



JULY 2021

A DEVELOPMENT MONTHLY

₹ 22

## North-East

### LEAD ARTICLE

#### Governance in NER

P S Sreedharan Pillai

### FOCUS

#### Educational Policy Interventions

Prof K M Baharul Islam

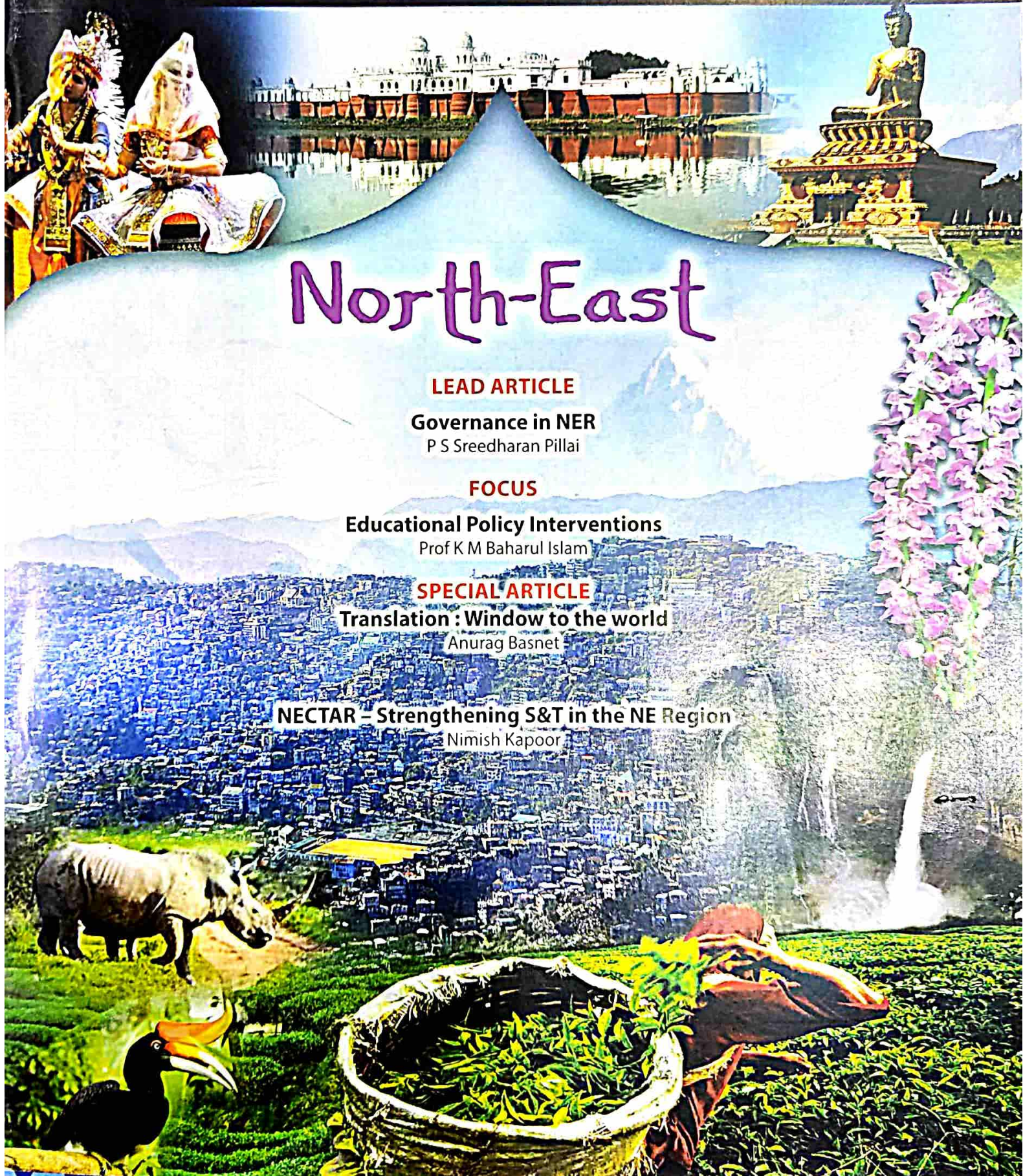
### SPECIAL ARTICLE

#### Translation : Window to the world

Anurag Basnet

#### NECTAR – Strengthening S&T in the NE Region

Nimish Kapoor





# Energy Efficiency Measures

**T**he Ministry of Power is implementing measures to save energy with an objective to reduce CO<sub>2</sub> emission levels in the environment from industries, establishments, and by using equipment/appliances. In this regard, Perform Achieve and Trade (PAT) Scheme is a key programme for large industries and establishments. This scheme aims to enhance the cost-effectiveness of energy savings by upgrading technologies or by taking in-house actions to minimise energy consumption. The scheme provides mandatory targets for the identified Large Units and the excess energy saved by them is issued as Energy Saving Certificate, which are tradable instruments. The different industries and establishments are assigned separate energy efficiency targets based on their levels of energy consumption and the potential for energy savings.

By the year 2020 the scheme coverage has been extended to 13 most energy intensive sectors in the country including Cement, Iron and Steel, Fertilizer, Thermal Power Plants, Refineries, Petrochemicals, Railways and others. This initiative is currently leading to energy savings of about 17 MTOE (Million Tonnes of Oil Equivalent) and has resulted into mitigation of about 87 million tonnes of CO<sub>2</sub>, per year, a figure close to total CO<sub>2</sub> emissions of country like Bangladesh.

Appliances are the main points for electricity consumption at household level or at office and commercial establishments. In view of the rapid growth in high energy consumer goods, the demand for electrical energy has been increasing every year. This rising demand can be optimised, if the consumers prefer high efficiency appliances. To enable market transformation of efficient products, Standards and Labeling (S&L) Program was introduced by the Bureau of Energy Efficiency (BEE). The objective of S&L is to provide the consumers, an informed choice about the energy savings potential and thereby the cost saving due to the products available in the market. The scheme includes display of energy performance labels on key energy consuming equipment & appliances, with stipulation for minimum energy performance standards. The scheme has now included 28 appliances till March 2021 and over 15000 models of energy efficient products have been awarded Star labels, a popular symbol among the consumers for endorsing energy savings. The impact of using a huge number of efficient products by the citizens have resulted into an estimated electricity savings of 56 Billion Units during 2020-21, worth over Rs. 30000 crore. This initiative has been effective in reducing the CO<sub>2</sub> emissions of approx. 46 million tonnes every year. Such steps have become very effective and a simplified approach is considered



more useful to promote energy efficiency globally. Many countries have followed this labeling programme, thereby reaping benefits of energy savings and also in reducing CO<sub>2</sub> emissions.

The blend of regulatory as well as market based policies in various sectors would offer promising outcomes, if all the energy efficiency measures are adopted by the potential Consumers of the economy. This would further endorse the Government's significant efforts in enabling mitigation of CO<sub>2</sub> emissions towards maintaining environmental integrity and meeting our climate commitments.

Carbon dioxide (CO<sub>2</sub>) is the well-known greenhouse gas on our planet. Rapid increase in its concentration in atmosphere is major cause of global temperature rise which in turn leads to many environmental and healthcare problems. The 'greenhouse effect' works in case of CO<sub>2</sub> when solar radiation hits the surface of the earth, part of the heat escapes the atmosphere while balance heat gets trapped which raises the earth's temperature. This is a phenomenon popularly known as global warming. This primarily results in severe impact on climate change, which has a ripple effect over all natural ecosystems, and by extension, all industries and people around the globe.

## About BEE

The Government of India has set up the Bureau of Energy Efficiency (BEE) in 2002 under the provision of the Energy Conservation Act, 2001. The mission of the Bureau of Energy Efficiency is to assist in developing policies and strategies with a thrust on self-regulation and market principles with the primary objective of reducing energy intensity of the Indian economy within the overall framework of the Energy Conservation Act, 2001. This will be achieved with active participation and collaboration of all stakeholders, resulting in accelerated and sustained adoption of energy efficiency in all sectors.

BEE's span of Energy Conservation and Efficiency efforts covers areas such as Appliance, Buildings, Transport, key Demand Side Management programs in Agriculture and Municipalities and the Industry and other Establishments. □





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Let noble thoughts come to us from all sides  
Rig Veda

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**AUGUST ISSUE - PUBLIC ADMINISTRATION  
COMING UP - NARI SHAKTI**



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YOJANA is published in Assamese, Bengali, English, Gujarati, Hindi, Kannada, Malayalam, Marathi, Odia, Punjabi, Tamil, Telugu and Urdu.





# COVID-19 Vaccine is SAFE!

Registration is mandatory for vaccination

Use any of the below mentioned  
**Photo ID** at the time of registration:



Aadhaar Card



Voter ID



Driving License



PAN Card



Service Identity Cards  
with photograph issued  
to employees by Central/  
State Govt./PSUs/Public  
Limited Companies



MNREGA Job Card



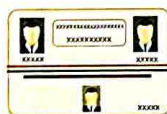
Passport



Smart Card issued by  
the RGI under NPR



Pension document  
with photograph



Official identity  
cards issued to MPs/  
MLAs/MLCs



Passbooks with  
photograph issued  
by Bank/Post Office



Health Insurance  
Smart Card issued  
under the scheme of  
Ministry of Labour

Produce the same **Photo ID** at the  
vaccination site for verification

 Helpline No.: 1075 (Tollfree)

When we are safe,  
Nation is safe!





My article 'Are we on a Cliff?' has been beautifully brought out. I am grateful. Best Wishes.

– B P Singh  
Former Governor of Sikkim

### Appreciate Efforts during Lockdown

The May 2021 edition of Yojana is a rich source to understand the Indian Federal Structure in changing environment like Covid-19. The magazine covers a variety of federal aspect beautifully, and I genuinely appreciate the efforts. The elaborate discussion of "One Nation, One Election" and "Gujarat Model" case studies depicts the successful transformation of India in recent years. For the youth reader section, the magazine especially highlights the Article- Challenges in Skill Development along with the way forward. Due to lockdown, we got the May edition hard copy a little delayed, as most of the shops were closed, but I appreciate team Yojana's effort who fulfill their commitment towards the reader, by immediately providing us with an online soft copy edition. I thank their effort to ensure continuous quality reading without any delay. I congratulate Team Yojana for their quality rich content which is very useful for competitive exam preparation as well as general awareness. I request Team Yojana to publish more on public policies so that the maximum number of people can be made aware of their rights and duties towards the nation.

– Kirti Wadhawan  
Kanpur, Uttar Pradesh  
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### Federal Structure

I am a civil services aspirant and reading this magazine since 2018. I am deeply indebted to this magazine which covers vital issues of governance in a very holistic manner. May 2021 Federal Structure issue was really helpful for all of us irrespective of their areas of interest. It provides valuable government information set up and functioning in respective domains. May 2021's editorial

was excellent and highly recommended to everyone. Heartily thankful to team Yojana and waiting for more issues with such excellence.

– Sandeep Kumar  
Ayodhya, Uttar Pradesh  
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### One Nation-One Election

The article regarding 'One Nation-One Election' by K.F.Wilfred is a very cost-effective solution and is from the 'Horse's mouth' as Sir Wilfred was himself in the Election Commission of India. Sir has in a very simple language addressed a constructive solution that demands amendment in the constitution. However, politics in India will never be in harmony with a totality solution and will always remain centered on Regional and Communal benefits. The most important aspect was not the monetary benefit but a pause in governance will be eliminated. I wish our other pillar of democracy- the Media; shall circulate such a solution to all the sitting MPs and pursue them to make necessary amendments in the Constitution or else let their opinions about this be known to the people who have elected them.

A good read in these tiring times of the Covid-19 pandemic. A constructive solution.

– Dhaval Jadhav  
Sub Engineer, Development Planning  
Municipal Corporation of Greater Mumbai  
dhaval.mcgm@gmail.com

### Informative and Relevant

Thank you team Yojana, the May addition was really helpful for me. While reading, I didn't even notice that I have highlighted the 80% of the magazine. I found each article full of information and relevant points. It was really good to read articles by such knowledgeable authors.

– Madhu Jha  
madhujha7838@gmail.com





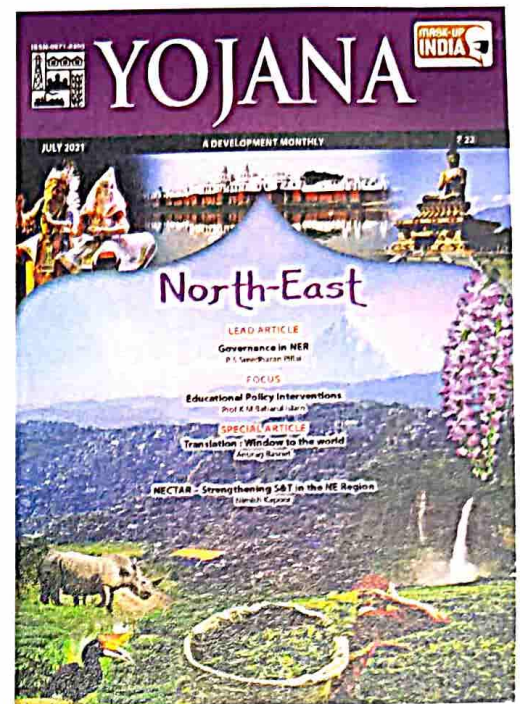
How complicated can it be for a set of youngsters the various parts of the Northeast struggling to prepare one of their traditional recipe in the capital city of India? This was precisely the theme of a 2020 film *Axone*, apparently named after the dish (pronounced as *Akhuni*) with a peculiar pungent smell that made the protagonists face all sorts of discrimination and apathy, and eventually brought together different parts of the region to celebrate their diversity and culture right in the heart of Delhi. Another drama series that came up recently, based on Shamanism in the state of Sikkim, was shot in the region and featured many local talents reflecting on the life and challenges in the region.

The prevalent view of 'mainstreaming' of the Northeast and its population is myopic and misplaced. It is like telling a Delhite or Mumbaikar that their identity exists only if it is recognised and related to, by say an average American. It is equal to imposing our ignorance over something that is rich and old enough to exist and flourish since ages.

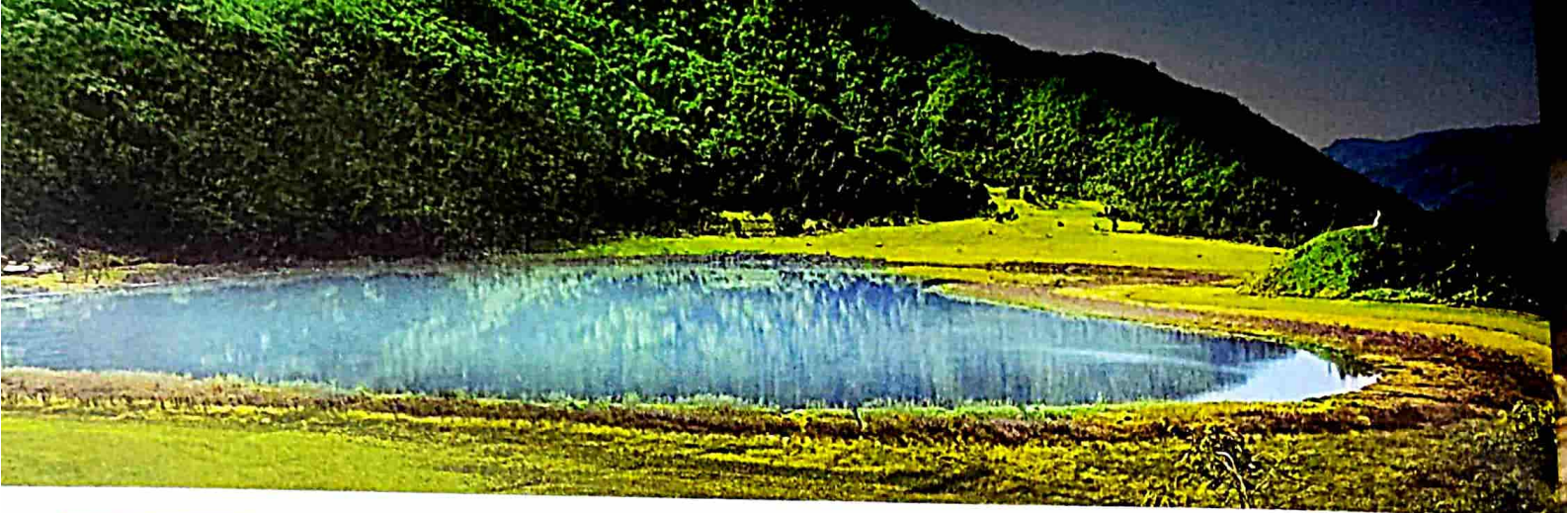
The Northeastern Region (NER) has several unique and unparalleled features; fertile land, abundant water resources, evergreen dense forests, high and dependable rainfall, mega biodiversity, flora and fauna and a mixture of socio-economic, political, ethnic and cultural diversity. This issue of *Yojana* is an attempt to connect with the Northeastern region and collectively learn a bit more. The region has its own unique challenges and opportunities. While the entire world is moving towards sustainability, it has been a way of life in the North East innately linked to nature. This needs to be amalgamated today between development and our natural habitat today especially in our metropolitan cities amidst changing worlds. The North East does have a unique indigenous culture and this has to be protected yet made relevant to modern times today.

While commissioning the articles, it was a difficult yet interesting choice to make between the spectrum of music, dance, art forms, literature, films, and the hardcore subjects like governance, development, employment, and educational opportunities. In our humble submission, it is impossible to cover the eight States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura in a few pages like these. Yet, we have tried to bring varied glimpses, opinions, and research on the region. It is felt that a synergy is needed among the inter-disciplinary research community, policy planners and implementers, along with civil society to deal with the multifaceted challenges in the states. The common perception has been that the potential of the northeast is yet to be tapped to reap the benefit for its people. Under the aegis of The Ministry of Development of North Eastern Region, the government is committed to accelerate the pace of socio-economic development of the region so that it may achieve the growth parity with the rest of the country.

We are thankful to our authors for contributing with their in-depth pieces during the times of restraints, grief, and lack of resources due to the ongoing pandemic situation and lockdown. We are also grateful to our readers for their patience and constant support. It is with our subscribers' feedback, we are able to identify and pin-point the themes and topics that matches their taste and requirements. Hope you find this issue insightful and enriching. Stay safe and healthy. □







## SPECIAL FOCUS: MIZORAM

## LEAD ARTICLE

# Governance in NER

*P S Sreedharan Pillai*

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. Prior to the British rule, the different Mizo tribes lived under a number of sovereign chiefdoms. The area was known to the British as the Lushai Hills, and formally became a part of British India in 1895. After India attained Independence, Lushai Hills (later changed to Mizo District) became a District under Assam. In 1972, it became a Union Territory as Mizoram. And finally, after two decades of insurgency, Mizoram became a full-fledged State within the Union of India in 1987.

### North East India – 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. Until recently, this area was known for the active presence of a number of militant groups. However, under the present regime at the Centre, peace has been achieved to a large extent, with notable recent examples being the Nagaland Peace Accord and the Bodo Peace Accord.

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”. Except for this narrow Siliguri Corridor,

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. It is against this backdrop that governance must be delivered, for the overall development of the region.

### Institutional Support

The Department of Development of North Eastern Region (DoNER) was established in the year 2001. It became a full-fledged Ministry of the Government of India in 2004. The Ministry of DoNER functions as the nodal Department of the Central Government to deal with matters related to the socio-economic development of the eight States of Northeast India. It handled the Non Lapsable Central Pool of Resources (NLCPR) Scheme, which has been followed by the North East Special Infrastructure Development Scheme (NESIDS).

The author is the Governor of Mizoram. Email: [governor-mz@gov.in](mailto:governor-mz@gov.in)





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. The Union Home Minister is the Chairman, and the DoNER Minister acts as the Vice-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. Prior to the British rule, the different Mizo tribes lived under a number of sovereign chiefdoms. The area was known to the British as the Lushai Hills, and formally became a part of British India in 1895. After India attained Independence, Lushai Hills (later changed to Mizo District) became a District under Assam. In 1972, it became a Union Territory as Mizoram. And finally, after two decades of insurgency, Mizoram became a full-fledged State within the Union of India in 1987.

### Culture & Religion

Before the coming of the British, the tribes were primarily animistic. They practised primitive farming, hunted wild animals, and villages frequently fought with each other. Portraying the lifestyle of the times, the folk songs revolved around the three major themes of ‘love’, ‘hunting’ and ‘warriors’. There was no written script. There were a few tribal dances, such as *Cheraw* (bamboo dance), *Sarlamkai*, *Chheihlam*, *Khuallam*, etc. They observed three festivals called *Pawl Kut*, *Chapchar Kut* and *Mim Kut*.

The British annexation was followed by the arrival of Christian missionaries, who invented a script and an alphabet for the Mizo language. Today, virtually all of the ethnic Mizo

population have converted to Christianity, making up around 87% of the total population of the State. Almost all facets of their way of life have been Christianized, with the traditions related to the earlier indigenous belief system no longer practised. Around 8% of the population of Mizoram are Buddhists, primarily from the Chakma tribe along the Indo-Bangladesh border.

### 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*’. This was a phenomenon of bamboo flowering after every 48 years or so, followed by plagues of insects and rats, leading to agricultural famine. Angered and disillusioned by the alleged apathy and negligence of both the Union Government and the Assam Government, the Mizo National Famine Front was formed, spearheaded by Laldenga. In 1961, the Mizo National Famine Front became a political party called the Mizo National Front (MNF), with Laldenga as its President. On the night of 28 February 1966, the MNF launched an armed uprising against the Union of India, followed by a declaration of independence on 1 March 1966. After being swiftly suppressed by the Indian armed forces, the MNF retreated and continued its operations from East Pakistan and

Burma (Myanmar), with training and support from China. The Mizo Insurgency dragged on for two decades, with allegations and counter-allegations of atrocities committed by both sides. Finally, the Mizoram Peace Accord was signed by MNF leader Laldenga, Union Home Secretary R.D. Pradhan and Mizoram Chief Secretary Lalkhama on 30 June 1986, within the framework of the Indian Constitution. Subsequently, Mizoram became the 23<sup>rd</sup> State of the Union of India on 20 February 1987. The MNF won the election and Laldenga became the first Chief Minister of the State of Mizoram.

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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. The Union Home Minister is the Chairman, and the DoNER Minister acts as the Vice-Chairman.

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### Mizoram – Basic Parameters

Mizoram has a geographical area of 21,081 Sq. km. There are 11 Districts, divided into 23 Sub-Divisions. The State is divided into 26 Rural Development (RD) Blocks. There is one Municipal Corporation in the capital city of Aizawl. According to the 2011 Census, there were 830 villages in the State. The total population as per the 2011 Census was 10,97,206 with population density at 52 persons per Sq. Km. Urban population was 52.11%, while 47.89% lived in the rural areas.

### 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). Fencing is done along the Indo-Bangladesh border. Along the eastern side of the State, the 404 km border with Myanmar is being manned by the Assam Rifles, a paramilitary force. Due to the cultural and ethnic affinity of residents at the border, 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.

Being sandwiched on either side by Myanmar and Bangladesh, 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 South East Asia' under our 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 called the Lai ADC, Mara ADC and Chakma ADC. *Lai*, *Mara* and *Chakma* are the names of the tribes found in majority in each corresponding ADC. While the *Lai* and *Mara* are ethnically related to and come under the umbrella *Mizo* term, the *Chakma* are a tribe distinct from the *Mizo* in terms of culture, linguistics and religion. The

Governor of Mizoram is entrusted with special roles and responsibilities in these areas by the Sixth Schedule to the Constitution of India, which includes certain discretionary powers.

### Economy of Mizoram

Prior to the Covid-19 pandemic, the Gross State Domestic Product (GSDP) of Mizoram was continuously growing. The GSDP at current prices was estimated at Rs. 26,502 crores in 2019-20, registering an increase of 18.91% over the previous year. The Gross State Value Added (GSVA) at constant (2011-12) prices averaged 12.63% annual growth rate between financial years 2011-12 to 2019-20.

The tertiary or service sector constitutes a share of about 43.28% of the total GSVA. 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 the greater part of their income from agriculture, the contribution of agriculture & allied sector to GSVA is only 26.08%.

The Mizoram budget for 2021-22 is Rs. 11,148.89 crores, while the per capita income for the year 2019-20 is projected at Rs. 2,01,741.

### Agriculture

Mizoram is primarily an agrarian State with a large section of the population- especially in the rural parts, engaged in agriculture and allied activities. The projected gross cropped area in 2018-19 was 2,17,000 hectares. The production of important agricultural crops in 2019-20 were: Oilseeds – 8,087 MT; Sugarcane – 46,842 MT; Potato – 534 MT; Maize – 11,668 MT; Paddy – 60,239 MT; Pulses – 5,507 MT.

The Mission Organic Value Chain Development (MOVCD-NER) has been implemented since 2017 in Mizoram for the promotion of organic farming. The Scheme has covered 13,000 hectares, involved 14,104 farmers and initiated the formation of 9 Farmer Producer Organizations (FPOs) and 5 Farmer Producer Companies (FPCs). 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. Under the National Food Security Mission – Tree Borne Oilseeds (NFSM-TBO), a total area of 404 hectares are under Olive plantation. Various programmes have been undertaken in pursuance of the Union Government's aim of Doubling Farmer's Income by

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**Mizoram Peace Accord was signed by MNF leader Laldenga, Union Home Secretary R.D. Pradhan and Mizoram Chief Secretary Lalkhama on 30 June 1986, within the framework of the Indian Constitution. Subsequently, Mizoram became the 23rd State of the Union of India on 20 February 1987.**

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2022, including introduction of high yielding varieties of crops, intervention by Krishi Vigyan Kendras (KVKs), integrated farming system, horti-based farming, etc.

### Horticulture

Horticulture is one sustainable land-based activity in Mizoram due to the favourable agro-climatic conditions. In 2020, more than Rs. 240.80 lakhs were earned from off-season tomato cultivation, while the production of off-season cabbage fetched around Rs. 330.20 lakhs. Cluster expansion of Dragon fruit cultivation has been carried out, generating an income of around Rs. 300 lakhs in 2019-20. The production of Mandarin Orange in 2019-20 was estimated at 53984 MT valued at around Rs. 16 crores. The Bird's Eye Chilli from Mizoram has a Geographical Indication (GI) tag.

### Socio-Economic Development Policy (SEDP)

The Socio-Economic Development Policy (SEDP) is the 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 Policy has been divided into various components, including political, administrative, economic and social development.

The Administrative policy seeks the extensive use of Information & Communication Technology for effective governance. The core focus points of the Economic policy include self-sufficiency in Agriculture – Horticulture, Bamboo Cultivation, Rubber Plantation, Infrastructure Development & Management, Creation of Trade & Investment Environment, etc. The Social Development policy lays emphasis on Manpower Development, Education, Social Security, etc.

**The Socio-Economic Development Policy is envisaged to bring about sustainable development with both short-term and long-term implications. The Policy has been divided into various components, including political, administrative, economic and social development.**

### Mizoram – Strengths

Mizoram is the best State in India in terms of forest cover. It has the third highest literacy rate in the country at 91.58%, behind only Kerala and Lakshadweep (2011 Census). It has a high sex ratio of 975 (2011 Census). Potential oil and natural gas reserve has been found in southern Mizoram, close to Arakan in Myanmar. Mizoram has potential of 4500 MW if all the rivers were harnessed. The estimated solar potential of Mizoram,

as calculated by the National Institute of Solar Energy (NISE), is approximately 9.09 GWp. It also contributes 14% to the country's bamboo stock.

### Vibrant Community

There is the presence of a classless society in Mizoram, with a strong sense of community. People are generally good at heart, and are law-abiding citizens. To illustrate the discipline of the residents, the capital city of Aizawl has often been called a 'honk-free city', with drivers avoiding unnecessary honking of vehicles. The honesty of the general populace is also on full display with the presence of 'shops without shopkeepers' along the highways, which rely on the principle of trust.

The important role played by the community is evident during the Covid-19 pandemic. The State Government has established numerous Village/ Local Level Task Forces across the State, with active leadership by the local community leaders. Extensive community patrolling at the local levels during lockdowns has been a contributing factor for Mizoram registering comparatively much lesser Covid-related deaths. At the same time, these Local Level Task Forces, in collaboration with the Government and the various religious bodies, are constantly providing financial aid and essential items to the poor and needy families most affected by the lockdowns.

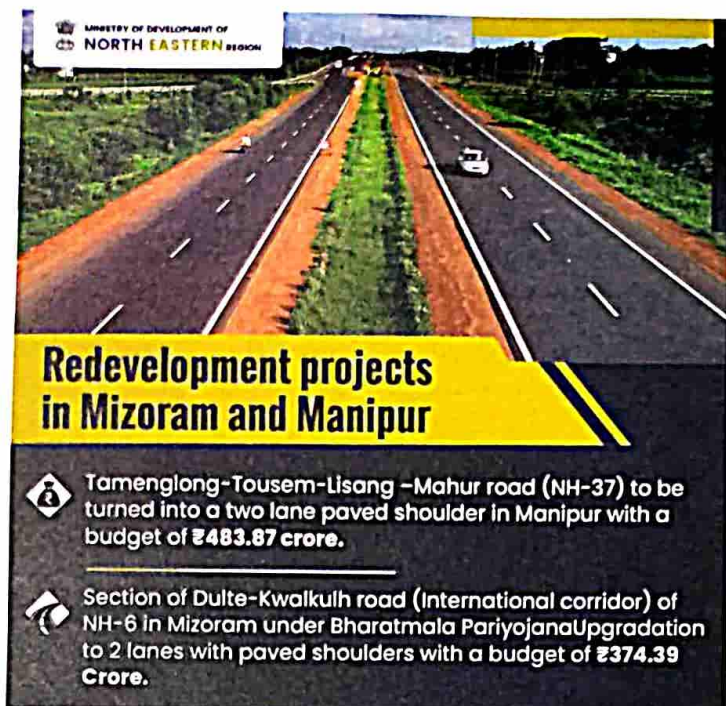
### Mizoram – Challenges

Being a landlocked State, connectivity in all its dimensions remains a challenge for Mizoram. The State of Mizoram has only one airport, named Lengpui Airport. It has only one railhead at Bairabi, situated along the border with Assam. Works are currently underway to extend the Bairabi railway line upto Sairang, situated around 20 km from Aizawl.

Mizoram has two National Highways (NH) connecting to Assam, and one NH running into Tripura. The NH connecting to Assam is the lifeline of the State. If this highway gets disrupted for any reason, connectivity with the rest of the country is essentially cut off.







Mizoram is also unfortunately plagued by high incidences of cancer and HIV. Among many reasons, unhealthy lifestyle is a contributing factor. About 67% of the people in Mizoram use tobacco, against the national average of 37%. The situation is exacerbated by the fact that the health infrastructure leaves a lot to be desired.

#### Mizoram – Potential

The State has immense potential in terms of agriculture, horticulture and allied activities. An overwhelming majority of the farmers still practice the ecologically unsustainable shifting cultivation, also called ‘Jhumming’ or ‘slash and burn’ farming. The agriculture sector is also plagued by problems such as the small size of average land holdings, aged and uneducated farmers, difficult topography, depleting soil health, less farm mechanisation, etc. Modern and scientific farming is the urgent need of the hour. Moreover, since production is mainly for local consumption, a shift towards commercial farming is required. Mizoram also witnesses a fair amount of success on a variety of horticultural products such as tomato, cabbage, dragon fruit, orange, arecanut, chilli, and banana. Profit can be further maximised by value addition through food processing. In all these, infrastructure such as cold storage, agricultural link roads, and easily accessible markets should be priorities.

Tourism, specifically eco-tourism and rural tourism, is another sector with massive potential. The clean environment, fresh air, comfortable climate and lush green cover make the place a potential tourist destination. The exciting terrain offers opportunities for

adventure enthusiasts, with possibilities of rural homestay experiences. Health resorts and wellness centres are also viable options. However, for tourism to really take-off, the Inner Line Permit (ILP) system, which restricts the entry of non-tribals into the State, may be a slight inconvenience. As per India Tourism Statistics 2019 by the Ministry of Tourism, Mizoram ranks the lowest in terms of tourist arrival. Therefore, it is imperative that the State improves on this front.

Handloom & Handicrafts is another industry with potential in Mizoram, due to the indigenous textiles culture of the State. It has generated employment to both skilled and unskilled labour. The next logical step is to find markets outside the State for the unique traditional handicrafts and the colourful textiles.

#### Kaladan Multi-Modal Transit Transport Project

The Kaladan Multi-Modal Transit Transport Project (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 then enter India through the southern part of Mizoram. As already mentioned, the entire northeast is connected to mainland only through the narrow stretch of land called the Siliguri Corridor. This is an undesirable scenario from all angles, including security, conveyance and transportation. 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. While work on the Indian side is almost nearing completion, there are a few stumbling blocks on the Myanmar side, which have not been helped by the current political turmoil prevailing there.

#### Conclusion

For a long time, the North East was a neglected and forgotten part of the country. However, upon the initiative of the present Hon’ble Prime Minister, Union Ministers have now been frequently visiting the region at regular intervals. Despite North East India accounting for only 3.76% of the total population of the country (2011 Census), the Union Government assures 10% of its Gross budgetary Support (GBS) to the region. Hon’ble Prime Minister himself has said that the Northeast has the potential to become the growth engine of the country.

**The Kaladan Multi-Modal Transit Transport Project (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 then enter India through the southern part of Mizoram.**

In the midst of these 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

*Dr Narendra Joshi*

The potential of the northeast to be the energy capital of India with its rich possibilities in solar, water, wind energy generation is hardly tapped so far. The stunning beauty of her locations and flora fauna is not even seen as tourism heaven. However, here is the delicate issue in this problem. What we need today is 'development through culture' not 'development versus culture'.

**T**he eight states of the Northeast form a very integral and inseparable part of India since time immemorial. This area is strategically very crucial for India as well as Asia. The region is surrounded by several other nations Bangladesh, Myanmar, Tibet, China, and so on. It comprises an area of 262,230 square kilometres. Almost 8 per cent of that of Northeast India is a bridge to South East Asia and is a bridgehead between India and the vibrant economies of Southeast Asia, including southern China. There is a huge economic significance to this area as well as it is endowed with great natural resources (oil, gas, coal, hydro, fertile land, etc) which can be harnessed for national development.

## 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 10<sup>th</sup>-8<sup>th</sup> century BCE, when Vedas were compiled, till 21<sup>st</sup> century. Just a few glimpses of such consistent contact and assimilation are cited here. Those whom our recent western and westernised intellectuals termed as Mongoloids were known as Kiratas since then. Yajurveda and Atharva Veda both mention Kiratas. Mahabharata describes Shiva and Uma disguising as Kirata couple to test Arjuna's penance. (Kirata parva part of the Vanaparva: they were having gold like skin) Bhima during his all-conquering tours of the east met Kiratas in Videha country. In Sabha Parva, sunrise mountain, Lohitya river and hills surrounding Pragjyotisha are mentioned. In Ramayana (Kishkindhakanda) Kiratas are mentioned: 'They are rich in gold, gems, an expert in cloth making and they tie their hair in pointed knots. Sri N.N. Vasu in his book 'Social

history of Kamrupa' has described their habits: simple life, eating fruits and herbs, dressed in skins, doing top hair knots, pleasant-looking but terrible with their weapons, yellow in complexion, adept in the art of weaving, etc. Vishnu Purana mentions Kiratas in the northeast part of India. Greeks in the 1<sup>st</sup> century AD had heard about Kiratas. Trade to China was filtered through Kiratas. Observed Kein, a Chinese general and explorer in 2<sup>nd</sup> century AD and then the assimilation of all the races were completed.



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A school of Tantra is attributed to Minanatha and belongs to Kamrupa. By the 10<sup>th</sup> AD China was possessing one hundred Tantra texts at this time. Sammha tantra speaks of the Tantrika culture of Kiratas, Bhotas, Cinas, Mahacinas. But this assimilation was not limited to the realm of mind alone, i.e. in thoughts, imagination and words alone. It got a concrete expression through the efforts of the then Indian rulers who took pride in calling themselves 'Dharma rakshaka' (the protector of righteousness i.e. Dharma) King in India bows down in front of rishi and seeks his guidance in mundane or secular matters as well. King Bhaskarvarman, aka Thagi raja is one of the most notable examples of this trend. Thagi raja was imprisoned by British rulers and there he got inspired by a sanyasi to raise against Britishers. During this Age of creation, many temples were constructed all over Assam and the rest of the area, ruins of which are still surviving in places like Malinithan. It has beautiful images of Parvati, Indra and Nandi. At Tamreshwari near Sunpura, three inscriptions are available which are Shaiva, Shakta and Vaishnava. Kalika purana mentions Vishnu Pitha in this area. Several bairagis are said to have lost their lives while searching for a temple, either due to hunger or becoming prey to wild animals. An altar of worship called Bura buri is found and is considered as an altar to Mahadeva or Adi Buddha. Brahmakunda and Parshuramkunda are places of pilgrimage in Lohit and a Shivlinga site is discovered in Paya in Lohit district. Even after the 12<sup>th</sup> century when



a general decline of creative spirit started one can notice powerful movements of Bhakti sampradaya and this too occurred all over India. 'Sages of India have been many for what has this great nation been doing except producing of sages.' However general mentality of the common man was also suitable for it. Where else was a Kabir, Dadu, a Tukaram accepted so easily observed Swami Vivekananda. These sages travelled from one end of the vast land to the other and through their exemplary lives, inspired words and melodious devotion took the message





of the Vedas and Upanishads to the people of all classes and sects. This was the time when Assam witnessed a great sage, Sankaradeva (1449 to 1669 AD) who relentlessly pursued mission of spreading Vaishnava bhakti. Like many of the other saints of India, he used the language of common people to express most abstract truths and introduced many concepts like Namghar, kirtana, drama, translation of Bhagavata, etc. He was followed by Madhav deva, Vamsi Gopal deva, Aniruddha deva, Purushottam Thakur, etc. Some of them also adopted some Buddhist Tantrik practices. Gopala deva came to Acamadesh (Assam) from Kalita with his mother. Kalita was on Northeast of Acamadesh and was inhabited by Abors (Adis) and Miris. Dr Kakati has supported the view that Kalitas were Aryan or Buddhist settlers who were kshatriyas and were having a colony of Vaishnavites in Northeast. Khunbao a leader of Noctes of Tirap district in Arunachal 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. Buddhists occupy a significant part of Arunachal Pradesh. Monpa, Sherdukpen, in Tawang follow Mahayana Buddhism and Khampti, Sigpho in Dibang district follow Hinayana Buddhism. Even tribes adjacent to Buddhist also are influenced by them. Buddhists, Shaivartes, Shaktas and Tantrika with Nathas are inseparable as Mina natha is said to be the same as Lui pa, who is, in turn, the same as Avalokiteshwara. All over the Buddhist tribes of Arunachal, there are prayers flags, chortens, prayer wheels, stone walls, etc. The same mantra

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is repeated all over the Himalayan borders, 'Om Mani Padme Hum': hail the jewel in the lotus. This mantra is written in Assamese script which is close to Devanagari and not in Chinese script. Om is considered as the essence of Vedas, Brahman as per Upanishads and start of many mantras as well as this existence. It is interesting to note that as per Adi lore the world was created from the word 'Keyum.' Most probably the grand Lama (The Jewel in the lotus) was the sage Padmasambhava. He is considered as an originator of the systems of worshipping which is followed by many even now from Ladakh to Lhasa. In 640 AD Prince

Gompa overran upper Burma and western China. He married a Chinese princess who like his Nepali wife was an ardent Buddhist. Both converted him to Buddhism. He sent for Buddhist priests from India and got them to reduce Tibetan language in writing in Indian script and that is still the script of Tibet. The names of almost all the gods and goddesses are Sanskrit: Manjushree, Avalokita, Vajrapala, Vajrasattwa, Amitayu, etc. The name Dorjee means Vajra or thunderbolt and one of the most common names there. An image of Kali is seen in many caves in Tibet, called Lahmo in some places. Most of the prayer flags are having a picture of a goddess on a lion; Vyaghreshwari, Seal of Tashi Lama bears the inscription 'Mangalam'. Tashi means Mangalam in Tibet. The Mother Goddess is called Tara or Dolma.

### Driving India's Growth Engine

The potential of the northeast to be the energy capital of India with its rich possibilities in solar, water, wind energy generation is hardly tapped so far. The stunning





beauty of her locations and flora fauna is not even seen as tourism heaven. However, here is the delicate issue in this problem. What we need 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. That is exactly what this area was throughout the historic ages. Development of region with most modern means and yet deeper and strengthened bonds of rich

art, craft and culture, restoring lost identity is the mantra for Northeast India. In one of his recent speeches, the Prime Minister said, "The Northeast has the potential to become the growth engine of the country. Day by day my faith is getting deeper because peace is now being established in the entire region. The mantra of peace, progress and prosperity is echoing in the Northeast," "While blockades in Manipur have become a part of history, Assam has witnessed a phase of violence for decades. In Tripura and Mizoram too, youth have abandoned the path of violence. Now Bru-Reang refugees are moving towards a better life," he said.

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. Around 22 projects worth approximately 885 crore rupees were recently earmarked for all this and by now the number must have gone up. For a long time lack of industrialisation has been a big setback for this region, insurgency, lack of initiatives and difficult terrain were reasons. But now NESID is promoting a lot of industrialisation 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

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emphasised 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, as well as creation of infrastructural conditions for border trade. Nine cities from across the Northeast region are declared as 'Smart Cities'— Agartala, Guwahati, Imphal, Kohima, Namchi, Gangtok, Pasighat, Itanagar and Aizawl. A fund of Rs. 14,124 crore for 464 projects has been sanctioned in the first phase. There has been a clear emphasis on skill development initiatives amongst the youth in the region and about 93 training centres and 69 skill partners are working in the Northeast region. Among them, Assam leads with 48 training centres with 39 skill partners, Manipur one training

centre with one skill partner, Mizoram six training centres with one skill partner, Meghalaya 10 training centres with eight skill partners, Nagaland eight training centres with five skill partners, Tripura 16 training centres with 12 skill partners, and Sikkim four training centres with three skill partners as per a recent study done.

However, looking at the area, population and its potential, and also the possible misuse of that by breaking India forces, all these efforts while being very praiseworthy may need even more impetus and innovation in coming time. Development also needs a careful balance with environmental and cultural heritage preservation. The blunders done in other parts of so-called civilised India and the world which led to eco disastrous and culturally uprooting modernisation and development should not be replicated in the Northeast. Development through culture is the mantra for the Northeast and that will surely make us winners in our Look East and Act East vision. □

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# Agriculture and Sustainable Development

*Dr M Premjit Singh*

**The North-Eastern Region (NER) has several unique and unparalleled features; fertile land, abundant water resources, evergreen dense forests, high and dependable rainfall, mega biodiversity, flora and fauna and a mixture of socio-economic, political, ethnic and cultural diversity. The congenial temperate climate is favourable to agriculture, which is the major occupation of the people of the region.**

**T**he NER comprising of eight states viz., Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim 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 (34.12%), followed by Tripura (23.48%). Arunachal Pradesh has lowest net sown area in the region. Cropping intensity is highest in Tripura (156.5%), followed by Manipur (152.1%), Mizoram (136.36%), and Assam (123.59%). About 1.6 million hectare area is under shifting cultivation in North East region. 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.

Rural population in the region is around 80%. In the absence of major industries except in the state of Assam,

the society is 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. Agricultural production system is by and large of CDR type. The system is characterised by low cropping intensity (114%) subsistence level and mono-cropping. Average landholding is 1.69 ha compared to national average of 1.15 ha. Although the landholding appears to be higher, the entire holding cannot be used for agricultural purposes due to topographical disadvantages. Land use pattern is relatively faulty for which annual loss of top soil is much higher

(46 tonnes/ha) than all India average of 16 tonnes/ha. Similarly, due to lack of proper water harvesting measures, only 0.88 mhm out of 42.5 mhm water is used. There is no reliable assessment of total irrigated area. Record gathered from different sources indicates that around 20.74% area is irrigated. Fertilizer consumption in the region is also very low and stands at around 11kg/ha ranging from as low as 2.7kg/ha in Arunachal Pradesh to a high of around 72kg/ha in Manipur. 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



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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. With these production practices, the region produces 8.2 million tonnes of total food grain against a requirement of around 8.5 million tonnes. The deficiency is therefore, around 0.3 million tonnes of food grain. Similarly, in spite of a desired aptitude towards animal husbandry practices, per capita availability of milk, meat, egg and fish per annum is only 31.39 litres, 9.36 kg, 33.50 numbers and 4.12 kg respectively. 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. While planning this, the strength of farming system approach to judicious utilisation and conservation of natural resources of the region with concurrent policy and research back up to increase production, value addition to the produce and their disposal, sale management shall be of paramount importance.

### Transformation of the Region

The ongoing economic reform process has thrown up several opportunities as well as challenges. But, in order to capture the advantages of the untapped potential the states need to reorient their development strategy within the overall macro-

economic framework. This is essential to achieve the broader developmental goals because the stronger states make a stronger region. Unfortunately most of the states in the north-east region lag behind under the garb of economic constraint and infrastructure hiccups.

In recent years, the central and state governments have undertaken several initiatives to stimulate regional economy and promote agricultural growth. Low productivity and risky agricultural production environment are the primary causes of already deteriorated rural livelihood. Ironically, this has happened despite the existence of a large number of production possibilities of a wide range of fruit 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.

The smaller size of total cultivable area prohibits horizontal expansion of agricultural production practices. It is

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found that the percentage of net sown area (percent of geographical area) is as small as 2 per cent in Arunachal Pradesh and less than one-tenth of total area in Mizoram and Manipur while in Nagaland and Meghalaya it is 13 per cent each. At the regional level, Assam occupies the highest share accounting for 78 per cent of the total cultivable area. Among the crops, the cereals occupy, on an average 74 per cent 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 characterised by:

1. The NER is extremely diverse: uneven land, high and variable rainfall pattern and ethnicity.
2. Rice dominates agriculture, but the productivity is low and production risky.
3. Further expansion of cultivable land is constrained by geo-physical limitation. The percentage of cultivated area is around a tenth of total geographical area in 5 out of 7 states.
4. Various combinations of crop-livestock-fish-silk are followed in the region but such diversification contributed negligibly.
5. Preponderance of small and marginal (S&M) farmers is an important feature of the region. As against the proportion of S&M farmers of 59 percent at all India the same varies from 65 per cent in Arunachal Pradesh to 84 per





cent in Manipur and Nagaland.

6. On account of complete dependence on agriculture, its vulnerability to natural calamities such as floods, submergence as well as droughts has deteriorated the rural life and rural poverty has become 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.

The approaches and strategies to increase rice production are given below:

1. Increasing seed replacement rate
2. Enhancing varietal replacement rate
3. Increasing cropping intensity through assured irrigation.
4. Expansion of effective irrigation facilities.
5. Adoption of more intensive cultivation practices (SRI/ICM/ Line planting etc.).
6. Maintaining soil health and providing judicious soil nutrients.
7. Revisiting the extension mechanism.

8. Facilitation of credit, finance and crop insurance
9. Marketing and creation of rural storage infrastructure, and
10. Farm mechanisation.

### 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. It has been estimated that the annual compound growth rates of fruits and vegetables in the region are 11.20 percent and 14.81 per cent respectively.

**The ongoing economic reform process has thrown up several opportunities as well as challenges. But, in order to capture the advantages of the untapped potential the states need to reorient their development strategy within the overall macro-economic framework. This is essential to achieve the broader developmental goals because the stronger states make a stronger region. Unfortunately most of the states in the north-east region lag behind under the garb of economic constraint and infrastructure hiccups.**

According to 19<sup>th</sup> Livestock Census 2012, there are 132.90 lakh cattle in NER. Among the eight states in the region, Assam being the largest state has maximum (77.56%) of total cattle, followed by Tripura (7.14%) and Meghalaya (6.74%). Maximum of the cattle population is local cows, crossbred (CB) being only 7% which is much lower than the national average of 21%. The proportion of crossbred cattle to total cattle population is very high in Sikkim (90%), Mizoram (33%) and Nagaland (55%) which is higher than the national average.

The meat production in recognised sector has gone up by 38% in NE Region between the periods of 1999-2000 to 2012-2013 which is higher than the increase in the national level of 29%. All the states except Arunachal Pradesh have witnessed an increase in meat production. Among the eight states, the increase in meat production is significantly higher in Nagaland and Meghalaya which may be due to their large livestock base and people's preference for meat.

Milk production has increased from 1021 thousand tonnes in 1999-2000 to 1236 thousand tonnes in 2012-2013 which is an increase of 17% but during the same period milk production of India has increased by 41%. Milk production has increased in all NE states except Arunachal Pradesh and Mizoram from 1999-2000 to 2012-2013. It is interesting to note that Assam which has the largest cattle production in the region has slow growth in milk production which may be because it has maximum of indigenous breed in total cattle population. The total milk production of the region is only 0.93% of total milk production of the country during 2012-2013 and per capita availability of milk in the region was only 86 gm/day which was only 29% of the national average of 299 gm/day and much lower than the ICMR recommendation level of milk consumption of 220gm/day for a person. The per capita availability of milk has declined during the same



period while national average has improved by 27%. Arunachal Pradesh, Manipur and Mizoram witnessed decline in per capita availability of milk while it has increased in other states. The reason being lower average productivity of crossbred cattle in NE Region which is 6.26 litres per day as compared to the national average of 7.02 litres per day. Productivity of milk in case of buffaloes shows that the buffaloes in the region are very low yielder compared to other parts of India.

### 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. It is felt that the region needs appropriate policy and investment to boost the development process.

1. The NER is the symbol of a typical rain-fed production system, which adversely affected the regional economy. In a situation of extreme diversities regionally differentiated strategies for development of agriculture and allied sectors are required. It has been observed that on account of geo-physical limitation hindering expansion of cultivable area in many States, the vertical intensification of farming system is relevant. 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

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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 of Rice Intensification, etc.), to meet the growing domestic as well as international demand. In areas where crop production is restricted by smaller size of cultivable area, but there is ample scope for allied activities, another strategy like *agricultural plus* is required. That is, crop production should coexist with livestock, plantation, floriculture, medicinal crops and sericulture systems. The hilly terrains suit crop diversification with high value horticulture crops accompanied by livestock and sericulture. The shifting cultivation, which has been an age-old method of cultivation practiced in such areas, requires an innovative strategy for improving productivity of rice and other crops, flowers like orchids and livestock.

2. Rather than neglecting, the existing low input agriculture should be converted to opportunity as it is environmentally benign. Given the required interventions,

market for organic product may be explored.

3. Agro-processing sector hitherto is a neglected area but it has high potential to add value and reduce post-harvest losses. By encouraging fresh initiatives in agro-processing, packaging and exploring of newer marketing avenues, the region can take advantages of high potential cross-border trade with surrounding countries.
4. The innovation on energising and sensitising the rural institutions is yet another new thrust. Capacity building through wide scale knowledge initiatives, contract farming, reviving/revitalising the village institutions such as Field Management Committees and traditional village panchayats/councils is important. These institutions being the valuable social capital have the potential to become agents for knowledge dissemination and improving rural leadership. This is relevant as the financial institutions such as NABARD, NEDFI, SIDBI, IDBI, etc., may use community-based institutional collaterals for effective credit delivery.
5. Research and Development strategies: Continuous R&D support system for generating small and marginal farmers' friendly new agricultural technology should be given. Therefore, there is a need for boosting R&D investment in agriculture, which already is a low key area in the region.
6. Regional Database: Database is a serious constraint to effective policy analysis in the agricultural economy in the region. Therefore, 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. □



# Opportunities and Challenges for Youth

*Dr Ankuran Dutta*

**"We cannot always build the future of our youth, but we can build our youth for the future"**

**– Franklin D. Roosevelt**

**N**orth East India is abundant in resources but in terms of livelihood and employment opportunities, it is massively unexplored. For instance, wetlands perform a host of ecological and hydrological functions that benefit mankind. The bio-diversity-rich northeastern region (NER) accounts for almost 5 per cent of the wetlands in the country, which is estimated at 1.06 million hectares, which is around 4.17 per cent of the total geographical area of the northeast.

Outmigration of the youth from the Northeast to different parts of the country is one of the prime challenges that need to be addressed seriously. This happens with most of the uneducated unemployed youth. It is due to the lack of knowledge of opportunities and support from the communities in the region that they decide to join the labour forces in other states. The compensation that they earn outside the state may be small than what they could have earned in their region at skill development and capacity building in opportunities to different sectors at their places. One reason for that is the lack of skills in the youth population of NER. The most unfortunate thing that the NER witnessed so far is about its collective account of a mere 0.4 per cent of

the youth population against 3.9 per cent of the whole of India who has acquired formal skill as per the survey conducted by the National Sample Statistics (NSS) data 68<sup>th</sup> Round, 2011-12 titled 'Formal Skill Acquisition of Population in the Age Group 15-29 years across the States of India (in per cent)'. In that case, importance must be given to developing short-term skill improvement training or courses on technical and other jobs like electricians, plumbers, home interiors, dress designers, etc. Development of skills related to small-scale industrial productions like biodegradable plates and glass from natural fibers

found in the region can immensely help in situating the youths within a comfortable position from both the economic and job satisfaction part. The region though has developed several training centers with a total of 93 training centers and 69 skill partners working in the region, the outflow of youths has remained as the growing concern for job creation.

Apart from the agricultural sector, animal husbandry in NER also has the potential to create opportunities for the youth. More and more infrastructure of dairy farms and processing units can be developed and youths in local areas can be



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engaged or rather entrusted upon to engage youth for Milk procurement and selling the products. Northeast still has the lowest contribution of milk production among all the states despite India stands as the largest milk producer in the world. Guwahati in Assam alone requires an estimated 6 lakh liters of milk against the local supply of 1,25,000 liter of milk per day. There is a huge inter-state supply of milk; instead, the NER must employ its Youth resources in the local production of milk by setting up more and more dairy farms. Meat is in high demand in the NER. Already some youths have started to engage themselves in the piggery venture, especially those from Assam, Nagaland, and Meghalaya. Approximately, 28% of the total pig population of India is found in this region. Therefore, youth in NER also has the opportunity in setting up this piggery venture. NER is also popular for its traditional fish farming. Few traditional fish growers have already become entrepreneurs in fish farming. Stories about educated youths leaving their private jobs and engaging themselves in fish farming have helped them become self-reliant and earn more than their previous jobs. Several communities run fisheries that applied traditional methods and have been successful in developing their business. The abundant water bodies in the region

and its various indigenous methods of fish farming like – rice field capture fishery systems, wild aquatic cropping systems, Mountain valley rice-fish farming system, and running water terrace rice-fish farming systems, is enough for transforming this into an opportunity for the youths in helping the region to become self-sufficient.

Industrialisation as per the demand of the socio-demographic structure of the region; starting from its environmental aspects like climatic condition to people's culture and custom must be taken into account while chalking plan for job creation for the youths. For example – The industry of citrus fruits which are abundant in Assam and other NE states can be developed. As the geography

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of NER is full of lush greeneries and natural sceneries, the entire region has several tourist attractions. More effort must be put into the development of NER as the Center of tourist attraction leading to the establishment of various tourist industries – both historical and natural sites. Various kinds of tourist industries like cultural, religious, and adventurous can be built up in the region by the youth themselves. This development of industries may also help in the nurturing of new and innovative ideas to create small economic raising activities for the youths like establishing take-away food stalls with biodegradable packages near innumerable picnic spots, making multi-lingual tourist guides out of the local youths through training and courses, etc. can help boost both the industries and the youth resources of the region.

To understand the richness of the region in terms of resources, we can take the example of the wild water hyacinth stalks that grow abundantly in these wetlands and have been often considered a nuisance for a long time. Quite ironically these stalks have been used by other countries for various purposes. Association for Livelihood Promotion and Entrepreneurship Development (ALPED) started to train disadvantaged youth and women to source out a variety of products from hyacinths a few years back. The hay-coloured dehydrated stalks are





sturdy and strong to be woven into virtually anything. They can even be used in handlooms. Before taking his project to Majuli, the only river island district in India, the organisation trained 100 low-caste rural women in Kamrup district in the art of making bags, office folders, and files from water hyacinth. In Majuli, about 150 rural youth artisans now sell their products to foreign tourists and at local fairs by using freely available hyacinth stalks and improving their livelihoods.

When it comes to youth opportunities, especially in Northeast India, the pressing need is youth's participation in politics. This participation must not restrict to the 'Youths' only as 'Voters'. Instead, the opportunities must be grabbed by the youths of the region as performers in politics. There is still an under-representation of youths in the Parliament, though the proportion has increased from 8 percent in 2014 to 12 percent in 2019. Utilising youth energy into politics can infuse thoughts of an immediate solution to various existing problems as an outcome of the accumulated repressions faced by the same categories of the population.

The youths can indulge themselves in various agro-based

and processing enterprises to the packaging of fresh farm products like vegetables and fruits, pickles, jams and jellies, bamboo-cane-jute products, aromatic and medicinal plants, and high-end products like strawberries, horticulture, and floriculture. Bamboo and Rubber are among the important produces of NER, where the Youth can invest their energy into as India ranks third in rubber production whereas 20 per cent of the global bamboo production value comes from NER. As per the Youth Development Index Report 2017, Self Employment (SE) remains the most preferred segment of youth employment in India (53.5 per cent) across the states; among which the figures of NER states are already higher than the national average. □

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# Long-term Peace & Development

*Mrinal Talukdar*



In the past decade, there has been long term peace all over the Northeast region leading to new ideas flourishing and investments flowing in. 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.



When NagaEd, an education technology start-up from Nagaland, was selected to join the incubation programme at Alsisar Impact, a Mumbai-based social impact incubator, it became front page news in a Naga newspaper. According to the Dimapur based NagaEd founders Kavisato Sanyü and Shiroy Lily Shaiza, they set up NagaEd after seeing their family members struggle to access quality learning resources during the Covid-19 pandemic.

Founded by Kavisato Sanyü and Shiroy Shaiza during Covid-induced school shutdown, NagaEd is providing learning and teaching solutions for students, teachers and institutions seeking a digitally-enabled educational experience.

From the story of NagaEd jump to 'Wander Nagaland'— the first travel social enterprise in Nagaland, which was launched on November 4, 2019, and is continuing in its endeavour to create livelihood opportunities for everyday Nagas through tourism.



MINISTRY OF DEVELOPMENT OF  
NORTH EASTERN REGION

## Social and Infrastructure Development Fund



- SIDF was created with a sum of Rs. 586.20 cr. to upscale the infrastructure in NER
- The fund is provided to benefit Arunachal Pradesh & other border areas facing special problems
- A total of 37 projects have been sanctioned under the SIDF scheme.

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# Assam

According to the founder of Wander Nagaland, “the tourism industry is budding and still very new. And we don’t know how to articulate our value and we have not been able to explain to travellers what we have to offer.”

From Mishimi hills of Arunachal 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.

Take the case of the Vantage Circle of Assam. In 2010, while discussing startup ideas, friends Anjan Pathak and Partha Neog stumbled upon the concept of employee engagement programmes.

Partha, who had a decade-long experience in various tech companies, observed the impact the other brands had due to the spending nature of corporate. The duo thus decided to start Vantage Circle in 2011 with a seed capital of Rs 30 lakh. It started as a deals and discounts program for employees.

Today Vantage Circle is a cloud-based comprehensive employee benefit and engagement platform, providing benefit package to corporate employees through corporate offers, rewards, and engagement programs.

Last year, Vantage Circle was awarded a large contract for the Employee Rewards and Recognition platform by one of the largest enterprises in the US. Through this, Vantage Circle’s platform will provide over 90,000 employees of the clients based in the US and India an easy way to redeem their rewards. This forced Guwahati based Vantage Circle to open an office in New York also.

There are many more examples and the North East is changing as this new breed is going into uncharted territory as the region provides more opportunities than challenges.

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.

That is the reason Naga youth, after pursuing higher education abroad returned to their home state to open up new vistas.

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.

Departure from the past- the Prime Minister has stressed the need to leverage cooperative and competitive federalism to achieve all-round growth and move away from “one size fits all” approach towards respecting the heterogeneity of different states and addressing their local requirements.

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 initialising the structural changes in the same light.

With the implementation of the recommendations of the 14<sup>th</sup> Finance Commission, states are now entitled to

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a 10 per cent increase in the overall devolution of funds— an enhanced fiscal autonomy. This marks the beginning of the structural change in the distribution of resources and responsibilities between centre and states.

States are now entrusted with the responsibility of designing and implementing development schemes as per their priorities and needs.

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 industrialisation and socio-economic growth. Though the region is blessed with abundant natural resources for industrial and social development, they haven't been utilised to their full potential.

The region has certain distinct disadvantages. It is topographically located with access to the traditional domestic market of eastern India along with proximity to the major states in the East and adjacent countries such as Bangladesh and Myanmar. The region is also a vantage entry point to southeastern Asian markets.

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. The project is worth \$1.4 Billion.

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The other one is the Jirbham-Imphal railway line, opening up Manipur to the railway network of India. Government of India has a budget of Rs. 13,809 crore for this project.

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**

Many well-intended plans and strategies have been made for the region and as a result, we see substantial progress in many areas of the region. If the full measure of

success was not achieved, it is because implementing agencies were not in sync with the plans. It is therefore of pertinent importance that we develop a plan to strengthen the implementation capacity.

This can best be achieved by setting up a North-East Regional Project Implementing 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 North-East region has great potential to develop not just as a self-sustaining economic unit of India but also contribute to the success story of the country, which is reflected by the Prime Minister's focus on this region.

The stretch boasts fertile land and water resources, an ideal habitat for horticulture, and a rich cultural and natural heritage that could be explored further for development.

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. Raw materials form a major part of its trade with Myanmar and Bangladesh. Meghalaya, for example, exports stone boulders, limestone and horticulture products to Bangladesh.

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, creating tourism zones, involving local people and the private sector.

Each ministry of the Union Government is required to spend at least 10 per cent of its budget in the North-East.

But so far, the pool of unspent funds has been accumulating primarily because of the lack of capacity to formulate fundable proposals.

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Therefore any development strategy for the North-East should start with an incisive inquiry into why the region could not spend the earmarked money and use expertise from various institutions to prepare an array of doable projects.

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. Only on February 18, 2021 the Nagaland Legislative Assembly adopted a four-point resolution on decades old Naga political struggle with the 60-member

House resolving to work unitedly in facilitating ongoing negotiations for a final solution between the Centre and Naga political groups.

The union government has been holding two separate parleys with the Naga negotiators NSCN(IM) since 1997 and Naga National Political Groups (NNPGs) comprising of seven groups since 2017.

To harness the full potential of these sectors, significant investments will be required in upgrading the region's infrastructure, education and skill development. All this has to be done, keeping in mind the need for preserving the rich biodiversity of the region. In the end, development comes down to implementation.

The newly introduced initiatives of the ministry for development of the north-eastern region could energise the process. Much depends on the proactive role of the states.







### Strengths

- Several tourism attractions such as Blue Mountain (Phawngpui - Mizoram), Palak Lake (Mizoram), Kangla Fort (Manipur), Majuli (river island in Assam)
- Presence of an ethnic, tribal culture each with unique customs and traditions.
- Numerous tea estates
- The north-eastern region has a very well-performing gender development index
- Rich bamboo reserves
- Handloom and weaving is a skill acquired by the local community
- The abundance of natural resources like limestone as well as water for hydropower potential.
- Ideal climate conditions
- Safe and clean, pollution-free environment.

### Weakness

- Lack of proper connectivity. A large part of the region comprises a hilly terrain which makes the states dependent on the road network which is not particularly good. Also, a lesser number of airports reduce connectivity
- Limited tourism infrastructure facilities. Fewer accommodation facilities which are insufficient to cope up with the demand and are of poor quality
- Scarcity of skilled and unskilled labour
- Floods and landslides in monsoons make places inaccessible
- Laws in the state like land acquisition and transfer need to align with a vision for Public-Private Partnership (PPP) and make the environment conducive for investments
- Projects delayed in implementation causing development lags
- Landlocked states.

### Opportunities

- Development of the handicraft industry
- Flood management system to improve accessibility to certain parts of the states during monsoons, which can be developed as tourist spots
- Linkages to existing tourism circuits and further circuit development
- Fostering coordination with other states on developing tourism
- Trade can drastically be improved by improving infrastructural facilities and accessibility.

### Threats

- Overuse and commercialisation of eco-sensitive zones could lead to depletion of resources and weakening of attraction.
- Regional connectivity concerns
- Land banks and land availability if not addressed will limit private sector investments
- Migration of local people to urban areas for employment prospects.

Several initiatives have been taken in the last year and progress has been made. For example, the government has announced plans of investing Rs. 92,000 crore for development of roads and railways.

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

*Prof K M Baharul Islam*

Education policies worldwide are increasingly being realigned to the economic prosperity, vertical mobility and social citizenship of the people. Human capital theorists have long underlined the need for investment in building productive human capital in any organisation or a society. Our educational policies developed at the national level are often driven by some overarching goals. Such a top-down approach in implementing those policies on the ground, especially in a specific region like North East India, needs a bottom-up restructuring. There is an urgent need to re-examine our education policies at the regional level to provide an environment where individuals can utilise their education and training to gain employment, improve their living standards, and contribute to the social development of the area.

**T**he National Education Policy 2020 (NEP 2020) is embarked upon a vision of “transforming the system to meet the needs of 21<sup>st</sup> Century India.” But, are we ready to overhaul our education systems and approaches at the regional level and link our systems to the emerging nature of workplaces that is changing fast (World Development Report, 2019)? If so, what are the major strategic changes we need to undertake immediately to make this geo-strategic North Eastern region a human capital hub in the next few years? In this article, we will examine these issues and the way forward that links education policies to the wider challenges of the region.

Let us start with the region’s specifics that we should keep in mind to define our policy objectives or strategic plan for the North East. The first and foremost is the very minimal presence of industries that 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 minuscule 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 beyond giving an entry pass to the competitive job market. Hence, when an average student takes

admission in any undergraduate programme, neither the student nor the educational administrators are ready with any plans to fit into a modern workplace in the coming years. 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 materialise if the need to ‘get a job’ in the near future. While keeping in mind that we need highly knowledgeable people and fundamental researchers to develop a subject area, there is also 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. Our education policy restructuring for the region should start with this basic understanding.



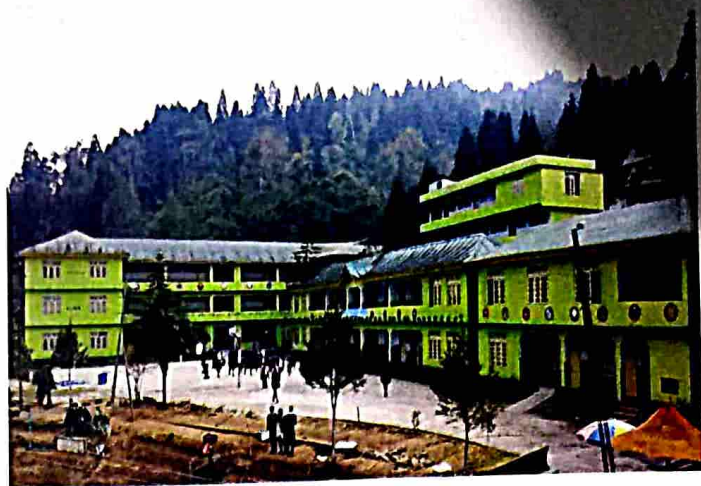
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Prof Srikant Datar, the globally acclaimed Indian-American economist and the Dean of Harvard Business School in his seminal co-authored work "*Rethinking the MBA: Business Education at a Crossroads*," argues for a shift from 'knowing' to 'doing' and 'being' in education. Extending his 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 - globalisation, leadership, and integration. It is not necessary that the existing systems should be turned completely upside down in all these three aspects, and a major focus remains within the concerned subject areas. At the same time, 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. Let us discuss these three aspects of potential policy intervention for the North-Eastern region.

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. Developers of graduate and postgraduate programmes in the region should come together state-wise or even at the regional level (as the states in the region more or less similar challenges), form inter-disciplinary groups and explore how courses, workshops and training components can be added to the mainstream curriculum to *globalise* them. By globalising, we mean to incorporate 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. In a narrower sense, students in a rural college in Mizoram or Tripura, while undertaking a course, should be familiarised with the prevalent working conditions, cultural nuances of other parts of the country and the world as part of their education.

Our academic programmes traditionally concentrate on the 'knowledge' contents, text and theories to build a sound foundation in a subject. That is a very noble approach, and perhaps Indian education systems are known globally for that strong 'foundation' built by our institutions over the years. However,



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. These qualities are not acquired in a day or just before a job interview. Specific courses should be introduced with motivational sessions mainstreaming across the programmes, and faculty-mentors should be assigned to guide them. Presently, it is left to individual students to acquire these skills outside of the programmes and often fail to impress a potential recruiter on these counts. Our universities and colleges need to launch 'Leadership Development' as a core component of all courses.

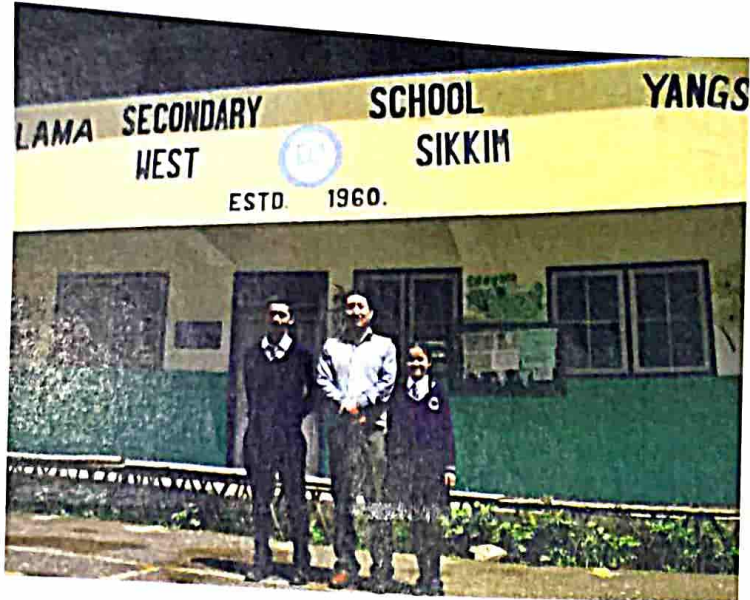
The third major redefining feature of our education policies in the region should include 'integration' skills in our education system. The region is in the periphery and away from mainland India. Its distinct and diverse set of cultures often adds to isolation in our learners' mental processes and worldviews. When some of them study in other parts of India or abroad, we see them excel. But these are a fortunate few who could afford to gain such exposure. For those left behind, 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. Today, students of Political Science should be able to join courses from computer science to look into social media politics. It will enhance their core learning in political theories and deal with the implications of technology in politics. We will need such professionals in the coming days

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with new jobs in domains like political campaign or social media management. With a combination of statistics courses, the same graduates will be able to gain entry into the world of election result forecasting. 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. Though these policies are earmarked as a national agenda, our educational programmes in the region hardly kept this on their curriculum development agenda barring a few specific departments or subjects. An average educated youth in the region rarely has any clue about how he or she can utilise his knowledge and focus on entrepreneurship, professional career or even the job markets in the far east, especially with increased linkages with ASEAN countries. The educational institutions in this region can cultivate the civilisational connections between North East India and Southeast Asian nations and incorporate relevant educational components based on the shared cultural histories and trade routes. If our campuses in the region can attract more interactions, exchanges and joint programmes with universities in ASEAN countries, we can expose our students to look for more opportunities. It is high time that our educational programmes and intuitions start building those academic bridges.

More than two decades ago, UNESCO published a ground-breaking report *Learning: The Treasure Within* for the International Commission on Education for the Twenty-first Century, chaired by Jacques Delors. It argued for an integrated vision for education and learning worldwide, which influenced our educational policies for many years. With the free-market economic reforms and socio-economic transformation of the societies post-1990s, it is relevant to revisit the report and revisit the educational policies we adopted. One of the prominent recommendations for the

education sector was to underline the concept 'learning to be', which emphasises an 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 is high time that the educational programmes across levels, streams and subject areas are sifted through an emergency overhaul to offer this flexibility to the students. A student of political science, as discussed earlier, will then be able to pursue an *à la carte* combination with computer science, biology or artificial intelligence. 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. One way of doing this would be to set up a common centre for inter-disciplinary programmes where faculty from all departments will offer courses that any student can pick up according to their interest.

In his popular book *Power Shift* (1990), the famous futurist Alvin Toffler talks about how the power of knowledge is the most accessible, affordable and democratic force that can overcome the other powers of wealth and violence. The North-Eastern region needs to covert that knowledge (in the traditional sense, as offered in our institutions) into a real power that will drive this region and people in the coming decades. Following the traditional routes of degree-granting programmes producing only educated youth with mark sheets will no longer be an option. While keeping high-end fundamental research avenues open for a very select few, most students must be given an option to join a workforce, career or profession with a clear roadmap to achieve the required skillsets while studying within a mainstream programme. Without a trained set of counsellors, course planners and mentors within the institutions, such a policy cannot be implemented. Therefore, we need to identify champions within our educators and administrators, reorient them towards the *changing nature of works* and convert them into mentors. Perhaps such a transformation is long overdue. □

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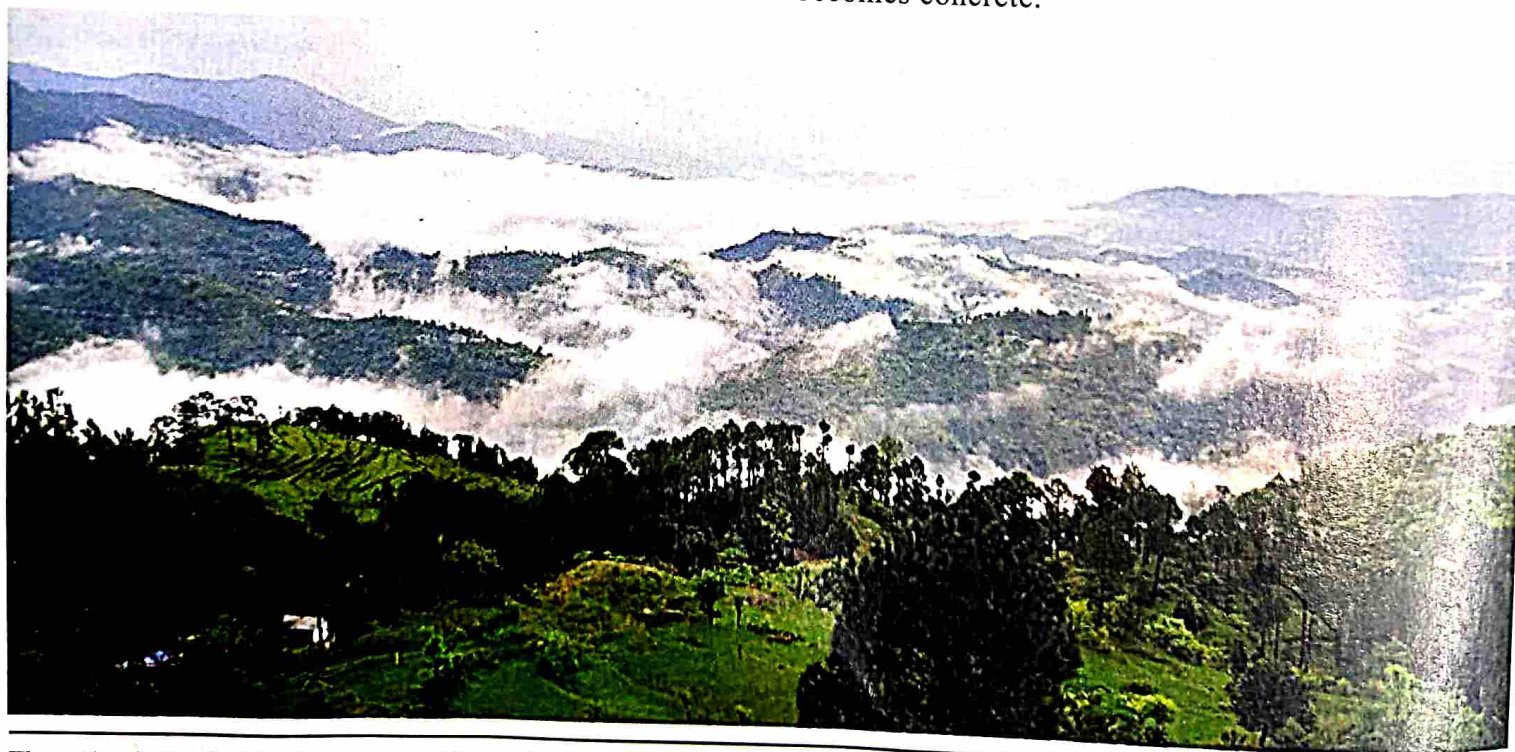
# Translation: Window to the world

Anurag Basnet

Translations open windows to worlds that otherwise will always remain closed off. They offer opportunities to build bridges of understanding between cultures and between peoples. This is vital in a country like India where multiple cultures exist cheek by jowl. In popular mainstream imagination, Northeast India is a monolith. Yet within this contiguous territory live multiple sub-nationalities. Historically, the peoples of the Northeast have a grouse that 'mainland' India does not understand them. One way to alleviate that is by translating more and more from the languages of the Northeast, especially those which do not have much representation—Nepali, Bodo, Kuki, Mizo, Kokborok, and Meitei, among others. Similarly, more and more content from other languages must travel into these.

**O**n the highways from the plains to any of India's many hill states, one faces a common traffic obstruction. Slow-moving trucks carrying sand from the riverbeds in the valleys to construction sites which mushroom the hillsides. As the trucks crawl uphill, some of the sand

is blown away by the wind, or falls by the wayside when tyres negotiate potholes, or is washed away in a steady drip if the sand was loaded into the truck still soaking wet. Sand transforms from dust to dwelling, but not all the sand that set off from the riverbed becomes concrete.



The author is Head of the Department of Journalism and Mass Communication at SRM University, Sikkim. He has an extensive experience in Indian publishing as editor and translator with Penguin India, Aleph Book Company, and Speaking Tiger. He is currently working on two translations, from Hindi and Nepali, forthcoming in 2021-22. Email: [anurag.basnet@gmail.com](mailto:anurag.basnet@gmail.com)





Translation is much like that. Text transmutes from one language, one form, to another. It traverses cultures. But it is impossible for the reader to ever know exactly how much of the author's meaning, suggestion, intention, was blown away or leached by the process itself.

Our languages spring from numerous sources. From culture, history, religion, belief, geography, topography, among others. And when I translate from Hindi and Nepali into English—the three languages I know reasonably well—I feel the loss keenly. As the facilitator of this transmutation, I know exactly how much sand blew away.

We cut into our hillsides to make what look like steps or stairs. Terrace farming, or step cultivation, it is called. I've always imagined the person who gave it this name looked from a distance and named it thus. Up close, these are life-sustaining fields where we grow rice, maize, pulses, vegetables, flowers etcetera. In Nepali, there is a name for each step, *garaa*.

The outer lip of the step is called *kanlaa*. And the inner end of the step is the *bhitta*, the wall which forms the base of the *kanlaa* of the next step. Rice cultivation requires

a lot of flowing water and every few years, the inner end of the step has to be cut deeper into the hillside. The process is called *bhittachhilnu*, quite literally shaving away the hillside to compensate for erosion and make more room for planting. The irrigation channels which run down the hillsides, bringing water from rivulets to the roots of plants, are called *kulo*. With little or no resonance in English, explaining these terms, pithy in themselves, bloats the text unmercifully without precisely conveying meaning.

Rural families in the hills are mostly large. Lack of literacy is a reason. So is simple economic logic. More children mean more hands to till the land. Though now, as focus shifts from agriculture to more lucrative means of livelihoods, that is changing. Usually, a generic calling name is used in households for each child. So, in the

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**When choosing a language to write in, every author makes natural assumptions about her readers. What they know, what they understand, and how well they will grasp text, subtext and meaning. So, what is perfectly clear to a particular audience can be impenetrable to another. There are, of course, also the shared experiences and culture between author and reader. These mutually shared experiences create deep pockets of meaning that are conveyed through what remains unsaid. The translator, however skilled, is dependent entirely on the author for context.**

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order of birth, *Jetha, Maila, Sainla, Kainla* and *Kanache* for sons. And for daughters, *Jethi, Maili, Sainli, Kainli*, and *Kanachi*. There are also names for those with more than five sons and five daughters. As people grow up, these generic names stick, and they are known in their communities after the family or clan name and the order of their birth. Indeed, it isn't uncommon for someone's first name to never be known till the day of her death. So, if a man is called 'Basnet Jetha', a literal translation would be First-Born Son Basnet or Basnet the First-Born Son, or even First Brother Basnet, none of which sounds anything but ridiculous. So, Basnet Jetha the character remains. Yet, to the reader in English, the name will never convey the sense of a society in which the individual is so subsumed within familial and societal structures, or is so ignored by harried parents who must rear many offsprings, that he doesn't even have the simple luxury of a first name. The name Tedhe Thami can be rendered as Cross-eyed Thami but the layers of casual, half-affectionate contempt implied in using his physical deformity to address a human being are mostly leached away. A similar problem arises with a character called 'Bastay', itself a contraction of 'Basattay' or one who was born in the year 1962. As translator, I have no choice but to retain 'Bastay'. But the rich subtext of a society in which a couple has so many children that they can identify them only by the year of their birth is completely lost.

An acceptable strategy to deal with these problems is to allow the context to reveal the meaning. Yet context

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More and more institutions must become involved.

Language departments in universities, both public and private, must have adjunct translation departments which work actively to identify texts. Alongside, training students is crucial. It is important, also, to use the digital space more effectively. Online portals offer an effective platform to showcase translations.

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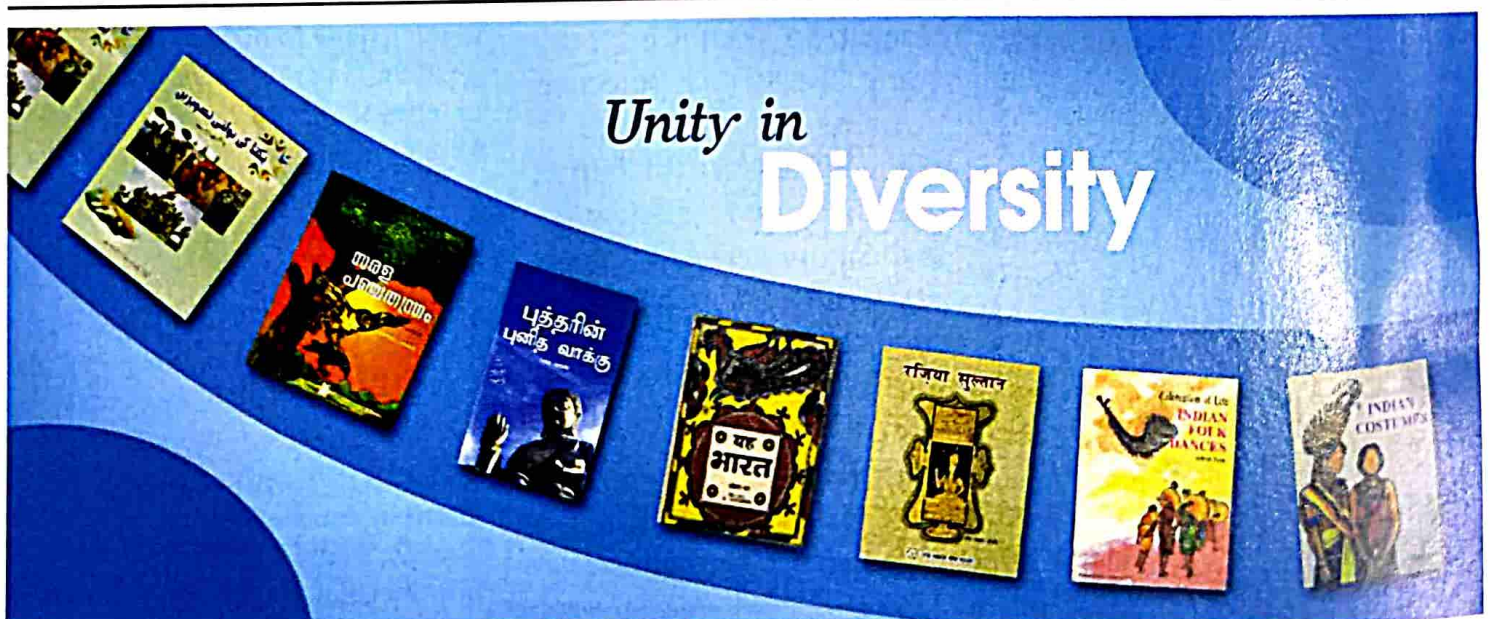
is fickle. When choosing a language to write in, every author makes natural assumptions about her readers. What they know, what they understand, and how well they will grasp text, subtext and meaning. So, what is perfectly clear to a particular audience can be impenetrable to another. There are, of course, also the shared experiences and culture between author and reader. These mutually shared experiences create deep pockets of meaning that are conveyed through what remains unsaid. The translator, however skilled, is dependent entirely on the author for context.

Footnotes are a usual strategy to provide a context in non-fiction.

In fiction, footnotes are as enjoyable as biting into a mouthful of warm fluffy rice, only to find a pebble in the centre. Yet, at times, they are unavoidable.

The word *syarpi*, immediately recognisable to each citizen of Darjeeling, is gibberish to anyone from outside the district. One must take recourse to a footnote to explain that it is the local lingo for CRPF, the Central Reserve Police Force. Or take the translation of a threat which the thugs of Darjeeling are fond of issuing. 'Pay up,' they might say, 'or I will reduce you by six inches!' Here, a footnote is needed to prevent misinterpretation. To 'reduce by six inches' is the colloquial expression for a beheading.

These are some of the problems I encounter every time I sit down to translate. I imagine it must be so for all translators. And we all find strategies to deal with them.





The book publishing industry in India, especially trade publishing, is opaque. For first-time authors and translators, the industry can seem like a temple whose doors are always shut. Its priests are mysterious and invisible. So are its gatekeepers. The sub-industry of book agenting, robust in the west, is miniscule in India. And while publishing houses invite submissions through their websites, sending one's work to them can feel like tossing the manuscript into a swift river. This isn't entirely their fault either. Most publishing companies in India are short-staffed, especially in the editorial departments. Pandemic-related layoffs haven't helped either. This is true even of the largest ones. But knowing this doesn't help any new author or translator one bit.

Publishing is a business, like any other. The pressures of the bottom-line mean that the appetite for risk, already not very high, is enormously reduced. Publishers look constantly for the next best thing. The big seller which will take the year from red to black. And more often than not, the next big things are celebrity autobiographies, both current and past. For they come pre-loaded with two precious attributes: a fanbase and ready recall. Or, in an aspirational country like ours, books that teach us how to be leaner, fatter, smarter, faster, stronger, calmer, more spiritual, or to reach the top before anyone else occupy pride of place. And if such a book were to be written by a photogenic author, so much the better. It is a cacophonous market, in which a high profile and a booming voice are virtues. Fiction, especially of the literary kind, is difficult to get noticed. Translations, for some reason, have the

aura of being literary. Hence, they are at a double disadvantage.

This is not to say that translations are not published. They are. Big publishers maintain robust translation lists. Yet the space is shrinking. The pandemic, too, hasn't helped. A shrinking market is faced with a crisis of existential proportions.

The other question is that of the economics of book publishing. Unlike their Western counterparts, Indian publishers rarely pay the translator a one-time fee for their work. In most cases, the royalty system works in translations like it does in any other kind of books. Under the royalty

system, a percentage of the cover price—ranging between 8 per cent to 10 per cent, depending on whether the book is published as paperback or hardback—is paid to the author. Print runs generally remain low, between 1,500 to 3,000 copies. And prices too. Look up Amazon, rarely will you find books priced beyond 899 rupees—unless it is an academic title. Back-of-the-envelope calculations will tell you how much an author makes on her book. Paltry sums. Unless of course her books become bestsellers. In case of translations, the royalty is shared between author and translator, which makes the pickings even slimmer.

### So why translate?

In the face of such doom and gloom, this question takes on a special significance.

I like to think of translation as the ultimate reader's recommendation. Reading is a solitary activity but once we finish a book, the first impulse, if we have liked it, is

**Sahitya Akademi, India's National Academy of Letters, has over the years, encouraged extensive translation works from Indian languages into English as well as between various Indian languages. The Sahitya Akademi Award, given in 24 languages, is still one of the country's most prestigious literary awards. It has an India-wide network and a history going back to 1954.**

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texts. Alongside, training students is crucial. It is important, also, to use the digital space more effectively. Online portals offer an effective platform to showcase translations. [www.rekhta.org](http://www.rekhta.org) ably demonstrates this for Urdu writing. Literary Hub, a daily literary website launched in 2015 by Morgan Entrekin, president and publisher of Grove Atlantic, is also an excellent model. More crucially, translated works must be introduced in school and college curricula more extensively.

to recommend it to a friend. Translation is just that. It is one way of saying to the world, 'Here, I found this book in a language I know. May you enjoy it as much as I did.'

A solitary exercise, translation is also intensely satisfying. When I manage to come closest to the author's intention, rhythm and inflection, I feel what I imagine a mathematician must feel when she works out a complex problem.

We must also translate because simply, we must. Translations open windows to worlds that otherwise will always remain closed off. They offer opportunities to build bridges of understanding between cultures and between peoples. This is vital in a country like India where multiple cultures exist cheek by jowl.

In popular mainstream imagination, Northeast India is a monolith. Yet within this contiguous territory live multiple sub-nationalities. Historically, the peoples of the Northeast have a grouse that 'mainland' India does not understand them. One way to alleviate that is by translating more and more from the languages of the Northeast, especially those which do not have much representation—Nepali, Bodo, Kuki, Mizo, Kokborok, and Meitei, among others. Similarly, more and more content from other languages must travel into these.

So what is the way forward? I do not think simply depending on the publishing marketplace to grow the translation ecosystem is a workable plan. More and more institutions must become involved. Language departments in universities, both public and private, must have adjunct translation departments which work actively to identify

The Murty Classical Library of India does yeoman's work in commissioning and publishing great works of translation. Perhaps more such corporate entities can be persuaded to fund works, not as an investment, but as grants. I firmly believe that if translators were to be reasonably well-paid for their efforts, we will see much more, and much better-quality works being transmuted from other languages.

Sahitya Akademi, India's National Academy of Letters, has over the years, encouraged extensive translation works from Indian languages into English as well as between various Indian languages. The Sahitya Akademi Award, given in 24 languages, is still one of the country's most prestigious literary awards. It has an India-wide network and a history going back to 1954. The Akademi is prolific too. Its website states that it publishes 'one book every 19 hours'. Yet these books don't make their presence felt in the market. An agency with such a network and backing can certainly do more to package and market its books effectively. Another means to promote translations and translators is to institute an annual grant in the different languages of India, which can take care of the financial uncertainty that embarking on a large project entails.

Most of all, what we must do is be curious. About our world, our neighbours, the fellow-citizens we share our country with. Over the years, we have made much of the idea that India is a melting pot of languages, cultures and people. We cannot truly become one if we remain uninterested in looking through the windows that translations provide. □





# Seven Sisters' Musicscape

*Bijay Sankar Bora*

**A melting pot of hundreds of ethnic communities, the cultural mosaic of Northeast India's Seven Sister states – Assam, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura—is cemented by tunes, melodies, rhythms, and lyrics of various genres and flavors. Music and rhythms are part of agrarian tribal life in the region geographically characterised by blue hills and green river valleys.**

**T**he unique styles of folk, classical, rock, and contemporary music of the Northeast make it a significant entity in the country's musical ecosystem.

## Assam

Being the most populous state of the region, Assam dominates the music scenario in the region because of its rich history, an amalgamation of one thousand years old folk music tradition, about five hundred years old tradition of written drama songs, nearly three hundred years old tradition of Indian classical music.

The origin of modern music in Assam dates back to 1883 when Satyanath Bora published *Geetabali*, the first book on Assamese songs. During the early part of the Twentieth century Ambikagiri Rai Choudhury (born in 1885), ushered in a revolutionary trend in modern music in the state with his compositions seeped in strong national fervor. Giants like Jyotiprasad Agarwala (1903-1951), Parvati Prasad Baruah (1904-1964), and Bishnu Prasad Rabha (1909-1969) set their unique gharana of modern music in the Brahmaputra valley region of Assam. Jyotiprasad laid the base of the modern music and film sector as an industry in the region in this era only.

The most glorious chapter of the music industry in Assam started with the entry of quintessential Dr Bhupen Hazarika (in 1939) who dominated the scene till the 1980s and his songs continue to reverberate across the hills and valleys of Assam winning hearts across all communities. With a new style both in terms of composition and tune of songs of nationalism and modern music with the flavours of the West, Dr Hazarika ensured modern songs in Assam transcended its geographical boundary and were recognized in other regions of India and abroad as well. Dr Hazarika's works expanded the scope of movie songs as well as radio songs in terms of the

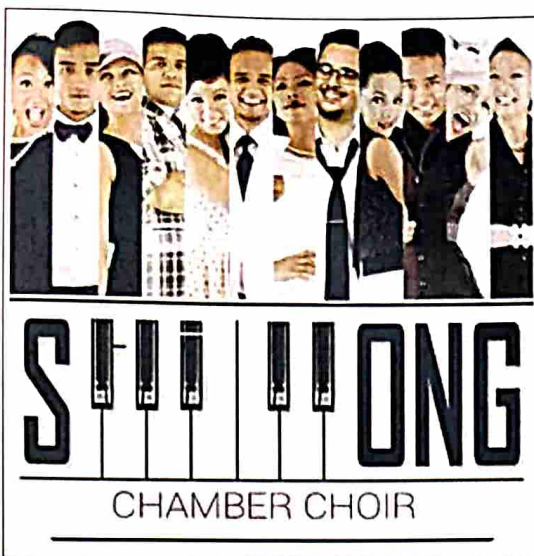
music-based industry in Assam. His younger brother and contemporary Jayanta Hazarika was one of the pioneers who truly westernised the music of Assam during the 1970s. The influence of western music on Assamese tunes, the inclusion of western instruments like guitar, mandolin, triple, African drums, were significant in the music of Assam during this era.

Other musical legends during this phase were Khagen Mahanta, Brazen Baruah, Dipali Borthakur, Hemanta Dutta, Jyotish Bhattacharya, Pulok Banerjee, Kula Barua, Jitu-Tapan, and many more.

Towards the latter part of the Twentieth century, a new and fresh trend started in the music scenario that brought modern hi-technology and digitised music to the region. Noted singer, composer Jitul Sonowal was the pioneer of this trend. Later in the 1990s versatile Zubeen Garg stormed into the scene with his album called 'Anamika' that created







a new sensation in the music world of Assam. From 1992 till date, Zubeen has remained the heartthrob who has not only experimented with the fusion of western and regional music but also contributed to reviving the traditional songs and styles of music in Assam.

Some of his popular contemporaries are singer-composer Tarali Sharma and Angarag (Papon) Mahanta, a fast-rising star in the music scenario in India. Papon introduced another style on an experimental basis called 'folktronica', a combination of folk music and electronic music. This phase of modern music is the result of globalization. Popular Assamese singer and composer Joi Barua's music is now a part of the Cannes 'best soundtrack' award-winning animated movie 'Fantasy of Companionship between Human and Inanimate'.

In the meantime, a few rock bands too have come of age in the state. Lucid Recess is an alternative metal rock band from Guwahati. One of the best Indian metal bands, it was formed in the spring of 2004 by brothers Siddharth and Amitabh Barooah. It has emerged as the most powerful metal band in Guwahati. The alternative metal band has won the Toto Award for Music 2011. Other best rock bands from Assam are Escape Velocity, Huworoni, Celestial doom, Tiprasa, and Rampazze.

Band of Hurricane Gals is an alternative/blues/Bollywood/fusion/indie/jazz/metal/rock band based in Guwahati. The band was formed in 2010 under the initiative of Mamoni Kalita (lead vocalist, composer, and director) and Arju Begum (drummer). The band uses traditional Assamese musical instruments like nagara, dhol, and dotara with guitar, keyboards, drum set, and some modern percussion instruments.

Tonmoy Krypton, the 19-year-old music producer from Sivasagar was

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one of the first creators out of the region to experiment with R&B music. One of his recent collaborations, 'Alakananda' has more than 3 million views on YouTube with most of his other compositions hitting popularity charts across a variety of platforms. 'Project Baratalaap', an effort by the creative duo Shankuraj Konwar and Maitrayee Patar and the other half of the 'Alakananda' equation, is another fresh narrative in this scenario.

Kuldeep who goes by the stage name 'KoolD' is another exceptional example, a rap artist, his track 'XORU MANUH' has some 7 million views and the numbers

keep rising by the day. Another singer Shankuraj Konwar has been getting feedback from countries like Thailand, Nepal, Germany, the USA, Bangladesh, Indonesia, China along with states across India and requests to translate their music into English.

Assam has provided the Indian film industry's one of the accomplished sound engineers Amrit Pritam as well as a fine film music scorer and director, Anurag Saikia.

An alumnus of Dr Bhupen Hazarika Film and Television Institute in Guwahati, 45-year-old Amrit Pritam has carved a niche for himself in the Indian film industry for creating a soundscape in several films including Slumdog Millionaire, Kal Ho Naa Ho, Love Sonia, Kaabil, Village Rockstars, Beautiful Times, Ishu, Man with the Binocular, Rainbow Fields and Court. Amrit Pritam has worked closely with Resul Pookutty and is a member of the Academy of Motion Picture Arts and Sciences.

Anurag Saikia (32), a man from Assam and an alumnus of the famous Swarnabhumi Academy of Music, Chennai, is now a well-acclaimed film score composer, music director both in Assam and Bollywood. He was the youngest music composer to be awarded Rajat Kamal for the best non-feature film Music Director for the film 'Yugadrashta'. He

has composed music for several films. He is known for his venture of syncing Borgeet (classical devotional song in Assam) to a symphonic orchestra.

### Meghalaya

For its majority Christian community, gospel singing has been part of life since anyone can remember. It was just a matter of time before the voices went from the church to the stage. The guy that dominates the scene of performing music in this picturesque hill state is Lou Majaw, a living legend who has been the constant entertainer of





rock band from Shillong is crowned as 'Meghalaya Icon III' at a rock music competition in Meghalaya. There are so many famous rock bands in Meghalaya some of them are Plague throat's, Maestro, Aberrant, The Czars, Eye 2 Eye, Verbs, Dosser's Urge, and Afflatus the only girls rock band from the city.

#### Nagaland

Talking about Nagaland, we must take the name of Alobo Naga band that was formed in the summer of 2010. Other most famous rock band from the state are Melodrama, Sunep Assemble Band, Incipit, Kronik, Eastern Hatz, Trojans, Blue Clover band, and Divine Connection.

a class apart thereby lifting the bar for the progeny.

The Shillong Chamber Choir (SSC), founded in 2001 by Neil Nongkynrih is a multi-genre choir that won the reality TV show India's Got Talent in 2010. The same year also saw the choir being awarded three gold awards at the 6th World Choir Games for Musica Sacra, Gospel, and Popular Music.

They also performed at the Rashtrapati Bhavan for visiting US President Barak Obama and Michelle Obama during their state visit to India. The choir's versatility ranges from performances with the Vienna Chamber Orchestra and the Fitz William Quartet to collaborations with known icons like Amitabh Bachchan for the opening of Kaun Banega Crorepati season 6. They have also teamed up with other recognized names like Shankar Ehsaan Loy and Usha Uthup. Their Christmas album in 2011 became the highest selling in the country for non-cinematic music.

Based in Shillong, 4th Element blends the four styles of funk, jazz, R'n'B, and soul. 4th Element has performed all over the country, and abroad as well. The band has represented India at The Nisville Jazz Festival 2019 (Serbia), The Belize International Jazz Festival 2018 (Belize) The Philippines International Jazz Festival 2015 (Manila), Jazzmandu Festival 2013 (Kathmandu), North East India Festival 2019 (Bangkok), The Delhi International Jazz Festival, (2016) The Hyderabad International Jazz Festival 2019, South Asian Bands Festival (2010) organised by SAARC and also performed at Sing Jazz club Singapore 2015 and Tulum, Mexico in 2018.

The rock capital of India, Shillong is also home to one of the most successful blue bands in India Soulmate. It created history by being the first and only blues band ever to represent India in the world. The north-east band was formed by lead guitarist, singer, and songwriter Rudy Wallang and vocalist Tipriti Kharbangar. Aberrant, another

**Tripuri people have always been connected with music. Every festival or celebration is a platform for the people to sing songs that represent the ethos of the occasion. Sachin Dev Burman (1 October 1906 – 31 October 1975) was a member of the Tripura royal family, who started his career with Bengali films in 1937. He later began composing for Hindi movies and became one of the most successful and influential Bollywood film music composers.**

The Tetseo Sisters is a band of four musician siblings from Naga hills. The four sisters—Mütsevelü (Mercy), Azine Vezivolü (Azi), Kuvelü (Kuku) and Alüne Tetseo (Lulu)—specialise in folk songs. They generally play traditional Naga one-stringed instrument, the Tati/Heka Libuh. The sisters recently performed at Mix the City Soundfest, organised by British Council in Delhi last month. The Tetseo Sisters started performing music at a young age. They played folk music at a time when gospel, rock, and pop were ruling the scene.

#### Manipur

The talented members of the 'Cleave' rock band in Manipur want 'helping hands' from all over the globe to CLEAVE all the evils in today's

society and to enjoy the powerful music of heavy metal with the band's original compositions which, they guarantee, will mesmerise each one until and unless they don't stick to drugs and injustice. The band calls its original compositions Progressive Seclusion Metal.

Many new bands are emerging in Manipur and getting popular for the high-quality music they perform. Some of





them are Stepping Stones, Recycle, Cygnus, Dazzle City, and Angellica.

Mangka Mayanglambam, a Manipuri folk, classical, and contemporary song performer and a pena player, has been singing her way to glory, taking the Manipur folk music to places.

Yumlembam Gambhini Devi is an eminent dancer and singer of Manipur. She is the first female artiste in the state to get the "Top" grade artiste of All India Radio, Imphal in Nat Sankirtan Music (Music) in 2008. The Government of India honored her with the Padma Shri in the field of dancing and singing in 2005. She is the recipient of the Sangeet Natak Academy Award for her contribution in the field of Nat Sankirtan in 1988.

#### Mizoram

Boomarang, a band of five incredible boys from Aizawl, is doing fantastic work. The splendid flow of their music is triggered by two soulful Lushan (Mizo) six-string executioners blended with metal, hip-hop, jazz, funk, punk, rock and they like to brand as "junk rock". The band had played alongside top International and national acts like Scott Kinsey Band, Lamb of God, Intron out, Firehouse, Parikrama, Pentagram, and many more. They were also winners and runners in many awards like Nokia Lords of Music, Independence Rock, Mumbai, IIT Guwahati, NIT Silchar, etc.



**Band of Hurricane Gals is an alternative/blues/Bollywood/fusion/indie/jazz/metal/rock band based in Guwahati.**

The band was formed in 2010 under the initiative of Mamoni Kalita (lead vocalist, composer, and director) and Arju Begum (drummer). The band uses traditional Assamese musical instruments like nagara, dhol, and dotara with guitar, keyboards, drum set, and some modern percussion instruments.

Magdalene, a Christian Rock Band of five Aizawl boys, was formed in 2005. Magdalene is synonymous with experimentation when it comes to the rock genre. They were also a winner and runner in many national competitions like Great Indian Rock NIT's, IIT's, Hornbill National Rock, etc. Their album 'Life beyond Death' adds a whole new dimension to Indian rock music is a must-listen for all rock music fans.

The Chosen is a young bunch of six enthusiastic talented girls from Aizawl who got together by their common love for music and formed a gospel band back in 2009 after jamming many times together. The band rose to the music

scene with their first-ever single "Broken Wings" later followed by "Kan fak a che". The young girl band includes Seni (Guitarist), Fiona (Vocalist), Mawitei (Vocalist), Xoei (Bassist), Afeli (Drummer), Malsawmi (Keyboardist).

The Apples is a loud and sparkling rock 'n' roll girl band that was formed back in 2007. The Apples is led by Zodingliani with her retro rock style and smirking off high-energy guitar. The band includes of Jojo (Vocalist), (Drummer), Afaki (Bassist), DingDingi (Guitarist). They have also covered the Mizo version of the 50's hit "Stupid Cupid" which helped them increase their popularity and fan base.

The Scavenger Project is the brainchild of Victor, former guitarist of the powerful band Magdalene. The band is a convergence of members like

## Sikkim

The three ethnic communities, Lepcha, Bhutia, and Nepalis constitute the folk dances and songs which are an ingrained part of Sikkimese culture. This music and folk dances relate to the beauty of the natural surroundings, depicting the harvest season, and are performed for good luck and prosperity. Some of the popular music and folk dances are described below.

Nepali folk dance "Maruni" – It is one of the oldest and popular groups dance forms of the Nepali community, usually performed by three male dancers and three female dancers. The dancers are usually accompanied by a clown called "Dhatu waray". Sometimes Maruni dances are performed to the accompaniment of the nine

instrument orchestra known as "Nau-mati Baja".

Nepali folk dance "Tamang Selo" - This group dance of Tamang community is performed to the rhythmic sound of "Dhamphu", a musical instrument and hence are also called "Dhamphu" dance.

Bhutia folk dance "Tashi Sabdo" - This age-old group dance beautifully and gracefully shows the customs of offering khadas on auspicious occasion. The dancers dance to the melodious tunes dully supported by a musical instrument such as Yarkha, Drum, Flute, and Yangjey.

Source: <https://www.sikkimtourism.gov.in/>





Jonah of 3rd Sovereign, Michael M Sailo, with a gift for composition and songwriting. They want to brand their music as “electro-rock progressive”, a blend of electronic, progressive rock, hip hop, and metal.

Frisky Pints started when Joseph and Danny met in Camden Town in London in 2010. They returned to India to team up with new bandmates Anggu and Valentino and officially started Frisky Pints Band. They have played in various venues and festivals across India like international artist Lee Ronaldo & The Dust (Sonic Youth of USA), The 7 sisters Rock Festival, The India Bike Week, New Wave Festival Goa, and more. They also participated in the competition like ‘Hard Rock Rising’ and stormed through the national level competition as well as the online voting system ‘top 25 bands worldwide’ category, the first Indian Bands to reach this level.

The band was handpicked by Uday Benegal (Indus Creed) to jam on MTV as part of the Rayban never hide sound series and also won the Delhi leg of the Converse roads to rubber contest. The bands were nominated by The Rolling Stone Magazine as one of the 2013’s ‘best-emerging rock act’ and MTV Indies included them in the ‘10 Immensely Talented Young Bands That Hold Potential to Stardom’.

Juggernaut is a six-piece progressive rock band. The band got a good riposte after releasing its first Single ‘Sacrifice’ in the year 2016.

### Arunachal Pradesh

Alien Gods is the Death Metal band from Itanagar, which was formed in 2005 with many talented members of music. Most of the members of Alien Gods band had been already involved in a local concert of music for the last many years. The other best rock bands from Arunachal Pradesh are Mangalz, Symmetry Clan, and The Vinyl Records.

Soul of Phoenix, formed in the summer of 2011, is a heavy metal/hard rock band hailing from Aalo, West Siang district, Arunachal Pradesh, and currently based in Shillong. Since their formation, the band has been performing a lot of gigs across the region. The band’s style is reminiscent of classic rock, heavy metal. The band comprises David (Vocals), Anand (Guitar), Narmee (Bass), Noah (Drums).

The Vinyl Records (TVR), is a four-piece all-female band based in New Delhi and Arunachal Pradesh. The band is made up of lead vocalist and keytarist Cheyyrian Bark, Mithy Tatak on drums and percussion, Minam Tekseng on bass guitar and Band Jini on lead guitar and vocals. They came together in February 2010 with their focus on playing post-punk rock music. Their debut album was called ‘Whims’ and featured 4 tracks. Their first internationally released song was called ‘Ready, set, go!’, and was aired in 2014.

### Tripura

Tripuri people have always been connected with music. Every festival or celebration is a platform for the people to sing songs that represent the ethos of the occasion.

Sachin Dev Burman (1 October 1906 – 31 October 1975) was a member of the Tripura royal family, who started his career with Bengali films in 1937. He later began composing for Hindi movies and became one of the most successful and influential Bollywood film music composers.

During the 1980s and 90s, Bimal Debbarma revolutionized the music scene of Tripura by writing and composing songs that the indigenous youth could identify with. His songs spoke of romance, love for the motherland, and the political alienation of the people. He died on April 14, 2021.

Bimal started his music career in the 1980s when the Kokborok (the language of the main tribe in Tripura) music scene was heavily dependent on folk songs. He and his colleagues like Jayanta Jamatia, Kwplai Jamatia, and Gautam Debbarma rejuvenated the scene by introducing new beats and modern instruments.

Horjwlai is one of the most promising Rock Bands from Tripura. The metal band was formed in mid-2004. Shadows, Swraijak and Dabanol Band, and Twijlang an alternative Metal Rock Band are few famous Rock Bands in Tripura. In 2014, after inducting a few other boys, Koloma band was launched. In 2015, they brought out their first album, Mwrwi. The band uses elements of other genres—such as blues and rock fused with folk tunes of Tripura—to tell tales of love, life, and strife in Tripura. The five-membered band — all of whom belong to the Debbarma Tripuri clan — play the flute, the guitar and traditional folk instruments such as the sarinda (similar to a violin), and the chongpreng (a string instrument). □



# Cinema in North Eastern India

*Manju Borah*

The North Eastern Region, comprised of Assam, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Meghalaya, Tripura, and Sikkim is unique with their varied lifestyles, linguistic origins, art and culture. A number of films made in the region have over the years fetched several National and International awards. However, the limited numbers of these films are not sufficient to foster the growth of a vibrant film industry as we understand in the context of the other successful film industries growing up in the rest of the country and outside.

**C**inema is primarily a visual medium. A good cinema is one that tells its story in visual frames that is both telling and at the same time soothing to the viewers' eyes mixed with sounds that complement the visual images presented aesthetically in a complete package.

The North Eastern Region of India with its pristine and verdant nature, mind boggling bio-diversity and its colourful mosaic of many races and culture, presents myriad opportunities to the discerning filmmakers to make cinema that can truly reflect the many hues and characters of man and nature. The region with the majestic Himalayan range in the North, the many hills and valleys, interspersed by innumerable rivers and rivulets, is a delight for any cinematographer worth his salt. The many racial and ethnic groups that inhabit the region speak their own dialects and practice their different but highly colourful customs and culture. The region boasts of people who still live in primitive conditions and at the same time people who have adopted to the most modern ways of life and living. The climate here too is mild with heavy rainfall in the summer and some areas in the north experience mild snowfall during the winter. People here are friendly and hospitable. They welcome visitors with open arms and

go out of their way to make them comfortable. That is why the region has seen continuous legal and illegal migration of people from all around which is a suitable subject for cinematic presentation.

Of course, with the opportunities, the region poses few challenges too for the cinema makers. Communication and movement in the region, especially to its nooks and corners, is still very difficult. Roads are sub-standard and rail communication is tardy. Few states in the region are not having railhead till now. Though the mighty Brahmaputra is flowing through the middle, the region has not seen a good waterway. The single rail track is not yet electrified, further slowing down people's and goods movement. Air connectivity to the principal city of the region, Guwahati, is tolerable. However the other areas are having very little air connectivity. The road journeys are costly due to excessive taxation on petroleum products and poor road conditions. The markets in the region are not well developed and hence, many items of everyday living are not easily available, including essential and quality cinematic equipment. The region doesn't have many theatres and audience development has not taken place resulting in the lack of audience for quality cinema. The region is a



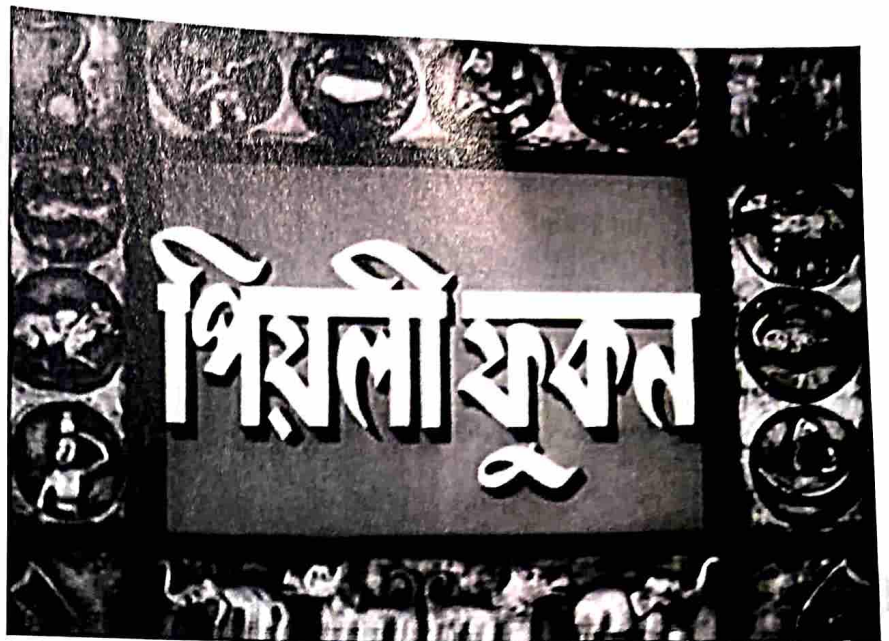
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hot-bed of ethnic, linguistic and communal tensions. Even tenor of life is frequently disturbed due to these factors and insurgency too is not uncommon. However daring filmmakers can find opportunities to make quality cinema even in such situations. This is proved by the state of good films that have been made by many young and upcoming filmmakers from this region which have been feted in many national and international film festivals and competitions and have brought laurels. This compact, colourful but landlocked and neglected region has seen both bountiful nature and hardships of life in an underdeveloped corner of a vast country whose leaders are often accused of giving a blind eye to the suffering of the natives. The love for their people and their culture and the anguish they feel about the deprivations that their people suffer, have made these film makers tell their stories to the world audience through the medium of cinema proving of the axiom, challenges bring opportunities. I think that is the secret behind the recent success of cinemas from the North East.

### Cinema from the Region

The North Eastern Region is unique with their varied lifestyles, linguistic origins, art and culture. It looks very different from the other regions of the country with more than 200 ethnic groups of people living here with their own distinct colour and identity. It is ironic that one of the founders of the Indian films, Pramathesh Barua belonged to the state of Assam! It is noteworthy that the father of Assamese cinema Jyotiprasad Agarwala made the first Assamese film, "Joymati", only five years after Ardeshir Irani made the first Indian Talkie "Alam Ara" in 1930. Agarwala was one of the pioneers of making realistic films in India in contrast to melodramatic films made during those days. His "Joymati" was based on a historical character with the same name, who was a strong and brave woman with a political vision from the Ahom dynasty in Assam in the 16<sup>th</sup> century. Despite significant loss from the film, Agarwala made his second film "Indramalati" in 1937-38 which was released on 1939. On the other hand, Pramathesh Barua released his Assamese version of "Devdas" in 1937.



After Jyotiprasad Agarwala's early demise, there was a long gap in making Assamese films. It was in 1941 that Rohini Kumar Barua made the third Assamese film "Manomati", again on a historical theme like "Joymati" followed by Parbati Prasad Barua's "Rupahi" (1946), Kamal Narayan Choudhuri's "Badan Borphukan" (1947), Phani Sarma's "Siraj", Asit Sen's "Biplobi", Prabin Phukan's "Paarghat", and Suresh Goswami's "Runumi".

**Father of Assamese cinema**  
Jyotiprasad Agarwala made the first Assamese film, "Joymati", only five years after Ardeshir Irani made the first Indian Talkie "Alam Ara" in 1930. Agarwala was one of the pioneers of making realistic films in India in contrast to melodramatic films made during those days. His "Joymati" was based on a historical character with the same name, who was a strong and brave woman with a political vision from the Ahom dynasty in Assam in the 16<sup>th</sup> century. Despite significant loss from the film, Agarwala made his second film "Indramalati" in 1937-38 which was released on 1939. On the other hand, Pramathesh Barua released his Assamese version of "Devdas" in 1937.

The most remarkable film of the 1950s in this region was "Piyali Phukan" directed by Phani Sarma where music was composed by young Bhupen Hazarika. "Piyoli Phukan" is the first Assamese film to receive National Film Award. It is said that the film was technically advanced considering the time it was made in. Another remarkable film maker Nip Barua emerged in that period making few films who's "Ronga Police" received silver medal at the National Film Awards. Then came Bhupen Hazarika with his first Film "Era Bator Sur" where Dr Hazarika made Lata Mangeshkar sing the famous number "Jonakore Rati Asomire Mati jilki jilki uthe..." bringing Assamese cinema to the notice of the viewers of the other parts of the country. With his film "Pratidhwani" made in 1965, Dr Hazarika received President's silver medal followed by "Lotighoti" in 1966 which too received President's silver medal.

One of the eminent film personalities of Assam Abdul Mazid



made his first film "Morom Trishna" in 1968 who made "Sameli Memsahab" in 1975 which received President's Silver Medal for the Best Regional Film and also the Best Music Director Award received by Dr Bhupen Hazarika. In 1969, Brajen Barua made a very popular film "Dr Bezbarua", and received President Silver Medal for the Regional Best Film category. From 1970 to 1982, quite a number of new directors made their mark in Assamese film world. Samarendra Narayan Deb, Kamal Choudhuri, who made the first colour film "Bhaity", Pulak Gogoi, Padum Barua, Dr Bhabendra Nath Saikia, Atul Bordoloi are worth mentioning. Padum Barua's "Ganga Silonir Pakhi" made in 1976, gave Assamese cinema a huge lift to the modern realistic cinema of that time. Another National Award winning Assamese film "Moniram Dewan" directed by Sarbeswar Chakraborty, music by Dr Hazarika was made in 1964. "Buku hom hom kore" sung by Dr Hazarika and later sung by none other than Lata Mangeshkar in "Rudali" is an unforgettable number which became very popular nationwide.

Jahnu Barua and Dr Bhabendra Nath Saikia made Assamese films known nationally and internationally with a long list of their films. Dr Saikia, a renowned writer in Assam, had directed eight feature films in Assamese. These films had been screened at various international film festivals like Cannes, Karlovy Vary, Nantes (France), Valladolid (Spain), Algeria, Pyong Yong (North Korea), Sydney, Munich, Montreal, Toronto, etc. On the other hand, all the films made by Jahnu Barua received National Awards and some of them International Awards too. Without their contribution, Assamese films would not have known to the other parts of the world during those celluloid days. Then came film makers like Gautam Bora, Bidyut Chakraborty, Dr Santwana Bordoloi, Sanjib Hazarika, Jangdao Badosa, Manju Borah (writer of this article) with their series of nationally and internationally acclaimed films in Assamese language and also in some other dialects spoken in this region.

Manipur is another state from this region very rich in cultural heritage reflected in their music, drama, literature and handicrafts. The state takes pride in films too. The first Manipuri film "Matamgi Manipur" directed by Deb Kumar Bose, released



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in 1972 received National Award for Best Feature in Manipuri language at 20<sup>th</sup> National Film Awards. Aribam Syam Sarma, 'The Jewel of Manipur Cinema' made his first film "Lamja Parashuram" in 1974 and his fourth film "Imagi Ningthem" brought him international recognition when the film received the Golden Motogolfier in the Nantes Film Festival in 1982. His 1990 film "Ishanou" was screened in the Un Certain Regard section at the Cannes Film Festival 1991. Aribam Syam Sarma, no doubt, is the most important and the finest film maker from this region that North East can always be proud of. Manipur can also be proud of with other film makers like M A Singh, Makhomoni Mingsuba,

Oinam Gautam Singh, H Pawan Kumar and few others with their excellent work in each of their film. In spite of that, the film production in Manipur at one time almost came down to zero and all the theatres closed down due to the local agitation to stop screening of mainstream Hindi films. Since the digital films making has started, the Manipur film industry is getting expanded, commercially getting released and also critically getting attention like before in National and International level though it cannot be said that the industry is growing in real sense. It is to be mentioned here that in the current year, the State Film Development Society along with the film community are celebrating the Golden Jubilee Year of Manipuri Cinema year through and in the process paying tribute to the pioneers who initiated motion picture story telling in this part of the country in spite of heavy challenges of having any infrastructure to make films in early 70s.

Meghalaya, with its unique identity of matrilineal system where lineage and inheritance are traced through women, celebrates various festivals to bring balance between man, his culture and his natural environment or ecosystem. But to establish a film industry, Meghalaya has a long way to go.

"Ka Synjuk Ri Ki Laiphew Syem" is the first film made in Khasi language of Meghalaya by Hamlet Bareh Ngapkyanta in 1981 followed by "Manik Raitong", the first colour film made by Ardhendu Bhattachayee in 1984.

After the 2000s, when militancy in Meghalaya suddenly came down, a market for entertainment (films) opened

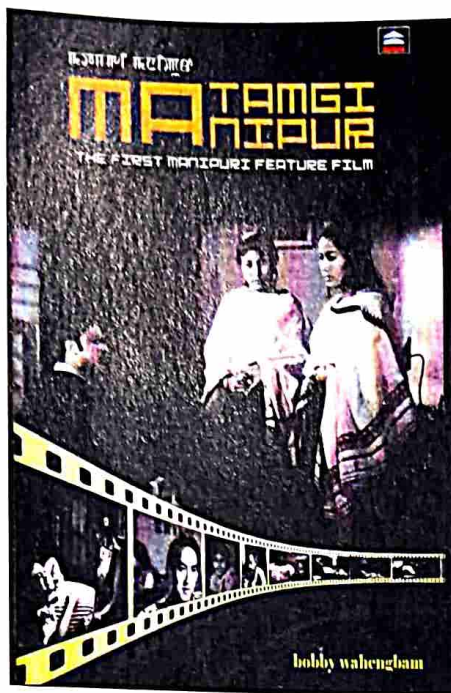


up. A number of video films, short and long, started getting produced. And in 2014, the first National Award winning film "Ri" was made by Pradip Kurbah followed by his "Onaatah"(2016) and "Lewduh"(2019)."Onaatah" received National Award whereas "Lewduh" became the first Khasi film to be premiered and won award in South Korea's prestigious Busan film festival and also the National Award for Khasi language and Location Sound 2019. It is indeed an inspiration to the budding filmmakers in Meghalaya where it is still very difficult to find a producer or financier.

Dominic Sangma, also from Meghalaya, made his mark with his Garo language (another official language in Meghalaya) "Ma.Ama" in 2019. But the question is where to release these films? What will be the response of the viewers? Directors, like Pradip, feel that travelling talkies are the only way to recover the cost of production of such films till now. Though, the entire Meghalaya is a Cinematographer's delight to shoot at anytime for any genre of films, we experience Ritwik Ghatak capturing the Khasi monoliths so aesthetically in Meghalaya depicting the sorrowful moments of the film "Meghe Dhaka Tara" which is a memory forever.

Another state of the North East India is Arunachal Pradesh which is of tribal origin having more than 20 major tribes and numerous sub tribes who follow a distinct ethnic culture of their own. The people of this state mostly follow the Buddhist ideals. The Monpas and Sherdukpens of Tawang and West Kameng districts follow the Lamaistic tradition of Mahayana Buddhism. Some other sects of tribes worship the Sun and the Moon God known as Donyi-Polo. Christianity and Hinduism are also being followed by some other group of people. Dance and music play a major part of the culture of the people of Arunachal Pradesh. The state is now trying to focus on cinemas and the Central Government is supporting it by setting up a film institute in the capital city of Itanagar.

Recently film making has been getting popularity amongst the new generation and some of them are getting good attention with their films at the national level. In 2013, Sange



Dorjee Thongdok made "Crossing Bridge" which is the first film made in Sherdukpen language. The film was premiered in Mumbai International Film Festival and received National Film Award for best film in Sherdukpen. But it is very unfortunate that until 2016, there was not a single functional cinema hall to screen these films and as a result films made in this state have very limited appeal to the local people.

"Sonam" directed by Ahsan Mazid has created history when the first ever film made in Monpa language was shown in 37<sup>th</sup> International Film Festival of India in Indian Panorama section. The film also received National Film Award and travelled in many International Film Festivals across the

globe.

"Head Hunter" is the third film made in Arunachal Pradesh in Wanchu language by Nilanjan Datta, a faculty in the department of Editing in Pune Film and TV Institute. The film reflects the issue of deforestation and unplanned construction as a great threat to this beautiful land. The director is also concerned of the uniqueness of the Arunachal culture but how at the modern time the new generation is somehow shying away from their past in their quest of being accepted in the 'mainstream'.

Two other films in Arunachal Pradesh were made in 2018 by Manju Borah (myself) and Bobby Sarma Barua. Both the films were based on two novels written by Yeshe Dorjee Thongchi, a Sahitya Academy Award winning prolific writer from this region. The films "In the Land of Poison Women" and "Mishing" received National film awards and participated in various International Films Festivals too. The latest film made in Arunachal Pradesh and received The Best Film in Environment is "Water Burial" directed by Santanu Sen. All the films made in this state are the true reflection of some important socio cultural issues but the state has a long way to go in establishing a film industry of their own.

Mizos, the people of Mizoram are from Mongolian race and are mostly Christians and scheduled tribes who follow a special code of ethics namely Tlawmangaihna which always keeps them in a close knitted society. The Mizos are known for their dance and

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music. The Cheraw Dance or Bamboo Dance is famous from this state. They have a lot of traditional folk songs too accompanied with folk musical instruments. Mizoram's handloom and handicraft are also praiseworthy.

The only Mizo feature film made so far is "Khawnglung Run" directed by Maupuia Chawngthn. It is an action and romantic period film based on true events of the historical massacre of Khawnglung during 1856-59. The film was shown in some National and International film festivals. Some documentary films are also being produced by Films Division, Mumbai and some other private production houses. Lately the Mizoram Government, in collaboration with a film society, has been actively trying to promote Mizo films.

Nagaland is another important and interesting state in the North East region. Nagas, the people of Nagaland, constitute several groups of tribes inhabiting in the North Eastern part of India and North Eastern Burma. Each of these groups, though originated from Indo Mongoloid family, has their own dialect, culture and tradition. None of these groups can speak the same dialect. One of the common languages spoken by them is Nagamese and majority of them follow Christianity as their major religion. The culture of Nagas is vibrant having a unique style of dance forms. Even the folk music of Nagas is very diverse with melodious traditional rhythm based on religious beliefs, romance and bravery.

In the film scenario of Nagaland, there are a series of documentary films made along with few numbers of video films. Interestingly Ms Sophy Lasuh, Ms Vikeyeno Zao, Ms Tiainla Jamir, Ms Sesino Yhosu and Ms Yapangnari Longkumar are five dynamic women film directors from Nagaland who have successfully made a place for themselves in the world film. Ms Sophy co-owns "Cue Hue" with Seshino Yhosu. Their first production "The Story of A House" was screened at various film festivals and was well received. Her graduation film "Children of Silence" was shortlisted by the college for the British Academy Film and Television Arts (BAFTA) Awards.

Ms Vikeyeno Zao is another creditable documentary film maker



from Nagaland who was the first from North East to showcase her works at Cannes Film Festival. Her films "Last of the Tattooed Head Hunter" and "This Land We Called our Home" were selected for 63<sup>rd</sup> and 64<sup>th</sup> Cannes Film Festival in 2010 and 2011 respectively in the short film category. Film maker Ma Zao has to her credit a series of documentary films, telefilms and teleserials on nature as well as on social and anthropological aspects of the different tribes of Nagaland and Arunachal Pradesh.

Ms Tiainla Jamir is an independent director who has produced and directed a series of documentary films in Nagaland. Her film "Going the Distance" was the first film from the

state to be selected in the Indian Panorama 2016 at IFFI, Goa. It was screened at various film festivals and well received.

Running a production house "Take One" in Kohima, Ms Sesino Yhosu's debut documentary "Apfusta" on her grandfather, was screened at the National Portrait Gallery, London, Bang Short Film Festival, Nottingham, University of Rochester, New York and Rubin Museum of Art, New York. Her "The Imaginary Line" and "Story of a House" co-directed with Sophy Lasuh are also shown and well received in various film festivals across the world.

Ms Yapangnari Longkumar is known for her documentary film "And Down to the River They Went" which was screened in at Asiatica film mediate in Italy and at the Rubin's Museum, New York. She made other documentaries like The Diary of Mimi, To the Beat of Their Own Drum, Rise of Giants, The Last of the East, A Touch of Something Good and The Dawn of Faith and some more.

**Manipur is another state from this region very rich in cultural heritage reflected in their music, drama, literature and handicrafts. The state takes pride in films too. The first Manipuri film "Matamgi Manipur" directed by Deb Kumar Bose, released in 1972 received National Award for Best Feature in Manipuri language at 20th National Film Awards.**

In the recently-concluded 67th National Film Awards, Sikkim was adjudged the 'Most Film Friendly State' in the country. The small Himalayan state was recognised for its emergence as a new film shooting landscape in India. The Government of Sikkim has in the beginning of this year decided to set up a Film City Complex in the vicinity of the capital city of Gangtok in an area measuring over 10 acres. The Film City Complex envisages an Acting School, different kinds of Film Sets as well as Artificial Sets, Ramps for fashion events, Miniplex Cinema,





second film Yarang, again in the same indigenous language Kokborok was the inaugural film of Indian Panorama at the IFFI in 2008. With these two films, Tripura has come to notice amongst the moviegoers in the Indian festival circuit, though there is a long way to go to establish the film industry as such.

It has been observed that a number of films made in the eight states of the region have over the years fetched several National and International

Amphitheatre, Mobile Theatre, Concert Halls, Recreation Park, Editing Studios, Sound Studios, etc.

There is another interesting state in the North Eastern Region. That is Tripura. The people living here are known as Tripuris who are mostly tribes. There are 19 scheduled tribes in Tripura showing diverse ethnicity with two major racial groups namely Bengalis who are Indo-Aryans by origin and the other group is Indo-Mongoloids comprising a number of tribes who speak their own dialects having their own distinct customs and traditions.

In spite of having a very rich cultural background, Tripura is yet to start its journey in the field of film making. Father Joshef Pulithanath from Kerala, though from a different background, made the first Tripuri film Mathia (Bangles) in 2003 in Kokborok language which received National Award. It is about the practice of witch-hunts, which is still prevalent in the state. His

awards. However, the limited numbers of these films are not sufficient to foster the growth of a vibrant film industry as we understand in the context of the other successful film industries growing up in the rest of the country and outside. Moreover the population in the region comprises many distinct racial and linguistic communities and groups. Hence there are not enough audience for films made in any language making it extremely difficult to release such films in the theatres. This prelude the producers getting back their investment from such films. Except Assam and Manipur, not even five films are made in a year in the other states. In such a scenario, when we talk about the films made in the North Eastern Region, we can only hope that if the Government and some willing corporate houses and studios come up to help the filmmakers here, maybe some quality films could be produced here and slowly a film industry will grow in course of time. □

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## Textiles and Designs

*Sonam Dubal*

The textiles and crafts of the Northeast are made with a deep understanding of the earth and are sustainably produced as weaving is a way of life here. To preserve this culture of textiles and to link them to the outside world a sensitive collaboration with the Governments in the form of a Guild or Collective could be the need of the day of designers, artisans, and weavers as a collective working in tandem to the needs of the markets both locally and globally to find ways to evolve and develop prevalent crafts and make them more relevant through, research and development especially for home textiles and furnishing as well as for fashion markets.

**T**he North East of India is a bridge to understanding the other parts of Asia through its culture. There is a strong historical link that connects the North East of India with the South East of Asia like Myanmar, Thailand, Cambodia and Indonesia, and even Japan. This is essentially extremely strategic and important for bilateral relations of India with these countries. This affinity between textile craft and cultures makes it apparent that there is an untapped market for us beyond our borders.

Fashion as I studied and researched is deeply linked to history and culture and becomes a subconscious story to the collections that evolve. Coming from a mixed cultural background I delved into my personal history and found myself between worlds trying to absorb the contemporary yet balancing collections on the fulcrum of traditions that I was intuitively attuned to. In my search for the beginnings of my story, I came upon 'Eri silk' woven in Assam.

The weaving of this textile is slow but a rich process with incredible thermal properties. Eri silk also has medicinal properties. This silk is extracted without killing the worms so has been coined "Ahimsa silk" and is used for weaving the shawl worn by monks.

The process of weaving is the journey itself. Weaving as a craft is practiced chiefly by women and needs support to thrive and can only be possible by schemes from the Government or state authorities. Weavers in the region also need support as they are mainly handloom which is slowly disappearing.

The author is an award-winning revivalist designer from the region with the label 'Sanskar'. Email: [www.sonamdubal.com](http://www.sonamdubal.com)

The weaving community is also fragile as the topography of the North East and this has to be sustained and markets need to be developed for their products as an urgent need especially in situations as we are facing today like Covid-19.

The investment would mean growth in livelihood through traditional craft for them. Interestingly it is working and understanding the weavers' lives, then creating new terms in working with the weavers from the North East can be fruitful. Weaving must also be encouraged in households as a part of living cultural history.



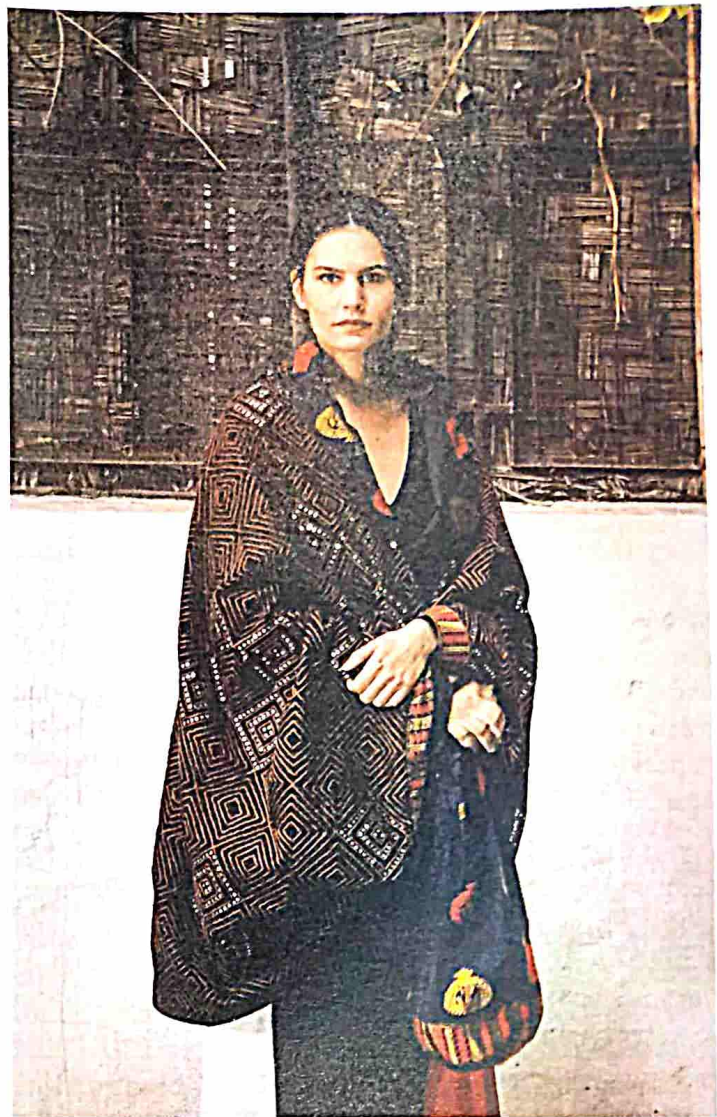


The textiles and crafts of the Northeast are made with a deep understanding of the earth and are sustainably produced as weaving is a way of life here. In the beginning, textiles produced in this region were for local consumption (whether the Silks or shawls woven in Manipur or Nagaland or Mizoram and the Eri or Muga silks that are produced in Assam and Meghalaya and other local cotton textiles from Tripura and Arunachal Pradesh).

These were produced for festivals, marriages, and other ceremonies. The textile industry was self-sustaining at the beginning and had a way of finding its markets through the years but with economic growth, there has been a move for weavers now to be more dependent on the mainstream economy. This has also created complications maintaining their niche value and design sensibilities for commercial markets.

Today however to preserve this culture of textiles and to link them to the outside world a sensitive collaboration with the Governments in the form of a Guild or Collective could be the need of the day of designers, artisans, and weavers as a collective working in tandem to the needs of the markets both locally and globally to find ways to evolve and develop prevalent crafts and make them more relevant through research and development especially for home textiles and furnishing as well as for fashion markets.

Indigenous stories can be rendered and worked into the collection be it for home lines or fashion or furnishing. In this age of storytelling, Jesmina Zeliang from Nagaland with her Heirloom Naga has been one of the path-breakers creating contemporary styling with traditional skills in soft furnishing, basket weaving, and home products from Naga textiles rendering them for global markets sensitively.



Sustainable employment, education, and continuous work with design intervention and research is the need of the day. Apart from the Muga, Eri, and Matka silks and cottons from the Northeast, there are also many other developments brewing like the bamboo, banana, and nettle fiber, and many kinds of subtle mixed weaves between silks and wools and other blends that are slowly cropping up adding to the dimensional work slowly coming from the region which is becoming more attractive for the designer and the consumer.

The challenge is to work in the North East taking its unique yet incredible repertoire of work and bringing it to the forefront of mainstream markets individually.

Embracing the past into the future became the mainstay and foundation of my work with my label "Sanskar" which I started twenty years ago in 1999 as I first dabbled with recycling and upcycling of leftover fabrics recreating vintage ensembles in Indo-Asian shapes.

Sustainability combined with Eri silk further (Burrey colloquially) became an important foundation of the textile story in my line through the years as I started participating in mainstream fashion in India and abroad.





As I started my journey from 2003 with collections through the years I worked on traditional silhouettes and textiles from the North East reworking them into embroideries and shapes that reflected my mixed heritage and blended in a story of the travelogue through the silk route.

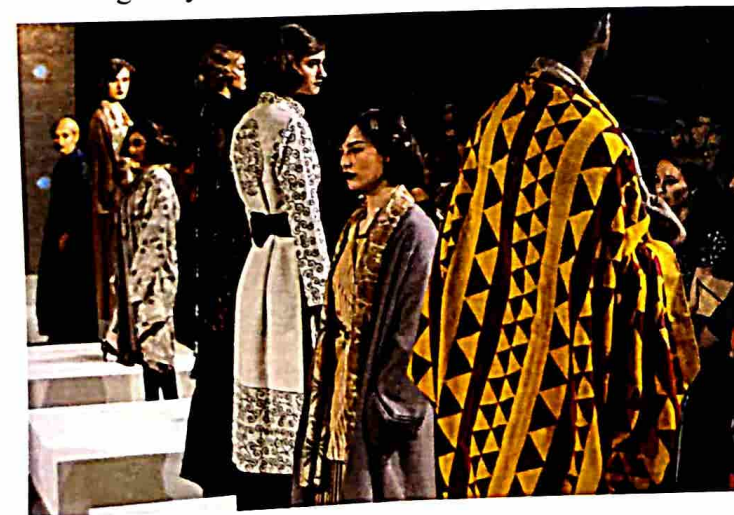
Over the years I found that they had a resonance to the discerning customer from around the world as I was invited to events in America- at the Asia Society in New York and other parts of Europe and Asia where I often spoke on the linkages of fashion, history, and culture.

In the year 2016 – As the first Indian designer invited to participate at the Eco fashion week in Vancouver, I showed a signature line with Muga and Eri silk and prints and embroideries from the silk route. This was supported by my representative Anthropologist Gail Percy in North America which was successful and so we were invited again in 2017.

It was in 2018 that I was approached by IMG Reliance Gautam Vazirani (Creative Strategist- Sustainable fashion) who had decided on highlighting textiles, weaves, and stories from North East as a part of the 13th edition of the sustainable day at the Lakme fashion week in 2018 to represent Assam.

Tying this up to my story I created MAJULI an exquisite collection of five ensembles by Sualkuchi weavers that represented the Assamese ethos through textile form and silhouette and had a contemporary visage as an installation as a background to the main show that had a resounding success by fellow designers- Jenjum Gadi who worked on an amazing Menswear collection in Naga textiles woven with the Loin loom representing Nagaland.

- Daniel Syiem had a rich, layered collection in indigenous Eri silk woven by the Ribhoi weavers from Meghalaya.




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**The entire world is moving towards sustainability which has been a way of life in the North East innately linked to nature. This needs to be amalgamated today between development and our natural habitat especially in our metropolitan cities amidst changing worlds.**

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- Karma Sonam whose line Kuzu had a stunning display of pattern mixing in textiles for both men and women in interesting nettle weave and Cotton textures that she had worked on representing Sikkim.

- Richana Khumanthem had a delicately woven collection in cotton, a rendition of beautiful motifs by the Meitei community representing Manipur.

- Aratrik Dev Varman worked on a stunning collection with an emphasis on craft and traditional pieces with beaded necklaces and headwraps for the runway from Tripura.

This was also a wonderful collaboration between us designers and Lakme Fashion Week at the North East Mojo as we were also a part of an initiative in which IMG in partnership with the U.N. had a day when we spoke about the livelihood needs, the empowerment of women and focusing on the crafts of the North East region.

Government Authorities could take note and work on these collaborations with other states and tie-ups to go forward because textiles and fashion are the second most employers in India after agriculture. We need more link-ups and inroads with design specialists and fashion communicators who can synergise with social media to create not just awareness but sensitively educate people on our textiles and lifestyle in mainstream India and globally.

The North East region has a unique indigenous Textile culture and this has to be protected yet made relevant to modern times today. This has started with many collaborative inroads, one of the most interesting work today is that of the Label 7 weaves, as an integrated textile- garment manufacturing facility in partnership with local communities dependent on the forest in Assam's Lohargat Forest range founded by Mandakini Gogoi, Uma Madhavan and Rituraj Dewan.

There is more need for this kind of collaboration and collectives between the craft sectors and the Fashion industry. We need to find a more democratic way of working with a much more open way for growth so that there is an easier supply chain for raw materials and finished products and helping the area.

As a revivalist designer, I think the most important thing that we have to understand and appreciate is the sustainable livelihood that is prevalent in the Northeast of India and learns from it. The entire world is moving towards sustainability which has been a way of life in the North East innately linked to nature. This needs to be amalgamated today between development and our natural habitat especially in our metropolitan cities amidst changing worlds. □



# NECTAR – Strengthening S&T in the NE Region

*Nimish Kapoor*

**NECTAR- North East Centre for Technology Application and Reach, an autonomous organisation, set up under Department of Science & Technology, Government of India is the 'one-stop shop' for technological support to the North East people. NECTAR is providing technological applications and scientific support to the farmers, entrepreneurs, or any organisation associated with rural corporation, construction, or any other industry in North East, where technological intervention and technical support are needed.**

**N**ECTAR 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 at 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.

Few years back the bamboo board industry and the industrial units associated with it in the North East region were facing a major roadblock. They were not able to penetrate the market due to lack of scientific approach, lack of linkages, visibility, and associated high cost. NECTAR took twin initiatives to support these units, first by creating their linkages with the raw material (bamboo

mat) and second by connecting them with the markets of major metro cities of India. 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. This completely eliminated middlemen's commission and assured best rates for the actual mat weaver with quality supply to the units. NECTAR's merchandise support to bamboo board industry is well appreciated with development of 16 bamboo board manufacturing units, out of which 9 are in NE states.

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 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-



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planting material, skill development, and employment generation.

NECTAR is an outcome of one of the recommendations at the 96<sup>th</sup> Indian Science Congress 2009 held at Shillong that proposed to establish a liaison office in the North East to use modern science and technology to convert natural endowments into economic benefits of the region. Ministry of Science and Technology, Government of India therefore decided to establish a nodal centre in the NER in the form of an autonomous organisation, 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, preferably available in central and state government laboratories, institutions, and start-ups in all the essential areas. 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.

NECTAR also introduced selling of bamboo products

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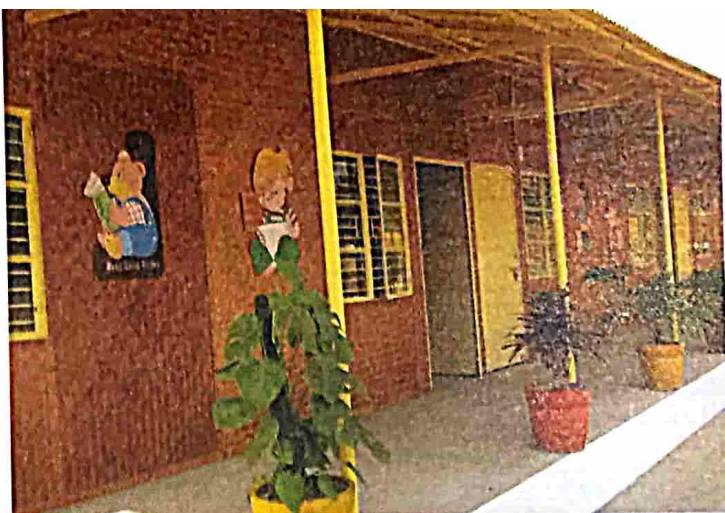
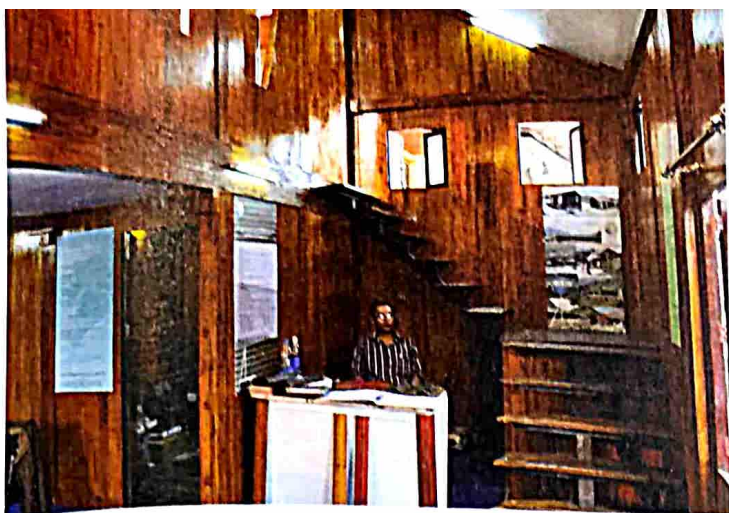
through e-marketing portals to benefit its supported units and local people of North East, by bridging the gap between the producer groups and consumers. The Centre is also responsible for the development of NE region using applications of appropriate technologies in the areas of biodiversity concerns, bamboo, food processing, watershed management, telemedicine, horticulture, renewable energy etc. through utilization of local products and resources. Traditionally, bamboo was largely used in the paper making industry or for handicrafts. 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 and process technologies, establishing market presence and market acceptability for such products, especially roofing, cladding and flooring, and developing waste utilisation options.

Many technologies have been developed and commercialised in the segments of wood substitutes, conversion of closed plywood units to bamboo ply, composites of jute and plastics, bamboo-based gasification for power generation and thermal applications, bamboo-







based charcoal making to utilise waste and meet rural fuel requirements, edible bamboo shoot processing for low-fat high-fibre dietary requirement, bamboo pulp-based hygiene products for rural areas, development of machinery according to available bamboo species, development of fire retardant, earthquake resistant and easy-to-install prefabricated as well as permanent bamboo-based structures for rural and urban housing, schools, hospitals, and disaster mitigation for plain and high altitude areas.

In the Agro and Food Processing sector, the Centre has supported setting up of bamboo shoot and pineapple processing units and king chilli pickle making units. Expansion of beekeeping activities in NER and spice processing facilities are other areas of support that the Centre provides. Honey testing laboratory, drink made from fermented rice water, non-carcinogenic smokers for meat etc. are also being supported. 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, especially sectors like solar, wind, biomass, and hybrid processes.

#### **Bamboo-based technologies with green material approach**

NECTAR is working on bamboo-based construction and structural applications with a green material approach. Under this effort, support is being provided to the projects related

to structural engineering and in development of bamboo composites by utilising the natural higher tensile strength and a weight-to-strength ratio of the material. As a result of these projects, earthquake resistant, lightweight, durable and aesthetic constructions for a variety of applications have been recommended. It enables informed choices for housing residential community and functional structures. Use of bamboo and bamboo-based composite material on different types of construction is being promoted in the NER.

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. These have been tested and commercialised at entrepreneurial mode. About 676 school rooms made of engineered bamboo were established which houses 25000 children in the affected areas in Chhattisgarh. In Andaman & Nicobar Islands, eco-sensitive engineered composite material-based construction viz. doors and windows made of bamboo boards have been implemented. Construction of nearly 55 thousand sq. ft. area with prefabricated housing structure to shelter almost ten thousand people at a time was successfully implemented in the Cloud-burst disaster-affected places in Leh and surrounding areas.

As a part of relief and rehabilitation efforts, 10 large housing units at three locations were established in Sikkim. Bamboo prefabricated structures under the 'Sarva Shiksha Abhiyan' in Manipur was initiated for setting up kitchen-cum-store under the Mid-day Meal scheme. Gasifiers based on bamboo have been developed to produce clean and renewable electricity, and a range of valuable by-

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products such as high-grade charcoal has also been developed.

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 by the Centre. NECTAR has developed maturity marking for identifying the age of bamboo culm (shoot of the bamboo plant). The system uses the placement of a coloured band painted on the culm in the year it emerged. NECTAR has developed a flute technology known as culm cutting or stem setting technique which enables fast regeneration of bamboo.

#### **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. Cost-effective raw material, skill development training, induction and primary processing machineries are supported for manufacturing bamboo sticks at villages and community locations. Skill upgradation trainings are also provided in the areas of mat weaving, use of natural dyes, processing of bamboo shoots, *agarbatti* stick rolling

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and incensing. Extensive trainings were also conducted in the areas of beekeeping, weaving etc.

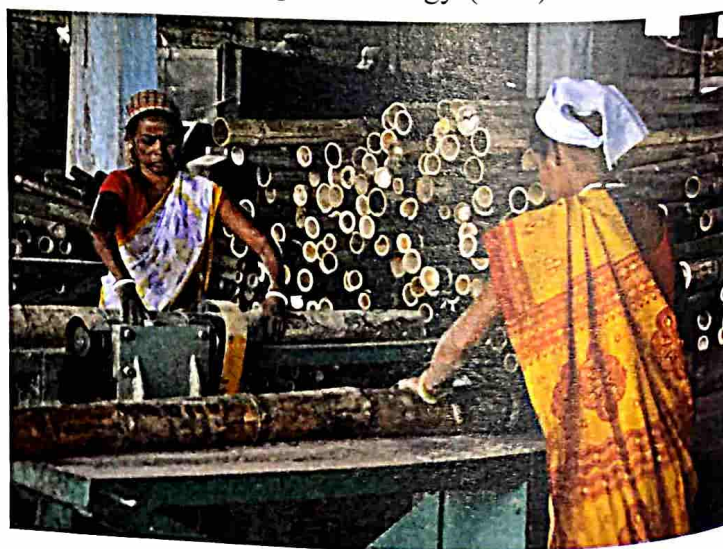
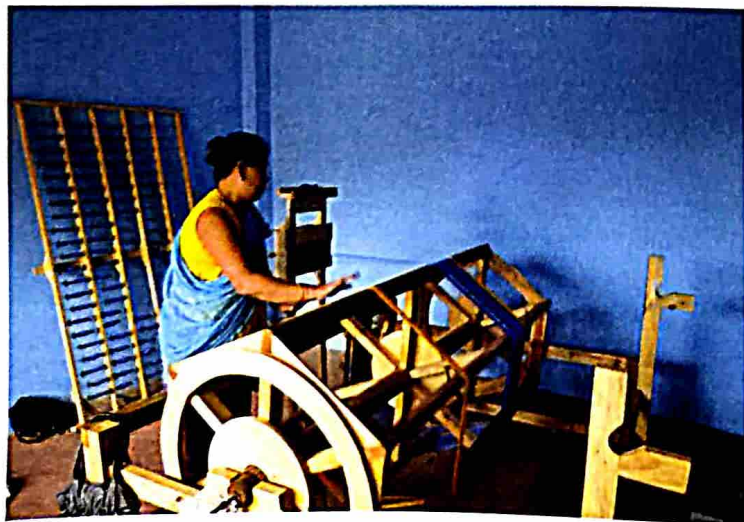
#### **Schemes of technology solutions for employment generation**

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

TOSS is an umbrella scheme of NECTAR to establish linkages with individuals and institutions to deliver technology solutions to the NER which have clear potential to generate social or economic growth in the region. This also creates opportunities for people to better their lives by value addition and sales of products and services that can be organised and made using the local natural and human resources.

BAANS is a scheme to undertake support measures under public-private partnership mode (PPP) in various areas of bamboo applications to generate employment, create sustainable livelihoods and incomes, especially among the poor and disadvantaged groups, including women. It also supports and promotes community groups, SHGs and decentralised associations of people to undertake economic activities in bamboo products and value-added processing, and in adopting measures for expansion and consolidation of bamboo technologies.

NECTAR has accomplished a technology outreach programme launched for NE students by conducting a scientific study on damage analysis of potato crop due to unseasonal rainfall during the third week of February 2019 under "Pradhan Mantri Fasal Bima Yojana (PMFBY)". It used Remote Sensing Technology (RST) in about 12,032







sq. km area of two districts in a record time of 25 days with all field work, analysis, and submission of Interim and Final report to NIC. The project was also aimed at providing real-time industrial exposure to NE students on remote sensing and GIS applications technology for crop analysis based on satellite image data.

#### Applications 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. Approximately 6 lakh sq. km of geographical area of North Eastern States and rest of the country with about 70 terabytes of digital data in the form of digital maps, high resolution imagery and digital elevation data have been successfully mapped and processed and 3D Terrain Digital Models have been made. Highly skilled technical staff of the Centre has imparted training to various paramilitary and state police forces at different locations and stations in India for their successful use.

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. About 66,115 schools and 81,240 habitations in Assam and about 4460 schools in Manipur were analysed.

#### Fixed Wing Micro Unmanned Aerial Vehicles

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. It is a radio-controlled model glider plane equipped



with a small GPS, a miniature autopilot and consumer-grade digital camera. The UAV is simple to operate. The 5-pound plane can be launched from any location. The powerful autopilot in

the UAV navigates the plane over the field with predefined flight path and height. After the flight session, the UAV returns to home and hovers over and the operator will have to land it manually.

The 500-sq. km tsunami vulnerable area was photographed and mapped using NECTAR's Micro-UAV. By using 3D terrain model one can visualise the extent of flooding, type of buildings and structures, and quantum of population likely to be affected at various levels of tsunami waves.

A case study on generation of Digital Surface Model (DSM) and Land Use data from UAV-acquired photographs over Brahmaputra river embankments comprising about 50 sq. km area has been accomplished to demonstrate the visualisation of flood-related disaster and its mitigation. The photographs collected over the area have provided information on the condition of the protective embankments and its erosion status along the Brahmaputra river coast.

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. People from the NER should take advantage of the technologies developed and supported by NECTAR. Successful case studies of NECTAR must be shared at the Krishi Vigyan Kendras of NER, NGOs, various community centres, innovation centres, entrepreneurial organisations, colleges and universities, so that every section of the NER can be benefited with the technological applications.

Details of NECTAR's schemes are available at [www.nectar.org.in](http://www.nectar.org.in). □





## ENVIRONMENT

# Waste and Climate Change

*Kopal Verma*

*Prof Anil Kumar Gupta*

Climate change is one of the biggest challenges being faced by the present world. A number of factors including clean energy, forest protection, adaptive habitat and natural resources are attributed to climate change mitigation and adaptation. With high pace urbanisation, solid waste is a ferociously growing concern especially for the developing countries like India. Amount and complexity of wastes is growing rapidly but the equivalent demands of technology and resources are still inadequate. Wastes and climate change are closely interrelated and are severely impacting each other but, however, less recognised in the domains of climate change mitigation, adaptation and disaster risk reduction.

**B**eyond the industrial revolution, the rate by which global surface temperature is rising has almost been doubled. In the last 40 years, it is increasing by 0.18° Celsius

per decade. Greenhouse gas (GHG) emissions (carbon dioxide, methane, and nitrous oxide) majorly emitted by the anthropogenic activities are accumulating in the atmosphere and absorbing solar radiations and,

thereby, changing atmosphere's chemical composition. This is further leading to the rise in extreme weather events all around the globe, e.g., severe droughts, devastating floods, scorching heat-waves, heavier and

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persistent rainfall, ferocious forest fires, etc. The resulting loss in snow-cover, rise in sea-level and increasing temperature is endangering human settlements, animal lives and forest cover.

The solid waste generated by various human activities is another major contributor to climate change, and simultaneously getting affected by it as well. There is a wide variety of wastes being generated, viz. municipal solid waste, commercial and industrial waste, construction and demolition (C&D) waste, agricultural waste, biomedical waste, electronic waste and hazardous waste. All these wastes generate GHGs during various stages of their life cycle. During waste collection and waste incineration (energy consumption in transportation and furnace) carbon dioxide ( $\text{CO}_2$ ) gas is emitted. Anaerobic decomposition of organic waste in landfills is responsible for the emission of methane ( $\text{CH}_4$ ) with 20-year Global Warming Potential (GWP) of 72. GWP is the amount of heat that is absorbed by a GHG, expressed in relation to that absorbed by a same mass of  $\text{CO}_2$ . Composting and biological treatment of waste

emits nitrous oxide ( $\text{N}_2\text{O}$ ) gas which has a long lifetime of 114 year with GWP of 289. An extremely short-lived component called Black Carbon (BC) with a very high GWP (3200) is emitted from uncontrolled and open waste burning. On the other hand, approximately 70% waste globally ends up in open dumps and landfills which renders huge land-surfaces useless, decreasing the green cover and, hence, reducing the natural carbon sinks. Also, the highly poisonous leachate (wastewater sludge) seeps down, polluting groundwater and soil. The toxicity of hazardous waste and the landslides incidences of waste dumps also pose life threats especially to poor and underprivileged people having no options than to live around such sites.

Globally, around 2.01 billion tonnes of municipal waste are generated annually, more than one third (34%) of which is only contributed by high-income countries. Waste generation per person varies between 0.11 and 4.54 kg. By the year 2050, waste generation globally is expected to rise to 3.40 billion tonnes, which is no less than a disaster for health, environment and economy.

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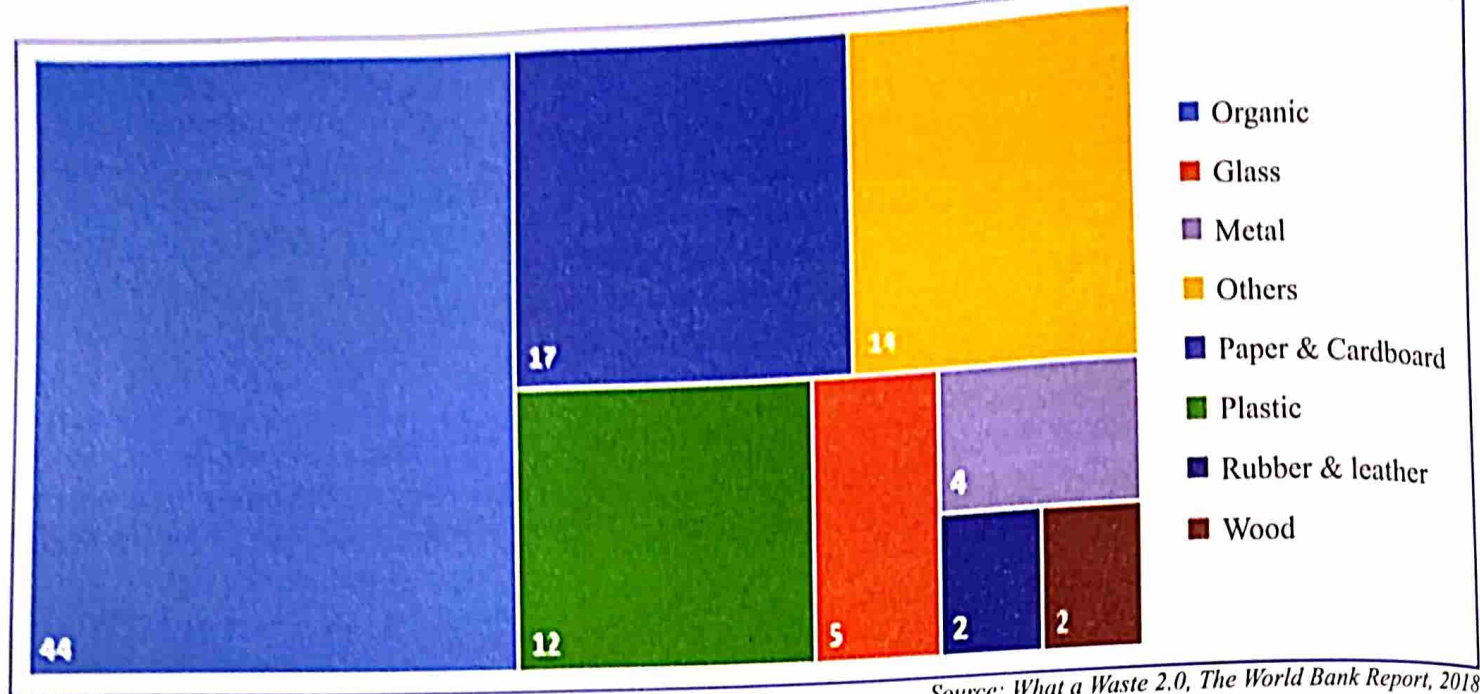
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India with a global population share of 18.05% contributes 11.95% to the global waste generation.

Globally, solid waste is composed significantly of food and green waste followed by plastic and cardboard waste (Figure 1). A serious concern comes from a significant proportion of waste ending up in open dumping (Figure 2). The role of economy is clearly visible as low-income countries such as the countries in sub-Saharan Africa are disposing more than 70% of their waste in uncontrolled open dumpsites whereas for high-income countries this share is as low as 2%. Quantity, quality and composition of waste may vary from region to region pertaining to the factors such as climate, population size, urbanisation, standard of living, economical condition and level of education and awareness.

Climate change, disasters and wastes have multilayer cyclic relationships and one leads to another. Extreme weather events like heavy rainfall, dust storms, cyclones, heat wave, etc. which are known aggravated may lead to disastrous consequences. Flooding which is common result of heavy rainfall, on one hand creates





**Figure 1: The composition of global waste (in %)**

voluminous quantities of waste converting resources including infrastructure and property into debris and litter, and adds to the burden as well as, on the other hand, hinder the process of waste management. Storms and cyclones are known for causing huge debris and disaster wastes. Heat-waves enhance dust and odour from landfill sites and rising sea levels are responsible for the erosion and flooding of coastal dumpsites. This manifests the two-way implications between climate change and solid waste management.

Effective waste management pathway consists of a systematic approach with collection of maximum amounts of waste generated, segregation of waste in different categories, treatment of wastes in each category, transfer to the market or the disposal site, and finally disposal of the remnants.

#### **Effect of Climate Change on Solid Waste Management**

A series of extreme weather events, viz., temperature fluctuations and extremes, disturbance in rainfall pattern, wind storms, etc. are known results of climate change which are affecting the waste management processes to a significant level.

#### ***Changes in Precipitation Patterns***

Climate change has led to significant alterations in the precipitation patterns. Increased average global surface temperature may lead to hotter and drier summers and shorter winter and can increase duration and frequency of extreme weather events like drought, hurricanes and cyclones. These events cause severe damage to property, infrastructure and human lives, affecting water availability and, hence, complicating the solid waste

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management procedure even more.

There has been an increase in daily precipitation rate as well as in the number of days. The average moisture content is generally high during these times. This elevates the risk of flooding which further leads to infrastructural damage, hindered supply system, creation of bulk household waste, inaccessibility of waste storage facilities, over flooding of site drainage systems and waterlogging in open waste storage containers. Waste management structures are protected by capping layers and bunds, which can be at higher risk of erosion and can become unstable because of the heavy rainfall. Also, frequency and rate of waste decomposition is severely affected by heavy rainfall and the flow, concentration and volume of leachate is also enhanced at the landfill sites. The entire hydrology of the waste management system can be altered because of the fluctuations in seasonal rainfall patterns. The clay substrate areas are at high risk of collapsing and can have huge impact on the adjoining infrastructure.

With reduction in rainfall, chances of droughts and water scarcity situations may prevail. Mainly in



summers, reduced availability of water affects various processes of waste management as well as the canal and riverine waste transportation system. The concentrations of organic wastes in the streams are increased during these times and the restoration of landfill sites through screening, landscaping, etc. is also affected because of the increased stress on vegetation.

### Changes in Temperature Patterns

In the last 40 years, huge fluctuations in daily minimum, average and maximum temperatures have been recorded. Frequent occurrences of very high atmospheric temperatures and heat waves are taking place. This is fastening the rate of degradation and decomposition of the waste for which the contemporary infrastructure of waste management is not competent enough. In other instances, high temperatures can cause drying up of the compostable wastes and hinders the decomposition process as microbes fail to sustain. Workers' safety and health is also at a great risk from the strong unpleasant odour, discomfort from extreme temperature and air pollution. Maintenance cost shoots up because in high temperatures, mechanical parts used in waste management machinery are gravely destroyed and a burden of

The upstream contributions are emerging from the energy input provided during manufacturing/distribution of the product.

When the product is in its operating mode it accounts for the direct contributions and the downstream contributions are arising during the disposal of that product. Solid waste management activities are adversely affected because of the climate change, with varying level of disruption in one or more of its processes.

additional costs for cooling system in buildings.

### Increase in Sea Level and Storm Surges

With the increase in global mean temperature, the snow covers are melting and, thereby, increasing the mean sea-levels. This is leading to high risks of inundation, flooding, bund erosion and seawater intrusion of the dumpsites and waste management sites in coastal areas leading to coastal water pollution. Increased sea level may also aggravate the impacts of storm surges, hurricanes, cyclones, etc., which are known to damage infrastructure and destroy human lives

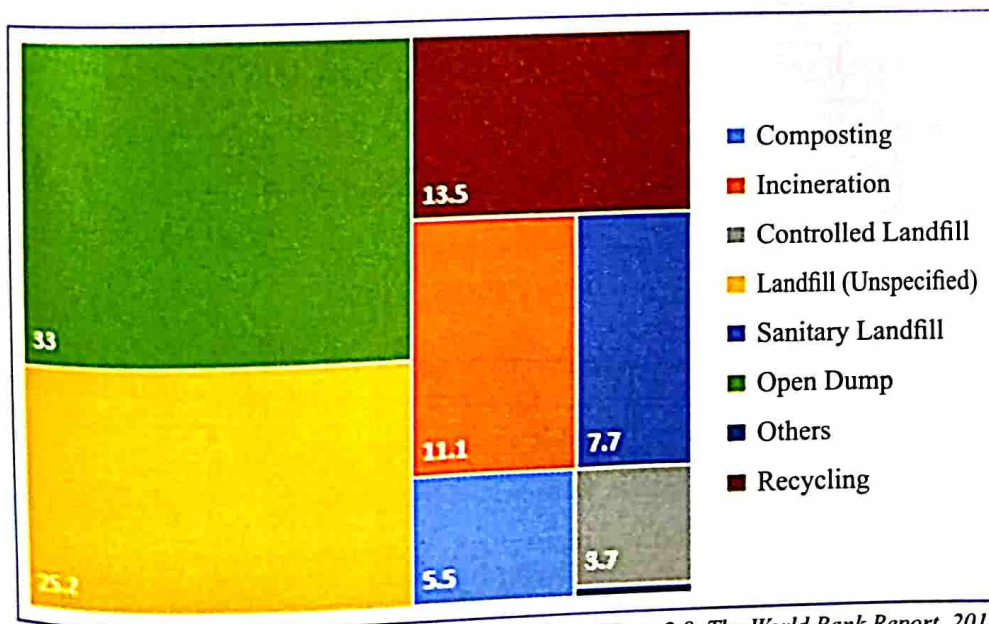
extensively. These disasters also leave huge debris and disaster wastes as result of destructions and emergency relief operations.

### Effect of Solid Waste on Climate Change

Municipal solid waste can be broadly classified into organic (biodegradable) and inorganic (non-biodegradable) waste. When organic waste is decomposed anaerobically it produces landfill gas (LFG), which is a mixture of 45-60% methane ( $CH_4$ ), 40-60% carbon dioxide ( $CO_2$ ) and 2-9% other gases. GHGs can be emitted from municipal solid waste management either directly or indirectly. Direct emissions take place when anaerobic decomposition of organic waste takes place or when the biological treatment of wastes (incineration/composting) is carried out. Indirect emissions are caused due to the fuel consumption in vehicles used for waste collection and transportation. Globally, domestic solid waste alone is responsible for the emission of 153.41 tonnes per day of  $CO_2$  equivalent gases.

There are three modes, viz., upstream, direct and downstream through which the waste sector is contributing to the GHG emissions. In order to understand the interrelation between climate change and solid waste, it is very important to take into account these modes of contribution. The upstream contributions are emerging from the energy input provided during manufacturing/distribution of the product. When the product is in its operating mode it accounts for the direct contributions and the downstream contributions are arising during the disposal of that product. Solid waste management activities are adversely affected because of the climate change, with varying level of disruption in one or more of its processes.

In less developed nations, the rate of generation of waste is rising exponentially as the municipalities



Source: What a Waste 2.0, The World Bank Report, 2018

Figure 2: Treatment and disposal of waste around the world (in %)



do not have enough budgets or the appropriate infrastructure to process and dispose municipal waste.

### Climate Change and Effluent Treatment Plants (ETP)

Effect on hydrological cycle is one of the main alteration climate change has brought to the earth's environment. Changing precipitation patterns have increased the evaporation (surface heating) and so is the water vapour load of the atmosphere. Higher moisture content of the atmosphere is liable to stronger rainfall. The effect of various components of climate change on effluent treatment plan is explained as follows:

#### Temperature

Various treatment processes are enhanced with warmer temperatures such as the conversion and removal processes or the usage of anaerobic reactors (to treat domestic wastewater). Whereas lower temperatures are favourable for stabilisation ponds, activated sludge process and aerobic biofilm reactors are temperature independent.

#### Rising Sea Level

The untreated water from a waste water facility might get released and damage the ecosystem in the event of a flood. In case there is structural damage to waste water facility, the

**ISWM is a comprehensive approach for reducing the quantity of waste reaching the landfill sites. It introduces a four R's principle viz. Refuse, Reduce, Reuse and Recycle, in order to lower the GHG emissions from the waste sector. This principle can be explained as: the things that are not necessary can be "refused", the things that are required can be "reduced" to some extent, the things already in use can be "reused" and the things that cannot be reused can be "recycled".**

untreated water might keep seeping for a long duration until the costly repairs are undertaken by the municipalities.

#### Storm Surges

Storm brings along the danger of flooding and causing infrastructural damage to WWTPs in coastal regions or flood prone regions. In the long run, increasing sea level also poses a serious threat to ETPs in coastal areas. High intensity tropical storms have the potential to cause further damage to infrastructure like effluent pipes. Overwhelming flow

in the pipes during storms can cause pollutants enter the system directly and contaminate supplies.

#### Precipitation

The retention time in treatment system might get affected by increased flow rate caused by the floods thus impacting the nitrogen removal process. This will lead to a higher Total Nitrogen concentration in the output. It is understood that Coliforms, Giardia and Cryptosporidium will be produced in high concentrations as a result of increased influent issues from sewage overflows. In areas with low rainfall the water quality will deteriorate because, the lower flow will also decrease the capacity of systems to dilute pollutant concentrations.

There is a risk of higher discharge of poisonous gases emitted into the atmosphere from sewage treatment plants as well. Various toxic and harmful gases produced during different processes in ETPs with their reasons are mentioned in Table 1.

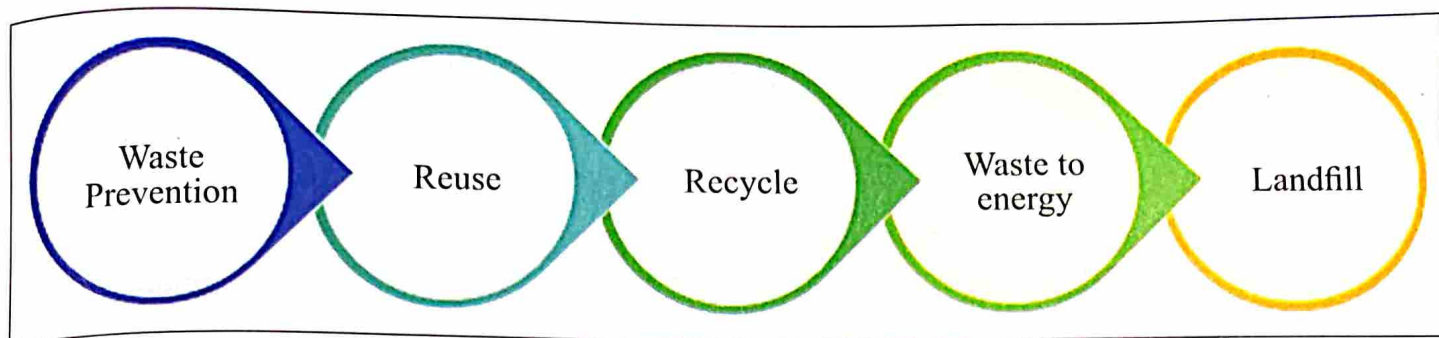
#### Mitigation Strategy

It is very important to understand the waste composition in different regions to chalk out an effective mitigation strategy for its environment friendly treatment and disposal. Integrated Solid Waste

**Table 1: Fugitive gases emitted through various ETP processes and their reasons of emissions**

Gases emitted from ETP	Reason
Methane (CH <sub>4</sub> )	- anaerobic decomposition of the organic matter present in sewers
Nitrous Oxide (N <sub>2</sub> O)	- Biological Nutrient Removal (BNR) process - Nitrification Denitrification (NDN) process
Carbon Dioxide (CO <sub>2</sub> )	- during treatment processes - due to electricity consumption
Hydrogen Sulphide (H <sub>2</sub> S)	- anaerobic decomposition of organic matter - from the reduction of mineral sulphites and sulphates - highly corrosive to mechanical and electrical equipment and sewer pipelines
Volatile Organic Compounds (VOCs)	- occurs during turbulent flow and air exchange between ambient atmosphere and wastewater - significant amounts are found in refinery and petrochemical wastewaters





**Figure 3: The Waste Management Hierarchy**

Management (ISWM) encompassing waste management hierarchy is the dire need of the time to be inculcated in various international and national plans dealing with waste management. In this hierarchy, before landfilling, waste prevention, reuse, recycling and transformation of waste to energy is kept on priority (Figure 3).

### **Waste Management Hierarchy**

Conventional waste management did not consider reducing, recycling or reuse of the waste as part of its system. Thus, a paradigm shift is required from conventional practices to ISWM. ISWM is a comprehensive approach for reducing the quantity of waste reaching the landfill sites. It introduces a four R's principle viz. Refuse, Reduce, Reuse and Recycle, in order to lower the GHG emissions from the waste sector. This principle can be explained as: the things that are not necessary can be "refused", the things that are required can be "reduced" to some extent, the things already in use can be "reused" and the things that cannot be reused can be "recycled". When this approach

is followed fervently, a significant reduction in solid waste generation can be achieved, which will evidently lead to a decrement in the cost and demand of transportation and hence in the greenhouse gas emissions.

### **Role of Policy**

In 2008, India came up with a comprehensive National Action Plan for Climate Change (NAPCC). Out of the eight exclusive missions encompassing and addressing various issues related to climate change, the National Mission on Sustainable Habitat was made accountable for the management of Municipal Solid Waste of the country. This part of the mission is focused on enhancing resource recovery and recycling, reducing waste to be disposed in landfills or open dumpsites and maximising reuse/recycling of sewage, as much as possible. In 2015, four additional missions were added to NAPCC, out of which one entire mission was dedicated to the theme of Waste-to-Energy conversion. The focus of this recent mission is to harness energy from maximum possible waste to

minimise the dependence on non-renewable resources for power generation.

Swachh Bharat Abhiyan (Clean India Mission) was launched in 2014 by the Prime Minister of India with primary aims of making the country open-defecation free and improving the status of solid waste management. This mission has definitely ignited the awareness regarding the basic cleanliness regimes and sown a seed of a hygienic, clean and safe behaviour among the people. The current status of Swachh Bharat Mission is that entire urban areas of 35 states/union territories have become open defecation free and the waste processing rate has increased from 18% to 60%.

There is an urgent need for a robust policy formulation which is inclusive of all major factors associated with climate change and solid waste management. Also, a thorough plan of action in an affordable budget is required to be prepared that takes into account the future projection of the outcomes. □

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# Rooting for Resilient Bamboo

Ankita Sharma

**'To unleash your true potential, look within,' goes a popular saying. When it comes to unlocking new avenues in India's rural economy, this would entail rejuvenation of a key resource—Bamboo—as a catalyst for socio-economic sustainability.**

**O**ne of the quickest growing plants in the world, Bamboo can survive and thrive in a range of climate conditions. Used in both the agricultural and the industrial sectors, bamboo's adaptability, resilience, cost-effectiveness and easy handling makes it an ideal material for resource-efficient livelihoods. The use of bamboo cuts across several spheres of life. Its soft shoots are used as a delicacy in some regions, while many use bamboo for construction of dwellings and houses. Bamboo can be used to create handicrafts such as mats, furniture and baskets, to toys, decorative items and even tools and implements. Also known as a 'poor man's timber,' Bamboo's versatility and vitality make it a precious agro-forestry resource.

According to Global Industry Report 2019-2025, the global bamboos market<sup>1</sup> size was valued at USD 68.8 billion in 2018 and is expected to grow at a CAGR of 5.0 per cent from 2019 to 2025. Modern technologies allow use of bamboo as a durable and high-quality wood substitute.

In India, bamboo is an important plant in terms of forest coverage and diversity. It is grown in over 13.96 million hectares across the country—thriving majorly in Madhya Pradesh and the North Eastern states. In fact, the Northeast region alone comprises 60 per cent of India's Bamboo reserve, and India is reportedly home to about 125 indigenous and 11 exotic species of Bamboo, making the country a significant player in international bamboo export.

However, despite India being the second largest producer of Bamboo, the sector's growth has left a lot to be desired. Over the past several years, more bamboo products have been imported in India rather than exported—according to estimates, the market share of bamboo cultivation in India is only 6 per cent. The domestic Bamboo industry has been held back owing to a wide



variety of issues in its value chains, including regulatory and legislative barriers to cultivation and harvesting of Bamboo, challenges in its procurement, lack of technical know-how among the primary users of Bamboo, lack of market linkages and insufficient market demand.

In this context, the post Covid-19 economic reboot offers an excellent opportunity to explore out-of-the-box ideas to give a fillip to the bamboo sector, in support of 'Aatmanirbhar Bharat' and the Government of India's rural push with 'Sabka Saath, Sabka Vikas'.

The multipurpose and environment-friendly use of bamboo has made it a universal resource for the rural population and its demand is ever-increasing. To support this demand, the Government of India has launched the restructured 'National Bamboo Mission', under the Ministry of Agriculture. The aim is to foster growth in the sector, create jobs and help increase farmers' income. Prime Minister Narendra Modi's agenda is also to double farmers' income by 2022-23, to promote rural welfare, reduce agrarian distress and bring parity between income of farmers and those working in non-agricultural professions. The growth of Bamboo cultivation

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and its marketability is key to making this possible.

### Demand drivers under Bamboo industry in India

- Population and income growth, increasing exports and favourable demographics
- Hybrid and genetically modified seeds, Favourable climate for agriculture and wide variety of crops, Mechanisation Irrigational facilities and Green revolution in Eastern India
- A strong demographic dividend and extensive labour force available in India
- Growing institutional credit, Increasing MSP, Introduction of new schemes like Paramparagat Krishi Vikas Yojana, Pradhanmantri Krishi, Sinchai Yojana, and Sansad Adarsh Gram Yojana and opening exports of wheat and rice
- Initiatives like Kisan Rath (mobile app for farmers, FPOs and traders), 200+ Kisan Rails and Krishi Udaan Scheme for produce transportation, and Perishable Cargo Centres, cold storage facilities at Airports and Inland Container Depot as well as cargo terminals and warehouses.

The development of the bamboo sector in India involves collective multi-stakeholder efforts. At the national level, the Ministry of Environment, Forests and Climate Change (MoEFCC), Ministry of Agriculture (MoA), Ministry of Development of North East Region (MoDoNER) and Ministry of Science and Technology (MoST) drive strategic initiatives to this end.

On September 2020, Ministry of Agriculture and Farmers Welfare inaugurated by virtual mode 22 bamboo clusters in nine States—namely Gujarat, Madhya Pradesh, Maharashtra, Odisha, Assam, Nagaland,

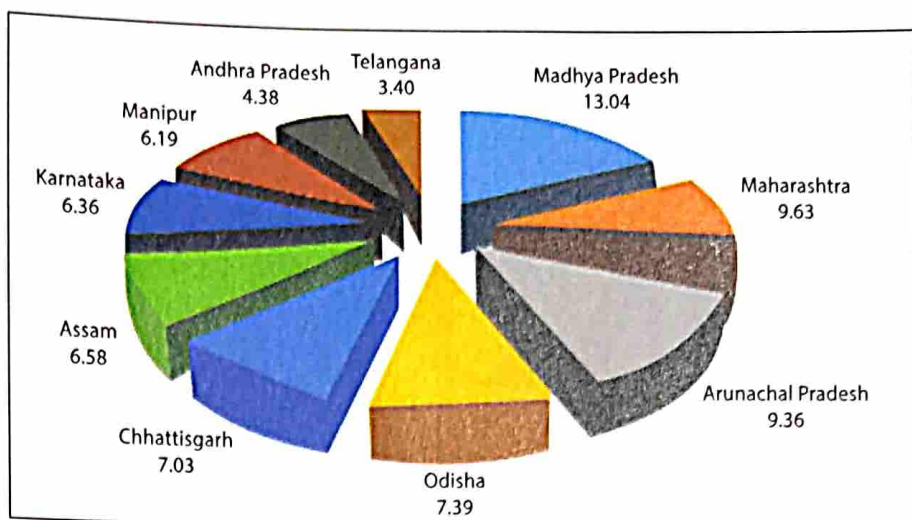


Figure. 1.1 State Distribution: Forest Survey of India Report 2019

Tripura, Uttarakhand and Karnataka. A logo for the National Bamboo Mission was also released.<sup>2</sup> The Cane and Bamboo Technology Centre (CBTC) has designed a project for the sustainable development of the bamboo industries to create a livelihood for people in the North Eastern India. Ministry of Tribal Affairs initiated the '4P 1000 Initiative: The Tribal Perspective through Bamboonomics' at COP 14 UNCCD 2019. NITI Aayog in July 2020 urged the state governments to carry bamboo and sandalwood tree plantation drives in a first-of-its-kind initiative of Khadi and Village Industries Commission (KVIC) towards monetisation of available vacant land resources and financial sustainability for farmers.

Such initiatives can bring an organised bamboo cultivation structure within the country and facilitate more income for the rural population as well

as contribute enormously to the national economy.

The Government of India is committed to enhance rural livelihoods and infrastructure development opportunities through the bamboo sector, using a holistic approach. This includes creating strong mechanisms of knowledge dissemination and exchange of good practices, improving technical standards, capacity building and skills development of cultivators, supporting bamboo startups and facilitating commercialisation of bamboo products. □

### Endnotes

1. <https://www.grandviewresearch.com/industry-analysis/bamboos-market>
2. Ibid.

NATIONAL LEVEL	
MOEFCC / MoDoNER	National Bamboo Mission / MoST
↓	
REGIONAL LEVEL	
North-Eastern Council / Cane and Bamboo Technology Centre (CBTC)	North Eastern Centre for Technology (NECTAR) / ARCBAR
↓	
STATE LEVEL	
State Bamboo Mission / State Forest Department	State Industries Department / Business Development Agencies



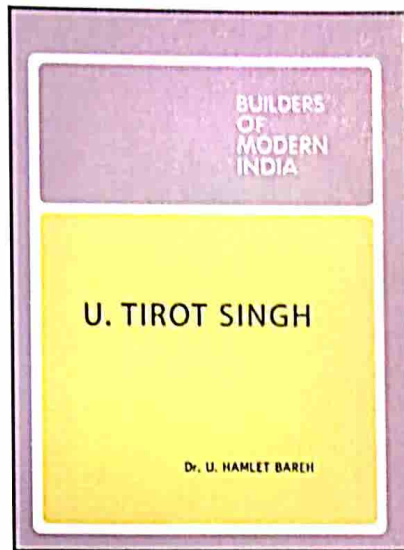
# U. Tirot Singh: Builders of Modern India

Author: Dr. U. Hamlet Barch



U Tirot Singh occupies a predominant place in the history of India's freedom struggle. Yet very little was known about him up-till Independence. He earns the title of a true freedom fighter. He had contributions in other fields too, especially in imparting trade and other incentives to his people. The preliminary contact which the Khasi Hills had at his time with the British Government, indeed put restraints upon him to widen the scope of any reforms from being executed although the tradition says that his great contemporaries were trying to pick up good lessons from the British administration with a view to enriching their own life.

Tirot Singh occupies the place of a leading statesman in being able to build up the solidarity of the Khasis and taking up a joint cause with Assam and the North East at the time they were hard pressed with the challenges from the East India Company. But Tirot Singh had foreseen a series of social changes which might lead to some distortion with the experience gained of the British pressure. The social



reforms which should adjust the society to such changes would no doubt have a subsequent role.

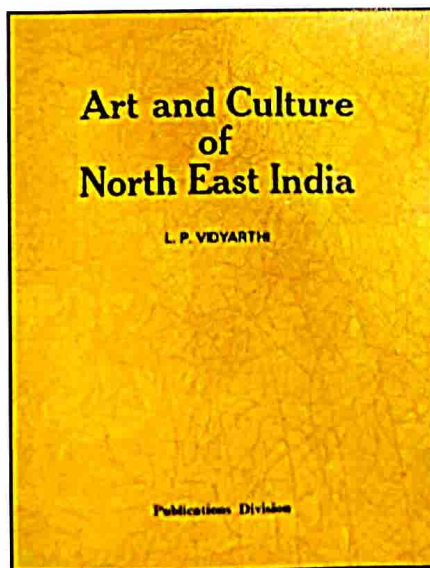
The history of Tirot Singh's struggle could not become complete unless the repercussion of this movement is dealt in with greater details. The book also evaluated this movement more as a diplomatic struggle amidst two contemporary figures, David Scott and Tirot Singh and the forces to which both were subservient. A biography is a dedication to a hero well versed in the social and cultural traditions. It is intended to throw realistic reflections

upon such an illustrious personage, his character, deeds and achievements but to be true to life, it holds good of his taste, habits and hobbies, worth of being emulated by his admirers. Tirot Singh represents the matrilineal social system, not only matrilineal are the laws of inheritance but also the laws of succession to kingly offices. They are, therefore, unique. But in the liberation movement, he was joined not only by his countrymen but also his neighbours. □

## Art and Culture of North East India

Author: L. P. Vidyarthi

North East region, a vital entity of great Indian land has been in the limelight in spite of being geographically in the extreme corner of the country. In the recent times by virtue of being a major source of oil, tea, forest produce and medicinal herbs, the region has acquired special importance for India. Dominantly mountainous, North East forms natural walls separating India from adjacent lands. The mighty river Brahmaputra with several tributaries, apart from being a great gift of fertility and civilization for India has also proved a great integrating force uniting North East with national mainstream.



Here is a book that gives a fair account of origin, history, rich cultural heritage, customs, traditions and beliefs of various tribes now settled in different parts of North East. The author has paid well deserved attention to various segments of the region and concentrated on past researches, the life, economic conditions, occupational patterns, arts and crafts, traditional dormitories and inherent concepts, dresses, entertainment and rapidly changing cultural and economic scene of the North East.

With supporting photographs these accounts will enrich the knowledge and delight the readers as they derive their authenticity from personal observations of the author. □

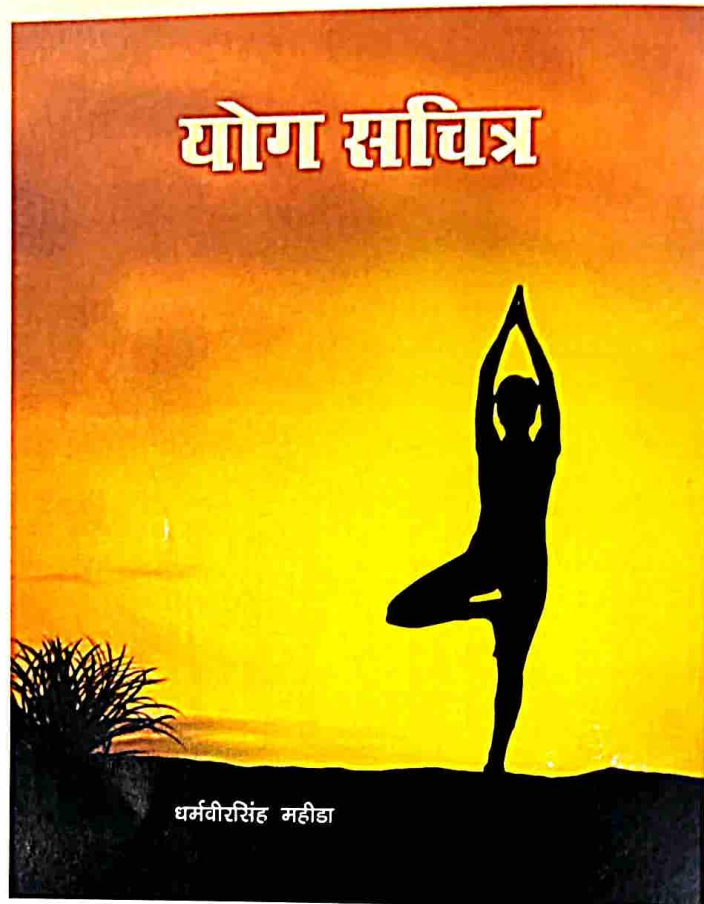


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