasional incidents are too insignificant in front of the greater picture. Sooner or later the last remaining accord – the Naga Accord – will be signed.



- Several initiatives have been taken in the last year and progress has been made. Under the “Special Accelerated Road Development Programme in North-East (SARDP-NE), the Trans-Arunachal highway is being developed.
- Under the BBIN initiative, a sub-regional Motor Vehicle Agreement that allows buses and later private vehicles with a Bhutan, Bangladesh, India and Nepal (BBIN) permit to travel unobstructed through borders between Bangladesh, Bhutan, India and Nepal. Similarly, bus services with Bangladesh have improved.
- With little bit of more enterprising zeal, support from local and central government and most importantly long term peace will propel the future of the North East in years to come.

Educational Policy Interventions for the Region

- The National Education Policy 2020 (NEP 2020) is embarked upon a vision of “transforming the system to meet the needs of 21st Century India.”
- With respect to the North-east region, the minimal presence of industries makes the region’s youths look for work elsewhere. Our students were dependent on ‘permanent’ government jobs for a long time, but these are now miniscule compared to a large number of ‘educated’ persons.
- The education systems, especially at the college and university level, are still focused around traditional subject areas granting degrees in specific domains. With virtually no connection to the industry, national or global, the suitability of the domain-specific degrees in gaining employment is the bare minimum.
- The focus is on gaining a degree with knowledge in a specific domain that may be a very idealistic mission, but pragmatics demand that such a linear vision will not materialize if the need to ‘get a job’ in the near future.
- There is a practical necessity to think about a large number of students who will need some life skills or value-added training during these formative years to gain employment in a very competitive market.
- There is a strong argument for a shift from ‘knowing’ to ‘doing’ and ‘being’ in education. Extending this argument for the education policymakers of the North East, we can say that our education systems need a similar rethinking whereby our governments, institutions, administrators and faculty should focus on restructuring our courses and programmes to incorporate three major elements – globalization, leadership, and integration.



- With some strategic interventions from government, educational regulatory bodies, institutional leadership, and the faculty's cooperation, at least an overall change in the system is possible.
- The World Development Report 2019 makes three major recommendations that will feed into our 'globalisation' strategy for education. First, we need to focus on new skills in demand, invest in rural areas and disadvantaged communities, and include 'high-order cognitive and socio-behavioural component in our programmes.
- This involves incorporating a set of understanding and training that will lead our students to understand the larger economic contexts of the country, demands of the market and trends of the global economy.
- A re-orientation is necessary to include 'leadership skills' whereby our graduates are trained to develop a problem-solving approach, inter-cultural understanding to work with a diverse set of peers, and a sense of responsibility for their actions and influence on others.
- Specific course should be introduced with motivational sessions mainstreaming across the programmes, and faculty-mentors should be assigned to guide them.
- Our universities and colleges need to launch 'Leadership Development' as a core component of all courses.
- Another major redefining feature of our education policies in the region should include 'integration' skills in our education system, given that the region is in the periphery and away from mainland India.
- Our education programmes must offer training on acquiring a holistic approach to analyse any given issue from multiple perspectives involving other knowledge domains. Here the NEP 2020 shows us the way as it recommends interdisciplinary structure of programmes.
- Integrative thinking is the need of the hour, and our education policymakers may very well start with themselves in this journey.
- While looking into the region's education systems, it will not be out of place to leverage the locational advantage of the region, particularly with respect to the look east or act east policies of the government.
- The educational institutions in this region can cultivate the civilizational connections between North East India and Southeast Asian nations and incorporate relevant educational components based on the shared cultural histories and trade routes.
- It is high time that our educational programmes and institutions start building these "academic bridges"
- With free-market economic reforms and socio-economic transformation of the societies post-1990s, it is relevant to revisit the educational policies we adopted. One of the prominent recommendations for the education sector was to underline the concept 'learning to be', which emphasizes on individual's



autonomy to grow in a specific direction of inherent interest, call it a passion, and achieve one's dream in life.

- Our policymakers in the North East region need to re-emphasise this point in coming years as it is also supported by the guidelines of NEP 2020. One of the fundamental principles of the NEP 2020 is “flexibility so that learners can choose their learning trajectories and programmes, and thereby choose their paths in life according to their talents and interests.”
- It only calls for our educators and planners, institutions' top management, and relevant government bodies to come out of the watertight subject boxes and join hands to offer more courses of interdisciplinary nature.
- The power of knowledge is the most accessible, affordable and democratic force that can overcome other powers of wealth and violence. The North-Eastern region needs to convert that knowledge (in the traditional sense, as offered by our institutions) into a real power that will drive this region and people in the coming decades.
- We, thus, need to identify champions within educators and administrators, reorient them towards the changing nature of works and convert them into mentors. Perhaps such a transformation is long overdue.

NECTAR – Strengthening S&T in the NE Region

- NECTAR was formed in the year 2012, with the merger of erstwhile National Mission on Bamboo Applications (NMBA) and Mission on Geospatial Applications (MGA). It is headquartered in Shillong, Meghalaya.
- For best services and solutions in terms of technological sustenance, support, and the use of technology applications for public and social good, NECTAR is connecting people of North East to the benefits of technology.
- NECTAR has the mandate of equitable and inclusive social and economic development of the NER.
- NECTAR took twin initiatives to support bamboo industrial units, first by creating their linkages with raw material (bamboo mat) and second by connecting them with the markets of major metro cities of India.



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- To ensure ready availability of raw material at a reasonable price, NECTAR financially encouraged various tribal groups to make bamboo mat and linked them with manufacturing units supported by the National Mission on Bamboo Application.
- There are many success stories for NECTAR in providing scientific and technical support to the NER. The areas in which NECTAR has played flagship roles include the following:
 - Agro and food processing, renewable energy source, bamboo applications like construction and structural applications, composites and wood substitutes, bamboo for energy, bamboo in industrial products, bamboo-planting material, skill development, and employment generation.
- NECTAR is an outcome of one of the recommendations at the 96th Indian Science Congress 2009 held at Shillong.
- Ministry of Science and Technology, Government decided to establish a nodal centre in the NER in the form of an autonomous organization, NECTAR.
- NECTAR's unique and distinct work is to act as a solution designer and a partnership institution that helps in focusing on providing technology applications and support for problems of the NE in consultation with State Governments and other related bodies.
- It is adopting applications of relevant proven technologies. NECTAR is also working for the applications to internal security, watershed analysis, development of fixed wing micro unmanned aerial vehicles, mapping of tsunami vulnerable areas, and Brahmaputra river embankment mapping and erosion study.
- The Centre is also responsible for the development of NER using applications of appropriate technologies in the areas of biodiversity concerns, bamboo, food processing, watershed management, telemedicine, horticulture, renewable energy etc. through utilization of local products and resources.
- With NECTAR's intervention and development of new technologies, value addition in the bamboo sector has increased from 10% to as high as 70%. NECTAR has also succeeded in developing a wide range of bamboo products, process and equipment configurations.
- For business development of NE-based value-added products like turmeric, black pepper, chilli, bay leaves, and honey, NECTAR has created linkages between the farmers and market of metro cities.
- NECTAR has also introduced these NE products through renowned e-marketing portals. As NER has vast renewable energy potential, NECTAR is working on renewable energy sources in association with other institutes, and it intends to scout and demonstrate technologies based on renewable energy resources.



Bamboo-based technologies with green material approach

- NECTAR is working on bamboo-based construction and structural applications with a green material approach.
- In this regard, several projects have resulted in earthquake resistant, lightweight, durable and aesthetic constructions for a variety of applications.
- In the areas of the development of technologies related to wood substitutes and composites, various relief and rehabilitation projects using bamboo composite material and prefabricated housing units have been initiated.
- Huge industrial applications of bamboo have been identified and established in research and development like bamboo processing 'waste' for high grade charcoal and activated carbon.
- It is being used as deodorant, disinfectant, medicine, agricultural chemical and absorbent of pollution and excessive moisture.
- Many innovations and technologies for the production of plastic composite products, mechanized bamboo blinds, acrylic products, fibre-based hygiene products etc. have been supported.

Developing human resources through skill-based trainings

- Programmes for skill development of rural masses for self-sufficient and sustainable livelihood have been initiated by NECTAR.
- Nearly 30 million man-days per annum had been generated by NECTAR through various activities especially construction and mat making.
- Women of NER are involved in weaving activities supported by NECTAR who are earning for themselves and using their skills to improve their social and economic situation.
- Skill Upgradation trainings are also provided in the areas of mat weaving, use of natural dyes, processing of bamboo shoots, agarbatti stick rolling and incensing.

Schemes of technology solutions for employment generation

- The Centre is offering two major schemes to NER: TOSS –Technology Outreach and Service Scheme and BAANS – Bamboo Applications and Support Scheme.
- Both these schemes are targeted for building and expanding partnerships with people, communities, local bodies, NGOs, SHGs, and research and technology institutions.

Application to Internal Security using 3D Digital Terrain Models



- The 3D Digital Terrain Models can be used for both operation room and field for planning counter insurgency operations and launching field operations by the state police and paramilitary forces.
- NECTAR has conducted neighbourhood Mapping and GIS analysis of different categories of schools (Primary, Upper Primary, Secondary, and Senior secondary) using 3D Digital Terrain Model.
- The Centre assisted the States' Education Department (SSA) in establishing new schools in areas of un-served population based on norms of Government of India's "Right to Education" programme.

Fixed Wing Micro Unmanned Aerial Vehicles (UAVs)

- Unmanned Aerial Vehicles (UAV) developed by NECTAR Are fixed wing type Micro-UAV.
- It is a self-guided plane that can carry different types of consumer sensors and capture geo-tagged photographs with inbuilt GPS.

Conclusion:

NECTAR is playing an important role in the development of NER. It is very important to connect the technologies with common people, various organisations, entrepreneurs, and farmers, so that the mandate of that technology can be proved.