Economic Reforms and Industrial Development in North East India: Heading towards Sustainable Industrial Development

(A peer reviewed edited book)

Editor

Dr. Manalisha Bhattacharyya

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Economic Reforms and Industrial Development in North East India: Heading towards Sustainable Industrial Development (A peer reviewed edited book): Articles collected and edited by Dr. Manalisha Bhattacharyya and Published by Principal & Chairman, Publication Board, Dispur College, Guwahati -6

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Foreword

I was delighted to learn that the Department of Economics, Dispur College is bringing out a book on Industrial Development of North East India. Serious academic discussion on this issue is not only very contemporary but also has become a necessity in the overall development context of Indian economy. My students Manalisha Bhattacharyya, Tulika Chowdhury and Dhritiraj Sarma of the department has briefed me about the book and I immediately agreed to write this foreword with lot of expectation. The structure of the book is well thought of and focused to be relevant for policy purposes. I am particularly impressed with the editor's stress on all the sectors of the economy that create a conducive ecosystem for sustainable industrial development. Given the attention of the Union Government on the North East, and the unprecedented opportunities that are expected to emerge with determined implementation of Act East Policy, this book may become a good reference in terms of both theoretical and empirical understanding of the region.

I wish the authors, the editorial board, the department of economics, and all the students and faculty members of Dispur College success in their endeavour.

Dr Gautam Mazumdar
Associate Professor (Retd.)
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17th August, 2022

A Note from the Principal

Any region's economic progress is mostly dependent on industrialization. With growing levels of investment, quick rate of expansion in income, and high rate of employment, the industrial sector greatly contributes to the eventual realisation of self-sustaining economy. As a result, it serves as the basis on which the basic structure of the economy must be built. It is anticipated that simultaneous growth in the agricultural, industrial, and service sectors can support economic development that is sustainable over for long term. However, implementing crucial measures to protect sustainability practices while facilitating industrial development is necessary for sustainable industrial development especially in the regions like North East.

Keeping all these facts in mind the Department of Economics, Dispur College is going to publish a book entitled: "Economic Reforms and Industrial Development in the North East- Heading towards Sustainable Industrial Development" on the occasion of 44th Foundation Day of the college.

I am extremely happy to learn that many eminent scholars have enriched the book by contributing important chapters. I would like to take this opportunity to congratulate the editors and each of authors who have extended their significant efforts in the entire process of publication of the book. Hope this book would be useful to the research scholars, academicians and policy makers who are working for the attainment of sustainability in the industrial development of North East India.

(Dr. Navajyoti Borah)

Principal, Dispur College

From the editor's desk

Industrialisation plays a dominant role in the economic development of any region. The industrial sector contributes significantly in the eventual achievement of self-sustained economy with continued high level of investment and rapid rate of increase in income and industrial employment. Thus, this sector acts as a foundation upon which the fundamental framework of the economy must be constructed.

The North-eastern area of India has not seen industrial growth despite strenuous attempts over the past 50 years, in spite of the region's rich potential for industrial resources. Most disputes over Northeast India's growth and development engine concentrates on agrarian bias and also the relationship between economic growth on one hand and instability, violence, and insurrection on the other. There have been several books published about whether or not affluence brought on by development is the greatest solution to conclude violence however, most studies confronted that employment generation and economic development tends to reduce crime, war and violence. But, the north-eastern region's rapid population expansion and lack of employment prospects exacerbate poverty and unemployment, which in turn fuels crime and instability and impedes the region's overall progress. The industrial sector, which has a high marginal propensity to save and invest, contributes to the self-sufficiency of the local economy. As a result, the level of investment will be high, the income will rise, and there will be more industrial jobs available, which will further lead to the economic growth of the local area.

The north-eastern region does have promise for new entrepreneurial ventures. The region has a long history of producing a wide range of products for residential, agricultural, and other uses. A favourable

environment for the expansion of industrial undertakings is provided by the accumulated experience, the accessibility of inexpensive skilled labour, and the amicable nature of social tradition. However, in order to embrace progress and use resources more effectively, this development and expansion must be sustainable and take into account both the short- and long-term benefits for the region and its people in the long run. Sustainable industrial development requires undertaking key policies that safeguard the sustainability of the environment, paving the way for development.

It would be wise to think about the fact that the chances for natural balance are endangered by the asymmetric consequences of excessive industrialization and other resource-related activities. Instead of forcing customised solutions on the North-eastern states, these deficiencies must be addressed by depending more on local development alternatives. It is indeed fortunate that more people are aware of this since it should help the Northeast lead in growth and prosperity. Despite possessing comparable characteristics, each of the Northeast's seven states has its own distinguishing characteristics. As a result, it is crucial for both governments and aspiring entrepreneurs to be aware of this variety.

While the North-eastern region has been a component of the structural reform processes that India began back in 1991 with a more aggressive economic liberalisation drive and have been relentlessly pursued since then, it is also time to design the region as a major investment destination with abundant business opportunities. The region, which is bordered by international boundaries is also a vantage entry point for the South-East Asian marketswith Nepal, Bhutan, Bangladesh, and Myanmar, is well situated to support India's aim of peaceful progress via regional and sub-regional economic cooperation.

With the strong soft skills and geographical advantages, the youths of the North-eastern region are leading the way in rewriting the

rules of business in India. An ever-increasing focus on MSMEs is undoubtedly contributing to the growth of the start-up culture in the area. The NER also has a huge base of agro-forestry products, mineral reserves, ranks among the world's mega-biodiversity hotspots, water resources with potential for hydropower, and a workforce that is highly educated and literate. Additionally, there is enormous potential for the growth of handicrafts, handloom, and tourism.

Consequently, improved incorporation of thinking and procedures connected to planning for the Northeast will herald a new phase of development. The entrepreneurial spirit in the area is fairly strong, and with more policy traction and financial assistance, MSMEs are undoubtedly receiving a fresh growth push to expand and assist young people in obtaining productive work. One of the most notable success stories is Sikkim's development as a centre for real organic farming with strong market connections and logistical support, allowing farmers to benefit from the true benefits of economic reforms. One of several desired outcomes that will help to define the future of North east is the expansion of extremely potential MSMEs.

This book sets the groundwork for a fruitful exchange of ideas and interaction with Northeast's policymakers and administrative institutions, as well as the necessary actions to realise the region's full potential. Thebook examines the level of industrial growth in north-east India along with the prominent industrial policies and the underlying causes of industrial backwardness in the region. The book will also explore the current trends and scenarios of industrial development in the region. This book is one of a kind as it will include every dimension of industries starting from agro-based industries to tourism industries to health industry and its growth process with discussions on formulation of policy directions to enhance sustainability in the long run. The recommendations made

in this book are congruent with the industry's goals for enhancing state-level industrial growth. The recommendations, while preliminary, are aimed to lay the framework for creating a plan for eliminating the barriers standing in the way of more investments and growth in the region.

During the preparation of the book, many people lent me their hands on various occasions. I want to begin my thanks to the supreme God who gave me the capability and energy to accomplish this task. It is my privilege to offer my heartfelt gratitude to all the persons who are associated directly and indirectly in the creation of this book. I would like to take the opportunity to express my deep sense of gratitude and indebtedness to the Principal Dr Nabajyoti Borah and President of the governing body Dr Balendra Kumar Das of Dispur College for taking this initiative without whom the book would have been a distant reality. I extend my sincere thanks to Dr Gautam Mazumdar for his valuable advice and suggestions. I am extremely thankful to all the peer reviewers for their help and support. I would also like to place my sincere thanks to the entire paper contributors and scholars from various universities and colleges who helped us to bring out this book in the present form. I would like to acknowledge the contribution of Dhritiraj Sarma in respect of structuring the overview of this book without whose involvement this book would not have been readied for print. I am also grateful to the Publication Board of Dispur College and IQAC Dispur College for their continuous encouragement for the publication of this book. Lastly, all the persons involved in the creation of this book at A.M. Publications, Bhangagarh, Guwahati deserve mention and thanks for doing all that in record time.

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Contents

CHAPTER 1

Sustainable Industrial Development and the Idea of "Fairness" in Climate-linked Policymaking

Unmilan Kalita, Dhritiraj Sarma
Dr Padma Sharma Goswami

Abstract

Sustainable industrial development requires undertaking key policies that safeguard the sustainability of the environment, paving the way for development. India, on its way towards a $5 trillion economy by 2026-27 requires adoption of climate-linked strategies that can successfully cater to this ex-ante growth. The strategic location of India's Northeast offers ample opportunities for enhancing the country's economic ties. In this, however, a major facet is introduction of climate-linked policies where in carbon pricing instruments enjoy a key role due to their flexibility and sustainability compared to most other regulations. In this chapter, an effort has been made to understand the nuances of 'fairness' in environmental cost distribution among stakeholders while implementing carbon policies. A carbon tax, while enabling cleaner technologies to compete with fossil fuel dominated sectors, can easily translate into increased energy costs. Such energy costs may fall disproportionately on low-income households which depend on the share of disposable budgets they spend on consuming power.

Lack of social protection and safety nets for coal mining and thermal power generation jobs put them at critical risk in case of a rapid transition to renewable energy deployment. This chapter puts forward an elementary groundwork for answering these questions by identifying 'fairness' as a key obstacle towards a greater sustainable industrial development of India and its Northeast.

Introduction

Climate change has been appropriately called "the most systemic threat to humankind" (Sengupta, 2018). There was a time when climate change remained unheeded to and growth via industrialisation became the norm. Tens of decades later, the world now faces a great challenge where over 1.3 billion people with agriculture as livelihood are at stake and global economy has experienced 49% more economic losses than the previous decade (Crops, 2018). Such an environmental change has mainly been due to excessive greenhouse gas emissions (GHG) from the industrial, energy and manufacturing sectors since the times of Industrial Revolution. Carbon dioxide (CO_2), as a GHG, has been the major driving factor of global warming with its levels today being far greater than witnessed in many years before.

Sustainable development or rather, sustainable industrial development requires undertaking key policies that safeguard the sustainability of the environment, paving the way for development. India, on its way towards a $5 trillion economy by 2026-27 and $10 trillion economy by 2033-34 (Times, 2022) requires adoption of climate-linked strategies that can successfully cater to its sustainable growth and development. Besides, a nodal part of India's footsteps towards Southeast Asia, India's Northeast calls for attention with regard to robust sustainable development policies vis-à-vis the looming threat of climate change. Notably, the climate of Northeast India is fast changing- abrupt rainfall patterns and

irregular monsoons, higher sun hours and depleting and degrading groundwater levels. The Union Ministry of Environment, Forests and Climate Change has projected that temperature levels in the region will rise by 1.8-2.1 degrees Celsius by the end of 2030 (Sangomla, 2021).

In Assam, the Indian state most vulnerable to climate change, models predict an increase in temperature of 1.7-2.0 degree Celsius between 2021-2050. The variability in rainfall could be between a decrease of 5 per cent in north-western districts to a 25 per cent increase in the central and south-eastern districts, according to the state's action plan on climate change. In Arunachal Pradesh, annual rainfall is predicted to decrease by 5-15 per cent in the 2050s as compared to the baseline and increase by 25-35 per cent towards 2080s. Further, in Manipur, there shall be an increase in temperature by 1.7 degree Celsius by 2030s while in Nagaland temperature may rise by 1.6-1.8 degree Celsius between 2020 and 2050. This changing rainfall pattern, especially during the monsoon season, affects the flow of rivers, extent of snow cover and health of mountain springs, which in turn have an impact on livelihoods, especially agriculture and fishing, forest flora growth, animal and bird habitat (and behaviour) and other ecosystem aspects. This will in the end negatively impact the overall vision of sustainable development for the region.

A major facet of climate-linked policies is reduction of carbon emissions (Nations, 2022). In a carbon emission reduction strategy, carbon pricing instruments enjoy a key role as they are opted mostly due to their flexibility and sustainability compared to direct or command-and-control regulations. A key consideration influencing the acceptability of a carbon policy is its fairness i.e., how costs will be allocated among different stakeholders. In India's context, the concept of carbon pricing policy is in a rather rudimentary stage. Being a fore-runner in the fight against climate change, India is putting up commendable efforts to achieve both development and

environmental sustainability. India's efforts include the Nationally Determined Contribution (NDC) targets, current implementation of Clean Development Mechanism (CDM), and implicit carbon taxation in the form of a Clean Energy Cess (CEE) to name a few. These are directly related to carbon pricing and thus, it becomes imperative to examine how such policies deal with fairness or cost-distribution among diverse participants.

This chapter reflects on the aspect of distributive justice vis-à-vis carbon pricing in India and its Northeast, and extends its discussion to a few suggestive implications. Fairness is a qualitative variable and observing a quantified effect of carbon pricing on fairness is beyond the scope of this chapter. With this limitation at hand, the chapter shall comprise of a subjective analysis of India's carbon pricing policies, followed by an understanding of the concept of 'fairness'. These shall be entailed by a brief discussion on our findings and the conclusion.

Decarbonising FASTER with fairness

The case for climate change today has never been stronger. The challenge we face today is to decarbonise our economies by the year 2100 with action in the next decades being critical. In this process, the choices made by government, the private sector, and civil society as part of the transition to a decarbonised economy will determine the extent of future climate impacts but also provide an opportunity to unlock investment and build an innovative, dynamic, low-carbon economy. It will require policies that efficiently promote opportunities for emissions mitigation and clean-technology developments, while imposing the least overall burden on the economy (Stern, 2006). The Organisation for Economic Cooperation and Development (OECD) and the World Bank in their 2015 collaborative seminal report "The FASTER principles for successful carbon pricing" laid out certain principles that focus

on putting an explicit price on GHG emissions through domestic carbon-pricing mechanisms (Dabbous & Tarhini, 2022).FASTER comprises of five principles, namely, fairness, alignment of policies and objectives, transparency, efficiency and cost-effectiveness, reliability and environmental integrity. These principles show that a well-designed carbon pricing instrument can provide the flexibility and certainty for a thriving industry or business, and investment climate while effectively reducing emissions.

The principle of fairness is among the first of its kind in global policymaking while also being the most difficult to be assessed. *Polluter pays principle* forms the basis of fairness. It underlines the idea that costs of transformation should be primarily be borne by entities responsible for emissions. The OECD fairness principle specifically focuses on impact of a carbon policy on the following factors:

1. Competitive fairness between firms
2. Employment fairness during structural transformations
3. Social fairness for vulnerable low-income consumers

Carbon pricing is defined as an instrument that captures the external costs of GHG emissions and ties them to their sources through a price, usually in the form of a price on carbon dioxide (CO_2) (World Bank). Such a policy puts an explicit price on carbon emissions using a carbon tax or through the cap-and-trade mechanism. It is widely known that emission intensive industries tend to pay enormously less compared to the damages they cause. For instance, in Germany, levelised cost of electricity production (LCOE) for a thermal power plant is estimated at 34.24 EUR/MWh while LCOE for wind plant is much larger at 71.38 EUR/MWh. As such, the incentive for investing in renewable energy dwindles in a country that otherwise has enormous wind energy potential. In this situation, a carbon policy comes to the rescue.

However, evidences suggest that carbon policies can be regressive as they lead to higher prices for energy and other necessities, such as food. Implementation of a carbon tax in Canada at USD 10 per tonne of CO_2 equivalent raised costs by 0.7% for families in lowest income quintiles compared to 0.3% for highest income families. Therefore, a successful carbon pricing policy should reflect the *polluter pays principle* and contribute to distributing costs and benefits equitably, avoiding disproportionate burdens on vulnerable groups (OECD, 2015).

India has the second largest number of registered Clean Development Mechanism (CDM) projects under Kyoto Protocol after China. In its remarkable journey of being a flagbearer of efforts towards renewable energy production, India has now over 5000 projects registered under CDM with issued CERs of 0.15 billion (85% of total issuance). Most importantly, India implements an *implicit carbon tax* regime in the form of fuel excise taxes which at present cover approximately 58.2% of emissions. However, such statistics although fantastic in writing, does not quite present a true picture of whether fairness has been treated as a significant variable in the entire equation. The following discussion attempts to discuss and analyse the fairness principle in India's context. It is assumed that the same shall apply to its North eastern states as well.

Achieving competitive fairness between firms

Ideally, successful carbon pricing should change the relative competitive position of firms by increasing the financial costs of emissions-intensive activities inflicting climate-change damages on society, and favour low-emission activities that do not contribute to climate change (Bowen, 2011).

Levelised cost of production (LCOE) is the measure of a power source that allows comparison of different methods of electricity

generation on a consistent basis. LCOE reflects the constant real wholesale price of electricity that recoups for the investors the overnight capital costs of constructing the plant plus operating, maintenance and fuel costs, taxes, interest and other borrowing expenses (Nicholson, Biegler & Brook, 2011). The cost is for the net power supplied to the station where electricity is fed to the grid and does not include transmission costs or utility profit margins. LCOE in India's context paints a different picture than statistics represent.

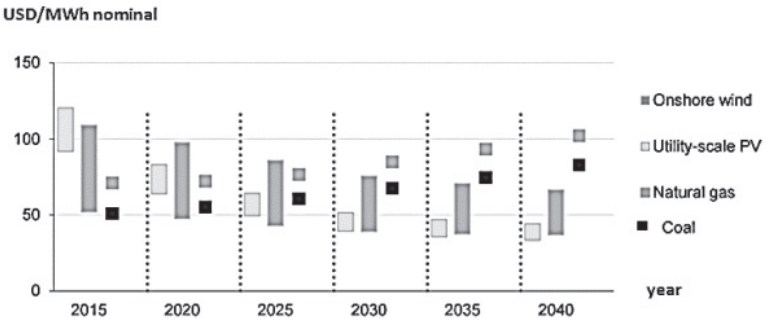

Figure 1.1: India's trend of levelised cost of electricity (LCOE)

(Source: Isoaho, Goritz& Schulz, 2016)

As figure 1 substantiates, the fact that levelised cost of electricity/ energy production from coal is lower compared to wind energy production plants, and will be so for a number of decades, is evident. Solar energy production, however, records a higher LCOE in earlier stages while accounting for the lowest at later stages. This is mainly due to substantial upfront costs associated with photovoltaic cells. At current price levels, prices of these energy sources would never converge. Nevertheless, including a carbon price in LCOE may give radically different results. Introducing a carbon price raises the LCOE by the price of carbon per tonne of CO_2 equivalent times

the emission intensity (EI) of the technology expressed in tonnes. It is obvious that electricity costs will increase with a carbon tax. However, because of differences in EI, a carbon price affects the cost of each technology differently and changes their relative competitiveness.

A carbon price can also negatively affect competitiveness among firms in several ways. Firstly, raising the prices of production inputs, it increases operative costs of firms in carbon intensive industries. India is still heavily depended on thermal power plants for production of electricity (figure-1.2). Attempting to deploy a price floor without strengthening the consumption base can result in heavy casualties. Middle to low-income households will face the tax-incidence to a certain extent while power companies will face severe losses.

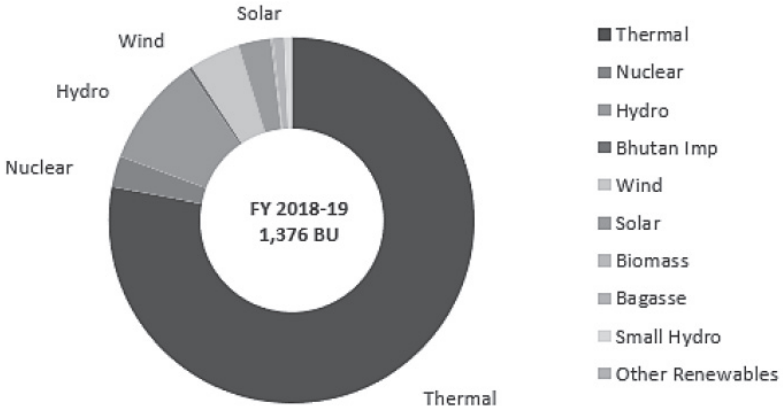

Figure 1.2: Distribution of India's energy production

Secondly, it will create administrative costs associated with compliance, including, monitoring and reporting. Where most of the energy firms in India have been running on a loss-making stride, such a policy will affect their profits. Small and medium enterprises will bear a greater brunt of taxation. In short, without proper incentives and technology in place to smoothen the transition

from conventional to renewable energy sources, energy industries will tend to have huge losses and may even face mass-shutdown without government bailout. This will have a domino effect on the entire market where ancillary firms will pass on increased costs to customers.

Case study: Carbon price floor policy of UK

With UK at the forefront of fighting climate change and implementing the Kyoto Protocol, their carbon pricing model demands great significance in India's scenario too. The UK government implements a carbon price floor (CPF) to provide long-term incentive to invest in low-carbon technology with fossil-fuel power plants having to face increasing carbon price (Luan & Lo, 2016). CPF consists of EU ETS carbon price and CPS cess on fuel. In 2013, the government had set the CPF to rise gradually in 2020 to EUR 30/tCO_2 and EUR 74/tCO_2 in 2030 with EUR 18/tCO_2 frozen for 2017-2020 to encourage business competitiveness and to restrain increases in household energy bills due to a large gap between UK CPF and rest of the world. Consequently, setting a CPF raises the LCOE for CCGT and OCGT EUR 112.59 and 150.91 respectively from a previous rate of EU 103.59 and EUR 137.33. this converges with the non-tax LCOE of Solar and Wind plants which equals to EUR 167.76 and EUR 123.97 respectively (Luan & Lo, 2016). Being a simplistic approach towards solving the LCOE disparity and building incentives for moving onto cleaner technologies, UK's CPF makes a strong case for use in India's policymaking and thereby creating a fair and competitive market.

Fairness in employment during structural transformations

The need for a "just transition" to a low-carbon economy – a transition that minimizes disruption of workers and communities and is reliant on sustainable industries and energy sources – is gaining traction in climate policy and political discourse. However, studies

suggest that not everyone will benefit equally from a transition to a low-carbon economy and stakeholders will supposedly share a disproportionate burden of an energy transition.

As the global trend indicates, climate action brings about net job creation (Organisation, 2018). The renewable energy sector, in totality, employed 10.3 million people in 2017. This represented a rise of 5.3% over 2016 job statistics. There has been an upward trend since 2012, with strongest expansion taking place in solar PV and bioenergy industries. However, jobs in wind energy and solar heating and cooling declined, with those in remaining technologies being stable. India has been a leading renewable energy job market alongside US, China, Brazil, Japan and Germany. Employment in solar PV increased by 36% in 2017 with a substantial increase in wind energy employment. How fair is the structural transition of such job creation- is our subject at hand.

There has been little analysis whether current transition policies meet equity goals embedded in the concept of a just transition (SEI). Table-1.1 provides some illustrative examples with regard to fossil fuel transition policies.

Table 1.1: Few policies taken by different countries for a transition to a low-carbon economy

Policies and jurisdiction	**Description**	**Transition support provided**
Coal Workforce Transition Fund and Coal Community Transition Fund (Government of Canada)	Provides assistance to coal workers and municipal governments in regions affected by provincial and federal government plans to phase out coal-fired electricity.	Support for workers: unemployment and retirement bridging grants, relocation assistance, career counselling, and tuition vouchers.

Framework Agreement for a Just Transition of Coal Mining and Sustainable Development of the Mining Regions for the Period 2019 (Government of Spain)	To aid workers and regions affected by planned closure of coal mines in Spain.	Support for workers: early retirement provisions, social assistance, and re-training programs for workers to move to green jobs.
Mine closure provisions in the 13th Five Year Plan for Coal Industry Development, 2016 (Government of China)	To cap coal output and improve mining efficiency. Mine closure provisions outline steps to ensure an orderly withdrawal of mines.	Support for workers: unemployment relief, training and job placement services. Assistance with abandoned mine reclamation and redevelopment.
Oil Worker Transition Fund (Government of Scotland)	Provides funding for oil and gas workers affected by a downturn in North Sea oil production to access training needed to transition to new roles.	Grants to help recently redundant oil and gas workers (or those at risk for redundancy) re-train or gain new accreditations.

Public employment programmes (PEPs) are used generally by nations to cushion such a transition- responding to temporary shocks and crises with a long-term horizon. Compared to policymaking in other nations that are slowly moving on from conventional to unconventional energy sources, policymaking in India is lagging behind significantly given its renewable energy potential and enormous workforce. There is no such specific policy that precisely pertains to support the present workforce in structural transitions. Fairness in this scenario gets neglected enormously, where only skilling for unemployed youth is focussed on. Table1.2 enumerates

a few policies that are in place to push for a low-carbon economy and to prepare India's workforce for *green jobs.*

Table 1.2: Few policies undertaken in India and the Northeast

Policy and jurisdiction	**Description**	**Transition support provided**
Pradhan Mantri Kaushal Vikas Yojana	To encourage youth to take up industry-relevant skill training	Prior learning experience or skills are recognised, training and assessment fees are paid by government
Sustainable and accelerated adoption of efficient textile technologies to help small industries (SAATHI) initiative	Provide energy efficient power looms to small and medium units (includes solar power looms)	No upfront cost for provision of solar power looms
Skills council for green jobs	Provide skill training through vocational courses for a range of jobs as rooftop solar PV installer, wind power site surveyor, biomass depot operator, etc.	Nil
Suryamitra skill development programme	Skill training for solar energy project installation, operation and maintenance	Nil

Multi-disciplinary Skill Development Programme (Government of Assam)	Impart market demand-driven skill training to 2 lakh youth	Support tea & Ex-Tea Community, Flood & Erosion affected people, people residing in Char areas and facilitate linkages for gainful self-employment
Sauramandala Rural Entrepreneurship Fellowship (Government of Meghalaya)	Identify the most promising rural entrepreneurs in the respective blocks and villages	Nil

Table 1.2 indicates the existence of policies that directly or indirectly facilitate the transition to a low-carbon economy via skill development or rather, industrial progress. However, most of these schemes do not address this aspect explicitly. The Northeastern states do not have any such policy in place, except Assam. However, none of the policies in Assam address climate change proactively. This a major concern which can turn into an impediment in case of a transitional move towards a low-carbon economy.

Another factor that affects a just transition is Employment Guarantee Schemes (EGS). These are long-term, rights-based employment programmes that entitle people to work and offer predictable and stable income while creating needed public assets and services (Lieuw- Kie-Song et al, 2010). PEPs and EGS contribute to a fair and just transition (Organisation, 2018). In case of India, EGS include MGNREGA, which does not factor in such job transition at all. ILO estimates suggest a loss of 6 million jobs by 2030 as a result of such shifts. It is evident that such job losses are not significant compared to the amount that is being created. However, studies observe that jobs created so far in solar PV sector in India tend to be contractual

in nature and do not provide job security or benefits (Jairaj et al., 2018). Lack of social protection and safety nets for coal mining and thermal power generation jobs put them at critical risk in case of a sudden uptrend in renewable energy deployment. Low-skilled workers and those that live in areas with a single dominant industry, such as coal and petroleum mining, will find job transitions most difficult (Tomassetti, 2022).

Social fairness for vulnerable low-income consumers

A carbon tax, while enabling cleaner technologies to compete with fossil fuel dominated sectors, can easily translate into increased energy costs. Such energy costs may fall disproportionately on low-income households which depend on the share of disposable budgets they spend on consuming power. Empirical studies suggest that in OECD countries, distributional effects of taxation policies vary by fuel. Carbon taxes on transportation fuels are not regressive in general in OECD nations, while taxes on electricity and heating fuels tend to be regressive, implying that low-income households bear the brunt of larger tax burdens compared to wealthier households (Flues & Thomas, 2015). Such impacts bear critical significance for developing countries like India which have a tariff structure unconducive to benefit the poorer households of the society.

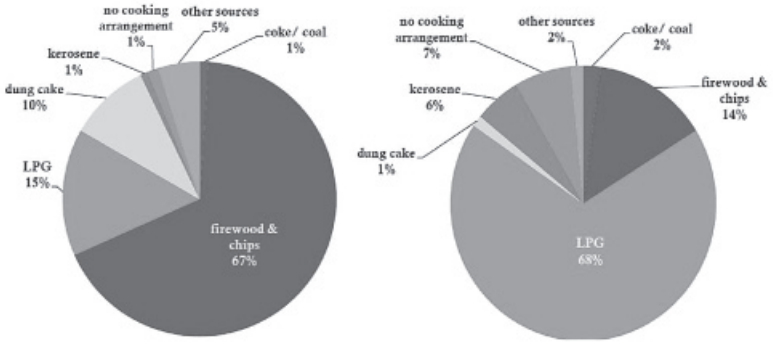

Figure 1.3: Cooking energy use in India- rural (left-hand) and urban (right-hand)

As Figure 1.3indicates, urban sector uses mainly LPG for cooking while rural households use firewood and chips mostly. In India's context, the government has implemented a Clean Energy Cess (CEC) on coal which is INR 400 per ton. Interestingly, the Economic Survey (2014-15) described it as an implicit carbon tax whose objective to reduce the harmful effects of carbon emissions by encouraging emission reduction. Although called a carbon tax, CEC was necessarily implemented for revenue considerations. Moreover, coal faces a tax of 5% under GST. Additionally, petroleum and diesel face a very high effective tax burden that comprise of excise duties and VAT imposed by the Centre and States respectively (Table 1.3).

Table 1.3: Effective tax burdens according to fuel types

Sl. No.	Fuel type	Coverage under GST	Tax burden (%)/ GST rate	Emission factor (kg CO_2/ MBtu)
1	Petroleum	No	90-120	71.30
2	Diesel	No	60-90	73.16
3	Natural gas	No	0-25	53.07
4	ATF	No	14-62	70.90
5	Crude oil	No	0-10	74.54
6	LPG	Yes	5 (domestic), 18 (non-domestic)	64.01
7	Kerosene	Yes	5 (fertiliser), 18 (non-fertiliser)	72.30
8	Naphtha	Yes	18	72.80
9	Coal	Yes	5 (+GST compensation cess @ ₹ 400/ton)	95.35
10	Petroleum Coke	Yes	5	102.10

Source: Petroleum Planning & Analysis Cell (PPAC), Government of India.

Evidently, coal faces a comparatively lighter tax burden than petroleum and diesel that are subject to very high tax rates. It must be noted that coal, especially bituminous, has a very high emission factor compared to most other petroleum products. However, it is understandable that coal has not been subjected to a high tax rate as most of India's power generation comes from coal-fired power plants. Most of the electricity consumed by households is produced from coal-based power plants. As such, it seems obvious that an imposition of a carbon cess on top of coal production, can result in increased electricity prices for consumers. This, however, may not be the case for India. Coal is subjected to just 5% GST and a tax over it would cause a negligible increase in tax burden. Overall, it is important to note that the carbon price should be such that the marginal cost of producing a unit of pollution should be equal to the marginal social damage caused.

Implications for policymakers

Carbon tax policies, although being attractive strategies for a sustainable future, often are regressive in nature. To address the regressivity of a carbon price, policy-makers have many policy options, including offering rebates, credits or lump-sum payments to low-income households. However, the distribution of costs based on income level is a very important question with respect to fairness. Besides, there are additional factors which are often not considered in evaluations of distributional impacts and in designing mitigating strategies. Factors such as location, socio-economic status (beyond income), culture, age, gender and race may influence the distribution of costs. It is important to consider these additional factors in measuring distributional impacts and in designing appropriate offsetting policies. Selecting and designing carbon taxes and emissions trading systems in a way that increases their fairness will enhance the political viability of current and

future carbon pricing policies, and ensure that they are compatible with, and integrated into, broader sustainable development policy objectives.

From our subjective analysis, it can be pointed out that carbon pricing may also have a detrimental impact on firms' competitiveness in a variety of ways. To begin with, raising the pricing of manufacturing inputs raises the operating expenses of firms in carbon-intensive industries; secondly, it will increase compliance-related administrative expenditures, such as monitoring and reporting. But carbon pricing can encourage cost-effective abatement, provide substantial innovation incentives, and alleviate fiscal issues by increasing government income by internalising the externalities associated with CO_2 emissions.

The impact of establishing carbon prices in a country like India may be assessed from a variety of perspectives. To begin with, taxing fossil fuels is one of the largest contributors to global exchequers, resulting in a revenue impact. Second, carbon pricing can hasten the development of novel clean energy business models thus reducing pollution level. Finally, carbon pricing has an effect on investment and job creation. When compared to a business-as-usual approach, a change toward sustainability in the energy sector is expected to produce 18 million extra jobs globally by 2030. In accordance with global policy goals, this employment creation is accompanied by a 41% decrease in GHG emissions by 2030.

Broadly defined objectives of fairness can be brought into instrument selection and design of carbon pricing policies to ensure that the costs of the policies are distributed among individuals in a way that reflects fairness principles such as the Ability to Pay and Protection for the Most Vulnerable. The changes required are often modest and would not need to detract from broader objectives of effectiveness or efficiency. Policy-makers should consider how a carbon pricing policy will impact individuals and regional households based not

just on household income level, but also on other factors such as income at the individual level, socio-economic status, culture, gender, race, region and age (Bouckaert et al., 2021). Then they can ensure that mitigation strategies that offset these particular vulnerabilities are built into the policy's design.

Policy-makers can also opt to dedicate some of the revenue from carbon pricing policies to offset distributional impacts, as well as investing in climate change mitigation. Mitigation strategies can be designed to ensure that vulnerable groups can access the relief. For instance, since tax cuts are often not practically accessible to those who do not file tax returns due to insufficient taxable income or exemptions, direct payments may be a more appropriate mechanism for offsetting distributional impacts. Since home improvement incentives are not accessible to renters, concomitant policies that are targeted to renters can be offered.

Carbon pricing is one of the most potent tools for encouraging the adoption of green technology, and when implemented properly, it may provide significant effects in a short period of time. Carefully regulated implementation of carbon pricing, particularly in industries of North-east India, will go a long way toward making the shift economically sustainable and increasing stakeholder engagement without jeopardising climatic obligations. Policymakers are continuously forced to strike a balance between the demand for renewable energy and economic feasibility. Thus, carbon pricing should be part of a policy mix that encourages both innovation and declines the dependence on fossil fuels, takes political dynamics into consideration, adjusts between sectors over time, and aspires for systemic change to develop sustainable industry and eco-friendly technology.

Conclusion

The crux of the climate conundrum is seldom portrayed as a

market failure issue. The logic is compelling in its simplicity: the fundamental cause of climate change is the unending flow of emissions from industry. Because the full societal cost of carbon-intensive goods and services is not represented in the market pricing of carbon-intensive goods and services, these emissions are a negative externality for the environment and the economy. As a result, establishing a price that reflects the real cost of these emissions appears to be an obvious remedy to this market failing. This propagates the concept of sustainable industrial development which necessitates the implementation of critical policies that ensure the environment's long-term viability while still allowing for growth by implementing climate-related measures capable of ensuring its long-term growth and development. The reduction of carbon emissions is a crucial aspect of climate-linked policies. As discussed in the chapter, carbon pricing mechanisms play an important role because, as compared to direct or command-and-control regulations, they are more flexible and sustainable. The idea of fairness i.e., how the costs will be distributed among the various stakeholders has been discussed comprehensively which is a critical factor in determining the acceptance of a carbon policy. Accordingly, an effective carbon pricing strategy should adhere to the polluter pays principle and contribute to the equitable distribution of costs and benefits, avoiding undue burdens on disadvantaged populations which bears great consequence for sustainable industrial development in the India's Northeast.

References

Bouckaert, S., Pales, A. F., McGlade, C., Remme, U., Wanner, B., Varro, L., ... & Spencer, T. (2021). Net Zero by 2050: A Roadmap for the Global Energy Sector

Bowen, A. (2011). The case for carbon pricing. *Policy Brief, Grantham Research*.

Crops, M (2018, April 10). How climate change affects people living in poverty. Mercy Crops, Portland, United States.

Dabbous, A., & Tarhini, A. (2021). Does sharing economy promote sustainable economic development and energy efficiency? Evidence from OECD countries. *Journal of Innovation & Knowledge*, *6*(1), 58-68.

Flues, F., & Thomas, A. (2015). The distributional effects of energy taxes. OECD Taxation Working Papers.

Isoaho, K., Goritz, A., & Schulz, N. (2016). Governing clean energy transitions in China and India: A comparative political economy analysis (No. 2016/28). United Nations University World Institute for Development Economics Research Working Paper.

Jairaj, B., Deka, P., Martin, S., & Kumar, S. (2017). Can Renewable Energy Jobs Help Reduce Poverty in India? World Resources Institute.

Lieuw-Kie-Song, M., Philip, K., Tsukamoto, M., & Van Imschoot, M. (2010). Employment Sector Employment Working Paper No. 69.

Luan, T., & Lo, K. (2016). Effect of carbon price floor on levelised cost of gas-fired generation technology in the UK. *World Journal of Engineering and Technology*, *4*(3D), 66-71.

Nations, U (2022, April 04). The evidence is clear: the time for action is now. We can halve emissions by 2030. Intergovernmental Panel on Climate Change, United Nations, Geneva, Switzerland.

Nicholson, M., Biegler, T., & Brook, B. W. (2011). How carbon pricing changes the relative competitiveness of low-carbon baseload generating technologies. Energy, 36(1), 305-313.

Organisation, I. L. (2018, August). The employment impact of

climate change adaptation. Input Document for the G20 Climate Sustainability Working Group, International Labour Organisation, Geneva.

Sangomla, A (2021, September 06). Climate crisis in Northeast India: How geography, rainfall variations define calamity course. Down to Earth, New Delhi, India.

Sengupta, S (2018, March 29). Biggest Threat to Humanity? Climate Change, U.N. Chief Says. New York Times, NY, United States.

Stern, N., & Stern, N. H. (2007). *The economics of climate change: the Stern review*. cambridge University press.

Times, T.E. (2022, June 14). India would become $5-trillion economy by 2026-27: CEA V Anantha Nageswaran. The Economic Times, New Delhi, India.

Times, T.E. (2022, June 14). India would become $5-trillion economy by 2026-27: CEA V Anantha Nageswaran. The Economic Times, New Delhi, India.

Tomassetti, P. (2022). Energy Transition: A Labour Law Retrospective. *Industrial Law Journal*. Nations, U (2022, April 04). The evidence is clear: the time for action is now. We can halve emissions by 2030. Intergovernmental Panel on Climate Change, United Nations, Geneva, Switzerlan

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CHAPTER 2

Glocalization: A New Social Order (In search of an alternative Industrialization Strategy for Assam: need for holistic development)

Dr. Budhen Kumar Saikia

Introduction

(udyamena hi sidhyanti kAryANi na manorathaiH |

na hi suptasya siMhasya pravishanti mukhe mRigAH ||)

-Hitopadesh

Meaning: Work gets accomplished by effort, industry, not merely by wishing. The animals don't enter a sleeping lion's mouth.

To industry nothing is impossible- **Latin Proverb**

National Progress is sum of individual industry, energy and uprightness, as national decay is of individual idleness, selfishness and vice. - **Samuel Smiles** (Scottish Author and Reformer- 1812-1904)

Think globally and act locally- is the motto of new social order at this

era of new nationalism which can be renamed as ethno-nationalism. No doubt, glocalization is a new terminology encompassing the local sentiments and the global connectedness with a view to holistic development. How glocalization is visualised in the cultural instruments is given in an example: Clinching the Academy Award for Best Picture, "Slumdog Millionaire" has been one of the most talked about films over the past few years. The opening presents Jamal, a "chai-wallah" (server of tea) and unlikely winner of the India's version of the "Who Wants to be a Millionaire" television show. Shrouded in suspicion for his success as a contestant, Jamal is interrogated by local police, and the "inspector-sahibs" (police inspectors) discover the convoluted life story of a child born in the slums to a Muslim family. Incorporating the culture, history, and conflict within India with each question, Slumdog Millionaire interweaves sweeping landscapes and colourful characters with deep emotion at every turn. Through its rich imagery and use of flashbacks, the film comments on social class differences, communalism, the rise of technology and development of Indian cities. This movie is definitely an example of the coming together of "global" and "local" as the game show host endearingly refers to "computer-ji…and odes to the renowned Indian actor Amitabh Bachan mix with depictions of call centres. The cinematography is breathtaking; subtitles and a following of the characters as they grow up in the slums creates a gritty realism with a Bollywood feel. (2008 -Farzana Nayani, Glocalization and Culture).

Glocalization: modus operandi

Among the places, the term glocalization independently developed is from Japanese business practices. It comes from the Japanese word *dochakuka,* which means global localization. Originally referring to a way of adapting farming techniques to local conditions, *dochakuka* evolved into a marketing strategy when

Japanese businessmen legitimately adopted it in the 1980s. The term was popularized in the English-speaking world by the British sociologist Roland Robertson in the 1990s, the Canadian sociologists Keith Hampton and Barry Wellman in the late 1990s, and Zygmunt Bauman. Hampton and Wellman have frequently used the term to refer to people who are actively involved in both local and wider-ranging activities of friendship, kinship and commerce. Manchester professor Erik Swyngedouw (born in 1956) is also credited for being one of the first individuals to use the term in his studies.

Ronald Robertson (1938-2022), the British sociologist, was the name who tried to popularize the term glocalization in his book Glocalization: Time-Space Homogeneity- Heterogeneity and used the term glocalization in the place of globalization. A combination of the words "globalization" and "localization" used to describe a product or service that is developed and distributed globally, but is also fashioned to accommodate the user or consumer in a local market to facilitate and highlight local issues as well as resources . This means that the product or service may be customized to conform to local laws, customs or consumer preferences. Products or services that are effectively "glocalized" are, by definition, going to be of much greater interest to the end user. According to Robert lamb, "If you look at glocalization as a dialogue between the global and local sectors, you get a good understanding of its challenges and potential benefits. With glocalization, a global corporation's goal isn't to say, "Here's a sandwich." Rather, the corporation asks, "How can we make a sandwich you'd like?" When glocalization and culture connect, local communities play crucial roles in developing and sustaining global policies." According to CERFE Group, (2003, Rome), glocalization could be a real, new prospect, being characterized by some extrinsic features - to be viewed as expressions and effects of the glocal vision - and namely:

- » the universal nature of the glocal proposal, addressed to actors of both developed and developing Countries, on the basis of equal and not conflicting relationships;
- » its manifest concreteness, emerging from its rejection of any ideology and from its tendency to assess the results of policies and actions in relation to their effects on the stakeholders 'lives;
- » its capacity to mobilize human energy, above all within the local civil societies, but also by spurring de-bureaucratized public administrations, socially-oriented enterprises, volunteers and individuals towards glocal action;
- » its natural tendency towards sustainability, owing to its double orientation, to use both public and private resources and to exploit both local and global opportunities, also referring to powerful political and economic actors.

But the real strength of the glocal proposal and perhaps its very appeal lies in its intrinsic and content - related features. In order to account for this aspect, a "glocalization ideal map" has been developed through the research. The President of the World Bank, James D. Wolfensohn, stated: Glocalization is of enormous importance because it brings us from the global question down to issues at the human scale, and to issues of humanity and people.

Glocalization: Pros and Cons

Robert Lamb, sociologist observed that the marketing funding and infrastructure behind a product may come from a global corporation, but the local level dictates what finished form that product will take. In this way, glocalization is a bottom-up system of Government for governance for globalization. We can take the economic model of glocalization and apply it to larger cultural and political issues and you have an entirely new way of looking at the

world. National governments of the World, invariably cease to be the major decision makers and become important players alongside cities, local leadership groups, private companies and international organizations. If we view the world as a collection of nations, we see varying levels of stability and social equality, depending on what country or region we are looking at. View the world as a whole and things look a lot grimmer. Parts of the Western world benefit from the latest technology, while disease, famine, war and starvation plague portions of the Southern Hemisphere. Some cities have grown into centres of knowledge and culture, while others swell with cheap manufacturing labour. In this way the diversifications of nature and order obviously necessitates the innovative social order-Glocalization.

Organizations such as the Glocal Forum and the Think Tank on Glocalization push for the creation of a more stabilized world through a series of glocalized strategies:

> Emphasizing city-to-city diplomacy...
>
> Developing local economies and encouraging free societies.
>
> Encouraging and revitalizing local cultures.
>
> Developing tourism opportunities for economic and social benefit…
>
> Developing sporting opportunities for economic, social and health benefit
>
> Empowering youth with a glocalized view of the world
>
> Using information and communication technology to foster economic development and social relations

The intended result of all these strategies is the same: Develop a world where local areas benefit from global resources while retaining their own cultural identities.

Roland Robertson's "Glocalization: Time-Space and Homogeneity-

Heterogeneity" is a theoretical article which looks at the concept of globalization through the way it is deliberated in the sociological field. Robertson's agenda in "Glocalization: Time-Space and Homogeneity-Heterogeneity" is to show the weakness of contemporary theories of globalization. Robertson's "cure" for this discursive problem is not through a better definition or more elaborate theory of globalization, but rather its replacement with the concept of glocalization. Robertson opens "Glocalization: Time-Space and Homogeneity-Heterogeneity" with the semantic definition of globalization which sees it as a process and not a fixed and resolved state which has clear characteristics. Viewing globalization as a process or system means in a sense viewing the world as becoming global as Robertson shows how sociologists tend position local culture in an inferior position to the rising global culture under globalization. Robertson hold that the vagueness which characteristics sociological discourse on globalization arises in part from the concept of globalization itself, and offers to replace the view of it as a process for a view of it as a condition or a trait of culture which is characterized by globalness.

In the light of glocalization and culture, seven strategic options in the field of cultural policies can be proposed.

A. Enhance the role of municipal government in promoting cultural activities and city heritage.

B. Use technology to preserve and develop local cultures and languages.

C. Enable local communities to use their indigenous knowledge for development.

D. Strike a balance between local culture and global culture in education.

E. Promote adequate representations of the local life and culture in global mass communication.

F. Use music, literature and the arts to promote peace and disseminate the glocalization concept

G. Strengthen local cultural industries...

Some suggestions illustrating possible actions to be taken in order to implement the abovementioned policies are given below. The three main domains concern:

A. cultural heritage and local knowledge for development.

B. support to local cultural production.

C. culture and arts for preventive diplomacy and peace-building

Prospects and problems of Assam's Economy

Assam is the largest economy of the Northeast region. It is India's gateway to the Northeast as well as to the neighbouring countries of Myanmar, China Bangladesh, Nepal and Bhutan, providing a vital link for trade with the Southeast Asian countries. It is the most industrially advanced state in the Northeast India, because of its comparative proximity to the rest of the country along with the availability of infrastructure. Its prospects for economic development are as follows:

Endowment with Natural Resources: Assam is rich in different types of natural resources such as natural oil and gas, rubber, tea and minerals such as granite, limestone, kaolin etc. Assam tea is a well recognised product all over the world.

Sectors with Investment Potential: The state is rich in water resources. Other potential areas of investment include power and energy, mineral-based industries, tourism and crude oil refining.

Favoured tourist destination: With its pleasant climate and scenic landscape, Assam is a popular tourist destination. The state offers visitors a variety of choices from world heritage (leisure) sites to temples and monuments.

Availability of workforce: Assam has numerous educational Institutions. A substantial portion of the population, in the age group of 15 to 25 years, is literate and unemployed.

Institutional change supporting economic enhancement and growth at a social level requires economic incentives, supported by political will.

As India moving into a new era of economic liberation, the region should also step forward. The framework for development of the region can be broadly based upon some vital components.

The first component of this development plan should be social empowerment. It needs to empower rural communities, create sustainable institutions so that they manage common activities around microfinance, livelihoods and natural resource management. The second component needs to be economic empowerment. The objective of this component should ideally be to develop the capacity of rural communities to plan and manage funds for various economic initiatives and common activities for the public. The third component will be partnership development. The objective of this component should be to partner with various service providers, resource institutions and public and private sector organisations to bring resources such as finance, technology, and marketing into the project so that the community groups are able to improve their livelihoods. The fourth and final component will be project management. This will facilitate various governance, implementation, co-ordination, learning and quality enhancement efforts in the project.

There are a number of factors contributing to the lack of industrial growth in the region, like

- Poor infrastructure
- Rapid growth of population (largely due to illegal migration and immigration)

- Inadequate electricity supply
- Violence and extortion (gradually reducing)
- Natural Calamities(some of them are man-made and the exact lessons are yet to be learnt…)
- High Cost Structure
- Shyness of capital due to high cost of production
- Vulnerability of the region
- Poor Transport and Communication Facilities
- Lack of entrepreneurial motivation
- Low level of public sector investment
- Wastage of Natural Resources
- Lack of Entrepreneurial and Managerial Talents
- Problem in Social Structure
- Lack of Efficient Administrative Machinery
- Disturbed Law and Order Situation
- Sensitive Borders

In recent years the "Look East Policy" of Government of India has made North East more important and strategic. Of late, Act East Policy along with Make in India (Flagship Policies adopted during 2015 and later) have been doing some vital changes in the production as well as trade destinations and they are doing the trade and industrial environment more favourable. The region has to gear up to take up more challenges and capitalize on the opportunities thrown open by the huge market in the South East Asian Countries.

If we go through the Human Development indices over the past years we find a gloomy picture of qualitative as well as quantitative development of our region. In 1990, the HDI in Assam was 0.411, which was increased to 0.447 in 1995, 0.488 in 2000, 0.531 in 2005,

0.567 in 2010, 0.598 in 2015, 0.614 in 2018 and 0.613 in 2019. In 2019 out of 36 states and UTs Assam's position is 30th with 0.613 values. In 2019 top five states in terms of HDI values were Kerala (0.782), Chandigarh (0.776), Goa(0.763), Lakshawadip (0.751) and Delhi(0.746). In 2019 Indian average value in terms of HDI was 0.645. These indices show the miserable condition of Assam's development along with inter-state differences in development. This in fact necessitates a fruitful strategy for development. Along with proper and innovative approaches cum attentions in the traditionally important industries in the state, the industries like tourism, enterprises in education sector, agro-based industries, food processing industries, horticulture etc. should be given comparatively much more importance for proper development. It shows the growing need considering the upcoming challenges in the existing industries.

Glocalization and the Assamese society

In the midst of ethno-nationalism we can closely observe the glocalization in Assamese society as a Worldly order. Though the Assamese nationality is found at a situation of fragmented social order with multiplicity of ethnic groups, religious faiths, racial factors and development-related sub-sectors, yet the glocalization is found at a vibrant force in Assam. Lakshmiminath Bezbarua once wrote in his poem...*guru lage moka sikshita sishya/ jagatak janani dilo/ Jagatara Guru Srisankara Gharate/ Andhalai nedekhilo hey, Guru Sankara*. The idea of think globally and act locally is beautifully reflected in this stanza which means that though we, the educated disciples have been roaming in different places of the World for the God, yet we, the blinds have not witnessed Srimanta Sankardeva, the World Teacher. Dr. Bhupen Hazarika, the famous singer cum music director composed the songs having the tune of glocalization.

Presently, glocalization is witnessed in literature, music, different cultural elements like dance and drama and even in the way of life. The lifestyle has been shaped under the influence of glocalization. In case of youth empowerment, women empowerment, rural development cum empowerment etc. the glocalization is beautifully reflected and as a result of which Assamese nationalism is upcoming in spite of having lots of predicaments. It is a good sign for nationalistic spirit for any nation.

To conclude, it can be mentioned that globalization has already been converted in to an out-dated idea and the concepts like glocalization has been brought in to effect. The countries like Japan, England, Canada, America etc. have put ingredients in popularizing the idea. The heterogeneity of lifestyle has been widely accepted by the people of the world. Hence, the concept like glocalization has been coming in to effect for developmental phenomena crossing its boundary from local and returning back from global. In fact we are inside the globe facing the challenges of the Worldly Social Order.

References

Appadurai A., Modernity at Large: Cultural Dimensions of Globalization, University of Minnesota Press, Minneapolis, MN 1996

Bezbarua Rachanawaliedited by Dr. Nagen Saikia. Banalata, Ghy.

Dissanayake W. (eds.),Global/ Local. Cultural Production and the Transnational Imaginary, Duke University Press, Durham, NC, 2000

Dr. Bhupen Hazarikar Geet aru Jeevan Rath (ed.)

Glocalization, CERFE, World Bank, 2003, Rome, Italy

Glocalizing North East India, (edited.) Saikia B.K. (2016) , Morigaon College.

Human Development Report, UNDP, 1990 to 2021

Wiseman J.,Global Nation? Australia and the Politics of Globalization, CambridgeUniversity Press, Cambridge, UK, 1998

Wilson R., Dissanayake W. (eds.), Global/Local. Cultural Production and the TransnationalImaginary, Duke University Press, Durham, NC, 2000

Wilson R., Dissanayake W., “Introduction: Tracking the Global/ Local”

World Bank, World Development Report 2003: Sustainable Development in a Dynamic World: Transforming Institutions, Growth, and Quality of Life, Oxford University Press, World Bank, Washington, DC, 2002

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CHAPTER 3

ACT EAST POLICY – Implications and Prospects for North East India

Sazzad Alam

Abstract

Act East Policy, a proactive reconstruct of the decades old Look East Policy, has given the North Eastern Region of India the opportunity to reinvent itself as the pivot around which the country's multifarious relations with the rapidly developing countries of East and South East Asia, thereby circumventing the shackles of landlockedness and consequent skewed economic growth. The article focuses on the tremendous potentialities the region has for developing multi-modal connectivity, trade and commerce, cultural relations and people to people connect with the aforementioned set of countries. While the current state of abject underdevelopment of all these potential sectors are exhibited, the article also shows the ways and means to get ahead with the adroit tweaking of policies and current conditions. The catch, as the article seeks to advocate, is to think and act out of the box. The article, moreover, provides a snapshot of all the steps and interventions the State Government of Assam has taken so far in pursuance with the Act East Policy of the Central Government. Although foreign relations come under the purview of the Union List in Schedule 7 of the Indian constitution, the Assam Government has established an exclusive Act East Policy

Affairs Department to push forward its interests within the ambit of the Act East Policy. The article, in this regard, gives an insight into the activities and achievements of this fledging Department. Yet the article judiciously delineates the challenges the State of Assam in particular, and the NER in general, faces while chasing the cherished objectives under the *avant garde* Policy. The article counters the negativity centering around the challenges with the aid of a SWOT analysis, and concludes that the way out of the dilemma is to take along the GenX through incorporation of the academic and trade communities.

Keywords: *Act East Policy*, *3Cs*, *UDAN International*, *Multi-Modal Logistic Park*, *Integrated Check Posts*, *Land Custom Stations*, *Minimum Import Price*, *Electronic Cargo Tracking System*, *Central Quarantine System* and *Visa Regime*.

Introduction:

Laced with multi-dimensional ramifications the 'Act East' Policy may be considered as a major foreign policy initiative on the part of the Indian Government in 2014. The 'Look East' Policy had set the ball rolling in the direction of the mystical Orient a few decades back. But the recast policy is not only significantly more proactive and result oriented but also encompasses several hitherto unaddressed aspects of international relations with the countries of East and South East Asia. However, the most important aspect from the point of view of North Eastern States of the Indian Union has been the solemn declaration by the Hon'ble Prime Minister Mr. Narendra Modi that under the restructured Act East Policy, the North Eastern Region would be the centre-stage of the country's relations with the East – especially the new emerging Asian Tigers of the ASEAN bloc.

In this regard, it is worth recollecting the adoption of the Look East Policy in 1991 by the then Indian Government of Prime Minister

Mr. Narasimha Rao. The basic objective was to reconnect with the Asian economic powerhouses [*viz.* Japan, South Korea, China and the ASEAN countries] as part of India's global outreach in the wake of its economic liberalisation, taking advantage of the physical proximity of these developed and fast developing countries. The Look East Policy had adopted a three-pronged approach of (1) renewing political contacts and understanding especially with the countries of the ASEAN bloc; (2) achieving better economic relations including trade & investment, science & technology, tourism, etc. with these countries; and (3) strengthening defence and strategic links with these countries.

Although the efforts over the years in this direction did fructify with India being accepted as one of the strategic partners of the ASEAN bloc, yet that endeavour cannot be said to have been properly inclusive of North East India. It rather concentrated more on maritime trade relations from the ports on the Bay of Bengal. As a matter of fact, it was only in 2007 that the promotion of trade and commerce with the South East Asian through the land boundary with the States of North East India was considered for inclusion under the ambit of the Look East Policy.

In this context, it is worth having a historical rehash in order to understand the precarious predicament of the North Eastern Region. Landlocked as an unfortunate consequence of the partition and the irrational drawing of the Radcliffe Line, along with the creation of Burma (Myanmar) as a separate country a decade prior to that; North Eastern Region of India has over the years been plagued by geographical isolation and perceived psychological alienation from the rest of the country. Although the region shares 4500 odd kilometers length of international border with no less than five countries of the subcontinent, security concerns had led to its conversion into a fortress-like formation during the second half of the twentieth century. All trade and transportation began to be tortuously routed

through the 25 kilometers "chicken–neck" Siliguri corridor with the rest of the country. Even then the trade and transport bottlenecks thwarted the region from getting properly integrated into the economic system of the mainland India, which resulted in economic stagnation of the region with grave socio-political consequences like ethnic strife and insurgency. Not being able to understand the problem in its proper perspective, the then Central Government visualized it from the prism of internal security and responded with the imposition of further trade and travel restrictions – which engendered a vicious cycle of psychological disconnect, sporadic violence and extortion, and skewed development.

The perspective of the Central Government of India underwent a paradigm shift in 2001 from the focus on the North Eastern Region from the point of view of internal security to that of comprehensive development, with the setting up of the Department of DONER – dedicated specifically for the development of the North East Region. It may be safely surmised that this occurred because the country had undergone the massive liberalization exercise in the early nineties of the last century, the fruits thereof were beginning to be harvested around that time in the frontline states, and so it was felt that development needed to trickle down even to the north-eastern corners of the nation. It may be understood that it is under such a progressive chain of events that the vision under the revamped Look East Policy in 2007 came to incorporate the North Eastern Region as well.

However, there were no visible impact on the ground, and whatever ideas surfaced remained within the realm of academic and bureaucratic paperwork. The reasons for such a state of things – as delineated by the former bureaucrat Mr. M.P. Bezbaruah – were:

1. The Look East Policy projects were never packaged or even publicized in the context of North Eastern Region;
2. There was never any comprehensive 'Wish List' from

the Look East Policy formulated and submitted from the region; and

3. There was no institutional mechanism for continuous and formal interaction and joint monitoring of the Look East Policy.

It is under such circumstances that we must assess the Act East Policy and its vision for change. The vision is to move away from the domestic thinking of North East India as the peripheral appendage of the country to that of a regional focal point of integration of India with countries of South and South East Asia. While Yunnan province of China has in recent times tried to break free of its shackles of land-lockedness in a similar manner, we can also relate our situation to the city which is the headquarters of the World Trade Organization and 20 odd UN and global organizations – Geneva. That city and the entire canton of Geneva is linked to the rest of Switzerland at its South-Westernmost corner by a 'chicken-neck corridor'. But its geographical location has been so thoroughly overcome by adroit human intervention that it is almost the centre of the world.

We can therefore envisage positioning the North Eastern Region at the centre-stage of the country's planned terrestrial rendezvous with the emerging economic giants of the ASEAN bloc. The backdrop for such a recalibration is already existent – the region being at the centre of several frameworks of regional cooperation – *viz.* ASEAN, SAARC, SASEC, BBIN, BIMSTEC, Mekong Ganga Cooperation, etc. In this context the Act East Policy not only stresses on building economic and strategic relationships with countries of ASEAN bloc and also Bangladesh-Bhutan-Nepal (BBN) bloc, but also encompasses building on the physical and systemic infrastructure for establishing that. In other words, harmonious multi-modal connectivity and inter-people relations are also the cherished goals of the Policy. Therefore, the Act East Policy may be considered

as the opportune vehicle for transforming the economy and social outlook of Assam and the entire North Eastern Region.

Facets of The Act East Policy Relevant For The North Eastern Region

The Act East Policy in its present *avatar* has multifarious components touching wide ranging facets of India's relationship with her neighbours on the East – especially the countries of the ASEAN and BBN blocs. However, from the point of view of the North Eastern States, some of these components are germane and help leverage the geographical proximity of the region to the South and South East Asian countries for engendering its economic growth and doing away with its perceived isolation of being in perpetual periphery. In this regard, we may delineate 3 (three) such components of the Act East Policy in terms of 3 Cs: Connectivity, Commerce and Culture. Besides, there are other significant components – *viz.* Tourism, Academic Exchange, etc. – which deserve mention in the context of their importance to the North Eastern Region.

Connectivity

On the 'Connectivity' front, the Act East Policy envisages opening up of the land-locked North Eastern Region to the external world through alternative pathways traversing the ASEAN and BBN bloc countries. The avowed intent is to provide seamless connectivity on the lines of *Panchapath* (Roadways, Railways, Airways, Waterways and Information-ways) espoused by Hon'ble Prime Minister of India, including multi-modal and fast transportation system and effective telecommunication mechanism. In this regard, we are blessed with several geographical and historical advantages as far as connectivity with South and South East Asia is concerned; *viz.* (1) physical proximity of the countries to Assam is such that the aerial distances of most of the country capitals from Guwahati

is less than or within comparable range of the aerial distance of Guwahati with major metropolitan centres of the country like Delhi, Mumbai, Hyderabad and Chennai; and (2) there have been historical trade and connectivity links which got snapped at the time of independence and partition, the most prominent among them being the Old Silk Route, the Stilwell Road, the Road to Mandalay-Rangoon (Yangon), the Railway Lines through Bangladesh to Mainland India, and the riverine route to Chittagong Port. The need of the hour is to capitalize on the advantages and establish diverse connectivity networks.

Firstly, establishment of direct air links with ASEAN & BBIN countries is a low hanging fruit. Considering that the aerial distances of the capitals of most of the ASEAN and BBN bloc countries from Guwahati is less than or within comparable range of the aerial distance of Guwahati with major metropolitan centres of the country like Delhi, Mumbai, Hyderabad and Chennai; direct flights can be introduced between the capitals of all these countries and the capital city of Assam. Although the step may initially not be economically viable in the short run, it would definitely reap rich connectivity and commercial dividends in the long run – if supported externally through Viability Gap Funding. Such a step would kick-start the establishment of close relationship.

Besides, in order to establish Guwahati as a regional commercial hub, steps are being taken for upgrading the Guwahati Lokopriya Gopinath Bordoloi International Airport into a global airport with at least 200 Domestic/ International Flights. For that, a massive development programme has been taken in hand. Putting in place maintenance & repair and night parking facilities within the Airport has also been conceived. After the Adani group took over the airport, these processes have been put on the fast forward mode.

Moreover, since Guwahati is being developed as an aviation hub, it would obviously require massive cargo amenities for movement of

cargo. In this regard, an Air Cargo Terminal is under construction in the Guwahati LGB International Airport complex at Borjhar by the Airports Authority of India. Meanwhile, Assam has also begun exporting by air vegetables and fruits to cities in UAE, UK and so on. In order to provide the requisite infrastructure for these efforts, the State Government has also constructed a Perishable Cargo Complex in the Guwahati Airport.

Secondly, the 'Roadways' sector has been a bottleneck for both travel and trade in the North East. As part of the Act East Policy, the drawback has been planned to be converted into a major advantage. In this regard, the following road infrastructure may be considered for development.

(i) Mainland India – Bangladesh – North East India (MI-B-NEI) Corridors: The development of such corridors – e.g. Agartala-Dhaka-Kolkata, Silchar-Dhaka-Kolkata and Shillong-Dhaka-Kolkata – are essential for easing out the traffic through the chicken-neck corridor of Alipurduar-Coochbehar-Siliguri-Dinajpur. Besides, there shall be tremendous cost and time cutting for passenger and cargo vehicles if they are able to take any of these MI-B-NEI corridors rather than undertake their journey through the present tortuous path. For example, the Agartala-Kolkata distance *via* Silchar, Lumding, Guwahati and Siliguri is more than 1600 Kms; while that *via* Dhaka, less than 700 Kms.

(ii) Development of Road Access to Ports: Port accessibility is a vital prerequisite for unstinted growth of exports. Having access to the nearby ports in neighbouring countries like Bangladesh and Myanmar would open up the world for the industrialists and traders of this region – long constrained by the need to go over to distant and congested ports within the country. In this context, for ensuring smooth access to Chittagong Port in Bangladesh, the 612 Km road from Guwahati to Chittagong via

Shillong and Dawki need to developed as a 4 laned expressway. That requires 4 laning of the stretch from Umium (Barapani) near Shillong to Dawki, and Bangladesh may be assisted for 4 laning of the stretch between Dawki and Chittagong *via* Sylhet. Besides, the Kaladan Project promises to provide access to newly commissioned port of Sittwe in the Rakhine region of Myanmar. But for that, we need to complete the 4 laning of the remaining 32 Kms of the East West Corridor in the Dima Hasao District of Assam, and also consider 4 laning of the stretch from Silchar to the border town of Zorinpui *via* Aijawl.

(iii) Development of Road Access to South East Asia: The road access to this vast region may be developed on a number of feasible fronts. The Asian Trilateral Highway is going to connect Moreh on the Myanmar-Manipur Border with Mae Sot in Thailand going through the vast Burmese terrain, and thereby connecting the North Eastern Region to the fast developing ASEAN road network. But in order to take full advantage of that Highway, we need to improve the connecting internal roadways by the 4 Laning of the 401 Kms of NH 39 from Golaghat to Moreh, early completion of the East West Corridor from Doboka in Nagaon District to Silchar, and the 4 Laning of the road from Silchar to Moreh via Jiribam and Imphal. Of course, how can we forget the reopening of the heritage Stillwell Road up to Kunming.

(iv) Internal Roads: As apparent from the discourse, any big expressway project along any conceivable international corridor can be effective only if the connecting internal roads to economic and political hubs as well as to other expressways are improved to international standards. In this context, Asian Development Bank (ADB) has been trying to identify & prioritize the requisite roads and road stretches required to develop road connectivity of Assam with BBN and ASEAN countries. The exercise has been undertaken as part of its study

on behalf of the Assam Government for laying the roadmap for the development of Assam and North East India under the scope of Act East Policy.

(v) Logistic Hubs along Highways: Since highways would involve carriage of goods and movement of passengers, the need for logistics hubs and storages on one hand and motels and roadside amenities on the other would be felt all alongside the highways concerned. The development of logistics for trade obviously requires proper planning and financial support. In this regard, a Multi-Modal Logistics Park is being developed at Jogighopa – near Goalpara but on the North Bank of the Brahmaputra River – by the Union Ministry of Road Transport and Highways (MoRTH) under the Bharatmala Project. Another Multi-Modal Logistics Park has got the green signal at Panchgram near Silchar in the Barak Valley. We may also contemplate similar logistic parks at Digboi in the extreme East, Dhubri in the extreme west, and also places like Numaligarh and Bongaigaon (which like Digboi and Noonmati in Guwahati house refineries and have tremendous potentialities for multi-modal connectivity besides those for economic growth).

Thirdly, the 'Inland Waterways' sector has always been the Cinderella of the transportation network of the region. Filled with large rivers and numerous meandering streams and huge ponds and lakes, water transport is an obvious viable, cost-effective alternative mode of transportation. No wonder 20 out of 111 national waterways recently declared by the Union Ministry of Shipping lie in the North East. Among the major river routes are the Brahmaputra and the Barak rivers in Assam, which have been designated as the National Waterways 2 and 6 respectively. There are on the whole around 3,839 Kms of navigable river routes in the region. There is moreover the promise of connecting through our internal waterways to the seas in our neighbouring countries. In fact, the Britishers used these

internal waterways along with railways to transport products to the ports in present day Bangladesh – *viz.* Chittagong (Chottogram) – and Myanmar (Burma) – *viz.* Rangoon (Yangon).

But presently this high potential mode of transportation lies in an underdeveloped state thanks to a few inherent lacunae. Both the Brahmaputra River (NW 2) and Barak-Kushiyara (NW 6) lack the minimum draft to support vessels perennially – which call for dredging and development of permanent river conservancy works. Besides, night navigational facilities need to be provided along the entire length of both the waterways. Moreover, we need to develop proper ports on the Brahmaputra and the Barak Rivers with state-of-the-art jetties, warehouses, passenger facilities and civic amenities, other trading logistics, and connecting arterial roads to the ports – in order to integrate the inland waterways into the overall trading mechanism.

Fourthly, the Railway connectivity of Assam and the North East to Bangladesh, through Bangladesh to the Rest of India, to Myanmar, and through Myanmar to East and South East Asia may be explored to bring about that connectivity revolution which will thoroughly transform the insularity of the region for good. As an initial step, the Indian Railways has already taken the initiative to link all the North Eastern States including Manipur, Mizoram and Arunachal Pradesh. As an intermediate step, railway connectivity may be considered for extension to border towns like Golokganj, Sutarkandi, Zorinpui and Moreh – so as to facilitate large-scale border trade.

While conceiving the future of railway connectivity with Bangladesh, it may be observed that the railway line to Chittagong within Bangladesh traverses very close to the Agartala – Sebroom Railway Line within the Indian territory in Tripura. This opens up several potential linkages between the two railway lines. In this context, the 15 Km long Agartala – Akhaura Railway Line linking Indian Railways with Bangladesh Railways is nearing completion.

The old Mahisashan Sahabazpur line, which was the railway link during the colonial days and got uprooted by the Pakistani forces after their defeat in the 1965 war, may be put on the fast track for restoration. The project once completed would go a long way in restoring the region to its pre-partition connectivity with the outside world; because the linkage shall not only facilitate transit to Mainland India through Bangladesh, but also enable access to the Chittagong Port of Bangladesh.

On the East and South East Asian front, we know that China has already made headway in this regard by starting to lay railway lines through Myanmar, Laos, Thailand and Vietnam to the ports thereof. A thriving internal railway system in the ASEAN is also on the path of development. We need to plug into the system through Myanmar. In this regard, other than the Moreh-Mandalay linkage through Kalay and Monywa, we can consider a railroad route conceived by the Britishers way back in 1915 – *i.e.* the Ledo-Mogaung line. Mogaung is right at the crossroads of the Mandalay-Kunming line. Recently, the Chinese President had mentioned about a possible bullet train line from Kunming to Kolkata *via* Mandalay, Silchar and Dhaka. While we may have apprehensions about his hidden agenda behind such a project, just as we have about their Belt & Road Initiative; we cannot deny that such high speed rail connectivity is the most plausible scenario in the future of this extended region.

Last but not the least, the Information-ways through digital connectivity from Cox Bazar is not only going to fast track the cyber relationship of the North East with its neighbouring nations, but also enable it to be the next IT hub of the country – considering that nearly 20% of the IT-based human resources of the entire country comes from this region.

India has only two landing stations of the International Sub-marine Fibre-optic Cable Network – viz. Mumbai and Chennai; both of which are far from North East India. Therefore, the region is

crippled because of poor bandwidth and speed. However, it may be mentioned in this context that the International Gateway may be accessed from its Cox Bazar Landing Station (CLS) in Bangladesh. Once that link is established, it may not be long before the North East becomes the next Silicon Valley of India.

Commerce

Although the North Eastern Region shares a long terrestrial border with the countries of the ASEAN and BBN blocs, the cross-border trade of the region with these neighbouring countries through the land route is abysmally low. It is in fact less than 1% of the total mutual trade of these countries with India. There are several factors for such a sorry state of affairs. It is through circumventing such factors and meeting the challenges head on that we can effect a change in the picture.

Firstly, there are several tariff and non tariff barriers on the trade with the countries like Bangladesh and Myanmar. That emanated from the security considerations and apprehensions that freer trade would enable smuggling of contraband items (*viz.* drugs, weapons, counterfeit currency, etc.). Besides, silo mentality on the trade front adopted by countries like Bangladesh has also resulted in the cross border trade through the land route, especially with Bangladesh, not been able to attain its true potential. The commodities that are presently allowed in any LCS or ICP or River Port for imports & exports are restricted to a specific list – the positive list. We need to do away with such a list. Rather, we need to have a negative list of items which cannot be traded. We should be able to trade the rest of the items freely – thereby enabling us to export and import as per our capability and requirement.

There is the possibility that the Bangladesh side may not agree to that, considering the adverse Balance of Payment (BoP) position of Bangladesh vis-à-vis India. Therefore, we may float a Roadmap

with ultimate goal of Negative List only; but meanwhile propose for gradual inclusion of more and more exportable goods in the Positive List. If this issue is sorted out, then the trade with Bangladesh is expected to see a quantum jump.

With Myanmar, as with 3 other countries forming the CLMV (Cambodia Laos Myanmar Vietnam) bloc, India has offered very special incentives for trade including heavy relaxation of custom duties. Yet because of other factors like absence of adequate facilities in the land ports, as well as law and order issues, are responsible for stymieing the growth of cross border trade. It is through addressing these teething troubles, we can set the ball rolling for land route trade not only with Myanmar, but also through it to the rest of the ASEAN bloc.

Secondly, the multi-lateral South Asian Free Trade Agreement (SAFTA) has quite adversely affected the goods trade with Bangladesh. The custom duties imposed by Bangladesh on imports from India are very high - perhaps done to ease the overall Balance of Trade (BoT) heavily tilted against exports from Bangladesh. But that has very adversely affected the trade with the North East.

Bangladesh has also imposed a Minimum Import Price (MIP) on certain exports of India – thereby fixing prices below which the goods cannot be imported in Bangladesh. That has artificially shored up prices of exported goods of India in Bangladesh.

We need to negotiate with the Government of to reduce and remove the high import duties imposed by Bangladesh and also remove the MIP on certain goods, with the premise that growth in mutual trade would be more beneficial to Bangladesh than putting up artificial stumbling blocks to purportedly “shield” its “fragile” economy.

We can accomplish either through bilateral mechanism or through the SAFTA review mechanism. However, we may also work out a Bilateral Free Trade Agreement signed with Bangladesh in place of

SAFTA – in line with the Indo-Sri Lankan Free Trade Agreement. This would obviously shore up the bilateral trade through the land route in the North East.

Thirdly, the facilities at the Land Custom Stations & Integrated Check Posts through which the North Eastern region harbours its land route trade with Myanmar in South East Asia and Bangladesh and Bhutan in South Asia are definitely not up to the mark. They hamper rather than facilitate such trade. And to top it all, out of the 42 notified land customs stations (LCS), only 26 are presently functional. Even in the functional stations, the facilities seem to be abysmally poor. Rest of the trade is through informal markets where even the basic minimum civic amenities are absent.

Therefore, the LCS and Integrated Check Posts need to be properly developed with provisions of basic minimum civic amenities therein, as well as facilities for seamless transportation, warehousing, telecommunications including data availability, ATM and Currency Exchange. In order to bolster other economic activities in the backdrop of cross border trade, the upgrading of larger border trade centres like Sutarkandi and Moreh to integrated border townships may be fruitfully considered.

Nonetheless, another serious lacuna may be observed in the border trade centres that have come up. The centres have no strong institutional mechanism, and are run on an adhoc basis. Since State Governments are not in a position to support the operational and maintenance expenses. Therefore, the Union Ministry of Commerce may devise a suitable mechanism for administering the centres through the Land Port Authority, or may also support the State Governments with OPEX for running the centres.

Fourthly, there is also the question of congestion of Land Ports. Most of the Land Ports are congested, because of poor amenities, storage facilities, parking facilities and narrow roads. These need to be bolstered with more facilities, and Off Border Clearance need to

be started. For that, we understand that Electronic Cargo Tracking System, Central Quarantine System, etc. need to be activated. And for that, the State Governments should submit its list of goods based on their exportable goods. Besides, recognition of certificates of BIS and other Indian Quality Monitors by Bangladesh will simplify clearance at the LCPs, and unnecessary duplicity of quality checking of goods at the Border can then be avoided. That would make cross-border trade through the land route hassle-free.

Last but not the least, industrial development of North Eastern Region is a *sine qua non* of sustainable trade relations with the neighbouring countries. Because if we open up the trade without enhancing the productive capacity of the region, it would only lead to rendering it as a source of raw materials and flooding it with foreign goods – especially the cheap Chinese goods. Therefore, it has been felt that an Industrial Corridor needs to be set up in the North East. Besides, private investments in the region also need to be promoted in a big way.

Culture

The diverse races, genes, cultures, and religions of the North Eastern Region of India have a striking similarity with those of South and South East Asia. Therefore, that provides the platform of not only cultural exchanges, but also people to people contacts in multifarious manners. In this regard, enhanced people to people relations have not only been one of the key objectives of the Act East Policy from the point of view of Assam, but it may be regarded as one of the key drivers for sustaining the connectivity and trade relations in the long run.

In this regard, the opening of the Consulates of all ASEAN countries in Guwahati has been a single-minded endeavour of the Government in order to facilitate easy movement of people between North East India and the countries of the ASEAN bloc. Along with

the opening of consulates, it may be noted that the existing Visa Regime also needs to be simplified for ensuring freer movement of people, including introduction of provisions like visa-on-arrival. We may also contemplate relaxing the necessity of Restricted Area Permit (RAP) required for coming to the North Eastern Region for citizens of ASEAN and BBIN countries.

Tourism

Mutual Tourism is one of the natural corollaries of people to people relations on account of cultural links, along with improved connectivity and infrastructure. Tourism is therefore one sector which can be harnessed in the backdrop of closer trade links of North East India with South and South East Asia. In this regard, the North Eastern Region does have a multitude of offerings on the tourism front – from its biodiversity laden flora and fauna to its blue hills and lush green valleys, from its picturesque tea gardens to the river cruises on the majestic Brahmaputra, from its religious shrines of different faiths to its prospects of adventure tourism and golf tourism. Besides, considering the proliferation of super-specialty and multi-specialty hospitals and nursing homes in Guwahati and a few other cities of the region, medical tourism may be another aspect of tourism having tremendous prospects.

Academic Exchange

Ties between universities and research institutions is another sphere of interest of Act East Policy. In order to facilitate closer academic and technical collaboration, we need to establish close relations between the leading Universities and Research Institutions of Assam and the leading Universities and Research Institutions of the ASEAN countries. Besides, we may contemplate having a chapter of the South Asian University in Assam, considering the uniqueness of the region. Moreover, since the youth is the future of any country

or region, and both North East India and South East Asia have large young populations; the Student Exchange Programmes may be initiated in a big way to integrate the two regions.

Implementation of The Act East Policy – Institutions & Agencies

In order to exploit the potentialities for all round development of the region offered by the Act East Policy, the State Government of Assam has undertaken a number of unprecedented initiatives on its own. In this regard, the State Government created the Act East Policy Affairs Department exclusively to capitalize on the explicit and implicit development prospects emanating out of the avant-garde policy. The designated role of the Act East Policy Affairs Department is 3 pronged: *viz.* that of a body effecting stakeholder integration, that of a mechanism for policy generation and documentation, and that of an agency seeking expeditious implementation of key projects.

In its two years of existence, the Act East Policy Affairs Department has had its own share of achievements and success across sectors. Of course, its mode of working required it to hand hold as well as hold the hands of the stakeholder departments and agencies of both the Central and the State Government, as well as of other State Governments in the North Eastern Region.

Regarding 'Connectivity', while there has been rigorous follow up on flagship projects of the Central Government like Asian Trilateral Highway and the Kaladan Project on one hand, the Department by itself has conceived and pushed forward projects of its own contemplation. On the airways front, the State Government of Assam worked with the Ministry of Civil Aviation of the Central Government to extend the UDAN Scheme of subsidized air-fares to ASEAN countries within 2 hours of flying time; committing to provide VGF for the extended scheme to the tune of Rs. 100 crores per year for 3 years in the process. The efforts of the State Government

witnessed fructification with the formulation of a tweaked version of UDAN scheme – the UDAN International, which envisages direct flights from Guwahati to 6 major cities of ASEAN and BBN countries. Such direct flights did get introduced from Guwahati to Dhaka, Bangkok and Singapore with great fanfare in 2019. The initiative however fell flat due to the lack of right impetus on the demand side, and eventually wound up due to COVID 19 pandemic over the next two years. But teething troubles need not thwart a concerted effort in the near future. However, the economic factors have to be managed to make the endeavour sustainable.

On the roadways front, as already mentioned, the Act East Policy Affairs Department of the Assam Government has got the Asian Development Bank (ADB) to undertake a detailed study. The ADB Report on the basis of that study – "Assam: India's Expressway to the ASEAN" – identifies and prioritizes roads (both external expressways and internal connectors) which need to be constructed. Besides, the Act East Policy Affairs Department had in association with the Ministry of Commerce, Government of India, organized a mega Indo-Bangladesh Stakeholders' Meet in October 2019. One of the objectives of that event was the creation of awareness about the BBIN Motor Vehicles' Agreement and the Agreement with Bangladesh for use of Chittagong & Mongla Ports, and deliberations therein showed the pathways for the resolution of issues in order to have effective implementation of these agreements. However, COVID 19 pandemic was again the culprit putting a dampener on the accomplishments of that summit. Yet recent developments have showed quite an amount of resuscitation on those exercises.

On the Shipping & Inland Waterways front, the single-minded efforts of the AEPA and Transport Departments of the Government of Assam have led to the dredging of the Brahmaputra and Barak rivers being carried out by the Inland Waterways Authority of India (IWAI) in order to maintain minimum draft for ensuring round the

year navigation on these rivers. Besides, a World Bank Project on Internal Waterways in Assam is also being carried out by the State Government. Moreover, it is worth mentioning that when the State Government organized the Global Investment Summit 2018, one of the Core Sectors for soliciting private investment was Inland Water Transport & Port Development.

On the Information-ways front, the State Government has been taking concerted steps for getting the net connectivity from the Cox-Bazaar Landing Station. In this regard, it has been taking up the issues of high rentals of the Landing Station with the appropriate authorities. It has also managed to rope in the Power Grid Corporation of India Limited (PGCIL) to augment BSNL.

Regarding facilitation of trade & industrial growth, the State Government had the plans for constructing a World Trade Centre (WTC) in the form of two 60 plus storied twin towers in Guwahati. Although it had hit a rough patch midway, efforts are on to revive the project. Besides, it has enacted several policies for facilitating industrial investment – *including* an exclusive Start-Up Policy and Logistics Policy. All these policies provide incentives to the potential investors and entrepreneurs, and also simplify and unambiguously delineate the procedures for them. After the Commerce Ministry of the Central Government announced the North East Industrial Development Scheme (NEIDS) 2017, the State Government formulated a new industrial policy – i.e. Assam Industrial Policy 2019.

The AEPA Department had also conceived the proposal for setting up of an Industrial Corridor in North East India from the Dawki Border *via* Guwahati, Golaghat and Imphal to Moreh *along the lines of* the Delhi-Mumbai Economic Corridor. The Department of Industrial Policy Promotion (DIPP) had accepted the proposal, and presently a Feasibility Study on the proposed Industrial Corridor is being conducted by ADB. The industrial corridor is expected to

cater to products in high demand but short supply in Bangladesh and CLMV countries.

The Department has also been organizing a number of conclaves to involve the academic fraternity and also create awareness among the various stakeholders. Beyond the realm of the State Government of Assam, the other Governments like the Indian Central Government and some active State Governments (*viz.* Meghalaya, Tripura, Manipur and West Bengal) are all working quite vigorously in the direction of Act East. International funding agencies like World Bank, ADB and JICA (the Japan Government agency) are supporting the endeavour in a big way. Non Governmental Organizations are also chipping in. But one such organization has carved out its distinct niche in this venture – *i.e.* the India Foundation. That foundation has organized several summits and programmes across the length and breadth of the greater region, and has been able to generate lots of positive vibes through its efforts.

Challenges Ahead

While we can expect the road ahead in the direction of 'Act East' to be having a golden end, but that road itself is evidently not paved with gold. Challenges lie both in the present state of affairs, as well as in the future scheme of things. Some of such problems and challenges we would need to encounter are as follows –

i) **Underdeveloped Connectivity Infrastructure:** Our road connectivity – both within and with our neighbouring countries – still are not upto the international standards. There are no four-lane express highways connecting the commercial hubs of Assam and the North East to the border trade points. The difficult terrain unsurmounted by good road network is thus further reducing the effective economic access of the region.

   Besides, the penetration of railways is still inadequate.

Moreover, as already mentioned, the potential for using internal waterways for people and goods movement is more or less unutilized.

ii) **Trade & Commerce Bottlenecks:** As already mentioned, the trade infrastructure of the North Eastern region with Myanmar in South East Asia and Bangladesh in South Asia are not at all up to the mark. Out of the 42 notified land customs stations (LCS), only 26 are presently functional; and even in the functional stations, the facilities seem to be abysmally poor. Besides, the road network with border towns is not capable of accommodating heavy-duty trucks, and often lead to traffic congestion at the border leading to delays and loss of perishable goods. Inadequate railway siding capacity and disruption of pre-partition railway linkages also hamper the growth of cross border trade.

iii) **Information Exchange & Net Connectivity:** In spite of the fact that one of the major gateways of international fibre-optic net connectivity through sub-marine cables is just across the border at Cox Bazar in Bangladesh, the information exchange and net connectivity has not yet picked up. The internet access in the areas of Myanmar bordering the North East is not at all satisfactory.

iv) **Visa Regimes:** The visa regimes we have with our neighbouring countries are complex and not people friendly. Getting visas is still a strenuous exercise. While Bangladesh has opened up its Assistant High Commissions in Guwahati and Agartala, for going to Myanmar we need to go to the Myanmar Embassy in Delhi or to its Consulate in Kolkata. The same is the case for people from these countries desiring to come to our region for business or tourism. There is no provision of visa on arrival. Therefore, the people do not feel welcomed – neither here nor there.

v) **Harmony of Policies & Standardization of Systems:** Many

of the policies of the Indian Government and its federal units are not in harmony with those of the neighbouring countries. For example, as already pointed out, while from our side we are pushing for free trade, the Bangladesh authorities have taken advantage of their LDC status to enhance import duties to abnormal levels. The obvious result of such policy mismatch is that the requisite synergy could not be generated till now. Besides, the systems in the different countries are not similar and more often than not incompatible – as a result of which travel and transportation of goods are not seamless, and have a lot of strings attached.

vi) **Law & Order:** The overall law and order situation issue in the region has undoubtedly improved in the last half of a decade. We no longer live in the midst of bandhs, bombs and killings. However, like any other malaise the problem is taking its own time to die a natural death. The same is the same in the bordering countries like Bangladesh and Myanmar. The Rohingya crisis has recently added a new dimension to it. Although the earlier concerns on militant groups taking shelter in neighbouring countries have subsided with the installation of friendly governments in Bangladesh and Myanmar, the shadow of the Chinese hand still seem to linger. Of course, it has been observed within the North Eastern Region itself even now that infrastructure creation and industrial investment in certain areas are often greeted with demands of extortion and death threats from militants, former militants, and organized goons masquerading as youth leaders.

vii) **Immigration:** One of the major mental blocks we harbor towards opening up to Bangladesh, and even Nepal and Myanmar to some extent, is the vexed immigration problem. Large scale illegal immigration from what is now Bangladesh over the last 100 years has threatened the demographic balance

of Assam. Similar phenomenon in a mitigated manner also originated from Nepal. Recent incidents make us wary even about the Myanmar side with Rohingya Muslims trying to sneak in every now and then. While there has been protective restrictions like Inner Line Permit and Restricted Area Permit, but these have managed to hinder the visit of bonafide people from these countries. Of course, it is expected that if the recently undertaken National Register of Citizens (NRC) exercise is extended to other Indian States, then the problem may be surmounted.

viii) **Smuggling:** The smuggling of timber, contraband items (*including* rhino horns) and cattle to neighbouring countries; and illicit inflow of drugs and such other items therefrom – all seem to stand in the way of opening up the borders with our neighbouring countries for trade and people to people visits.

ix) **Necessity of Defence Clearances:** As per a standing circular of the Ministry of Defence, any construction or development work undertaken in the border areas requires the prior clearance of that Ministry. While it may be opined that such a requirement is necessary from the nation's security point of view, but that has definitely hampered the development of facilities in these areas for cross border trade.

x) **Apprehension of Chinese Goods Flooding Markets:** There is always the apprehension that simply opening up the cross-border trade through the terrestrial front would result in flooding of the region's markets with Chinese goods, thereby leaving the local small-scale industries in the lurch. Such an apprehension is also not altogether unfounded as the Chinese have been dumping their goods over the years.

Epilogue

How we move forward on our road to acting on the eastern front depend a lot on how we manage to overcome the challenges and take advantage of the huge potentialities that lie before us. While papers in academic seminars and table talk among stakeholders may dream of a Utopia, there is always the difference between the cup and the lip. A rough SWOT analysis says it all:

- Our strengths seem to lie in the region's physical proximity with South East Asia and age-old trade and cultural links;
- Our weaknesses, as pointed out in the 'Challenges' section, are obviously our present debilitated road connectivity, trade and commerce mechanism being inclined towards the national mainland through the chicken-neck corridor – while the trade through the 4500 odd Kms of International Border is primarily still informal and has many a bottleneck to break, poor internet and tele-communication integration, divergence of policies and complex visa regimes between us and the countries of South East Asia;
- Our opportunities without an iota of doubt lie in the new Act East Policy, systems being put in place on an accelerating pace and our own initiatives; and
- Our threats are quite many – ranging from our lingering security problem to China already being involved in the aforementioned countries, to militancy and demographic problems respectively in two of the frontline countries – Myanmar (Burma) and Bangladesh.

However, we have to accept that the takeaways of our efforts are far too great. We need not look up to the European Union for inspiration. Just round the corner our ASEAN bloc and East Asian neighbouring countries have proved to one and all that opening doors and taking the hoi polloi along provide us with all the requisite incentives to

take the challenges head on. What then can turn the tide in our favour? It is no doubt the active partnership in the venture by the academic and trade fraternities, and the taking of ownership of the effort by the next generation.

References

1. ADB (2020); "*Assam – India's Gateway to the ASEAN*", Study Report of Asian Development Bank, March 2020.
2. Alam, S. (2019); "*Perspectives & Initiatives of Assam Govt. on Act East Policy*", Seminar Compendium of Interface 2019 (NEC Sponsored Seminar of the Department of Business Administration, Tezpur University).
3. Ali, Syed Muazzem (2018); "*The Current and Future State of India–Bangladesh Relations*", Strategic Analysis, 42:5, 529-537.
4. Banerjee, Pritam (2015); "*Bangladesh-Bhutan-India-Nepal Motor Vehicles Agreement: Unlocking the Potential for Vibrant Regional Road Freight Connectivity*", Discussion Paper, July 2015, CUTS International.
5. Barua, Jishnu (2013); "*Locating North East in India's Geo Strategic Environment: Future Trends with Special Reference to Myanmar and China*", Public Lecture at Cotton College, Guwahati, 27th August 2013.
6. Bezbaruah, M. P. (2018); "*Look East – Act East and the North East*", AsCon Reflections Series 001, Asian Confluence, March 2018.
7. CUTS International (2014); "*Indo-Bangladesh Trade Potentiality: An Assessment of Trade Facilitation Issues*", Study Report, CUTS International, April 2014.

8. Das, Ram Upendra (2016); "*Enhancing India Myanmar Border Trade: Policy and Implementation Measures*", Report of Department of Commerce, Ministry of Commerce and Industry, Government of India, May 2016.

9. EXIM Bank (2015); "*Bangladesh: A Study of India's Trade and Investment Potential*", Occasional Paper No. 170, EXIM Bank's Occasional Paper Series.

10. FICCI and PwC (2014); "*Gateway to the ASEAN: India's North-East Frontier*", Report of Joint Study by FICCI and PwC, 27th November 2014.

11. CSEAS (2018); "*Act East Policy and the Importance of Myanmar and Northeast India*", Report of Panel Discussion of Center for Southeast Asian Studies (CSEAS), Jindal School of International Affairs, 27th September 2018.

12. Karim S. and Hasan G.Q. (2015); "*Motor Vehicle Agreement between Bangladesh, Bhutan, India and Nepal : Implications and Challenges*", BIISS Journal, Vol. 36, No. 2, April 2015: 165-180.

13. Pulipaka S. *et al* (2017); "*India and Connectivity Frameworks*", Delhi Policy Group (DPG) Policy Report, November 2017.

14. Dhar, B., De, P., Das, G. and Singh, E.B. (2011); "*Expansion of North East India's Trade and Investment with Bangladesh and Myanmar: An Assessment of the Opportunities and Constraints*", RIS Report, October 2011.

15. Shringla, Harsh Vardhan (2018); "*India–Bangladesh Relations: An Indian Perspective*", Strategic Analysis, 42:5, 524–528.

16. Taneja, Nisha *et al* (2019); "*India-Myanmar Border Trade*", Working Paper 378, ICRIER, June 2019.

17. World Bank (2006); "*India-Bangladesh Bilateral Trade and Potential Free Trade Agreement*", Bangladesh Development Series, Paper No: 13, World Bank Office, Dhaka, December 2006.

18. Ziipao R.R. (2018); "*Look/Act East Policy, Roads and Market Infrastructure in North-East India*", Strategic Analysis, 42:5, 476–489.

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CHAPTER 4

An Overview of Performance of MSME in Assam

Payel Priya Kashyap
Dr. Jitu Tamuli

Introduction

The Micro, Small and Medium Enterprises (MSMEs) are important for growth of Indian economy in the context of industrial sustainability in an environmental friendly approach. The assured benefits of MSME are crucial in a country like India with the presence of social, cultural, gender, economic and financial inequalities. The MSME provides the jobs which enhances gender as well as social equity. It is acting as a patron of traditional and diverse cultural industries. The growth of MSMEs is a roadmap for achieving the vision of India's financial inclusion and self-reliant economy as it is the second employment venture in both rural and urban areas after agriculture.

The MSME is worldwide accepted as engine of growth for developing and underdeveloped countries as it contributes 50 percent of global GDP and 70 percent of global employment (MoMSME, 2021). In India, this sector provides around 45 percent of the gross manufacturing output, 40 percent of the gross exports and 30

percent of domestic GDP. After the unprecedented emergence and hit of the COVID-19 Pandemic, the Government of India places great emphasis on self-resilient economy. The recent Union budget (2022-23) focused on recovery and development of MSME with providing great emphasis on special attention on liquidity boost with a 36 percent hike in budgetary allocation for recovery of this sector (MoMSME, 2022).

In India, MSME is used in a broader term than Industry because it considers both manufacturing and services sector and there were distinct definitions for MSMEs for manufacturing sector and service sector prior to July, 2020. According to this definition, in manufacturing sector, an enterprise is said to be a micro unit if investments in plant and machinery does not exceed Rs. 25 lakhs; a small enterprise if investments in plant and machinery is between Rs. 25 lakhs and Rs. 5 crores; and a medium enterprise if investments in plant and machinery is between Rs. 5 crores and Rs. 10 crores. In servicing sector, an enterprise is defined as a micro unit if investment in equipments does not exceed Rs. 10 lakhs; a small enterprise if investment in equipment is within the range of Rs. 10 Lakhs and Rs. 2 crores; and a medium enterprise if investment in equipment is within the range Rs. 2 crores and Rs. 5 Crores. While in the new definition of MSME, there is a unique definition for a MSME for both in manufacturing sector and in service sector (MoMSME, 2022). This paper considers only the old definition of the MSME as the data used for analysis are based on the old definition.

In India, the Ministry of MSME works as patronage for many statutory and non-statutory bodies: the Khadi and Village Industries Commission (KVIC) and the Coir Board besides National Small Industries Corporation (NSIC), National Institute for Micro, Small and Medium Enterprises (NIMSME) and Mahatma Gandhi Institute for Rural Industrialization (MGIRI). In the development of Assam, these bodies have great roles,

specially the Khadi and Village Industry. Assam is an agrarian economy and recently there is a shift of agriculture to industry and services sector due to low farmer income and productivity of agriculture and rapidly growing population. Rural village industry occupies the pivotal role in the industrial outcome of Assam. Again a vibrant and diversified rural economy can be a viable option for generation of employment with income for rural population (Papola T. S and Misra V. N, 1980). In this regard, there is need for rural industries to grow primarily because of the following three reasons: (a) the agricultural growth is not able to provide suffice employments to absorb rapidly growing rural population; (b) underemployment in agriculture; and (c) the slow pace of growing of organized sector mainly in urban areas is failed to absorb all the surplus labour force (Das, 2014).

Again, in the North Eastern states, the development of industrial sector is in nascent stage. It is questionable that despite of heavy natural resource base, why this region is laging behind compared to other states of India. The main reasons for the growth of MSMEs is of prominent important for North Eastern States are: (i) As the North Eastern states are lack of capital, therefore, development of MSMEs is important as it is cost efficient, (ii) the development of MSME generates employment opportunities for labour abundant economy; (iii) Compared to capital intensive large industrial units MSMEs provide environmental sustainability and green jobs; (iv) MSMEs provides a chance for recuperate traditional and village industries otherwise large scale industries create threat to these industries; (v) MSMEs entails scope for inclusion of all sections of people without any bias of gender, class and caste and establish equity; and (vii) MSMEs generates a sustainable income for its stakeholder and hence has the capacity to eradicate poverty. Therefore, considering these assured benefits of development of MSME sector in the North Eastern States, it is assumed that in these states, for development of industrial sector, the development of MSME is vital. The

Government of India allocates 10 percent of total budgetary fund of MSMEs to the development of MSME sector of NE region. In 2012-2013 budgets, it was Rs. 283.50 crores, which was increased to Rs. 1608.61crores in 2021-22 budgets. Assam is one of the North Eastern states and the proper development of MSMEs is important to bring prosperity to its people. Therefore, in this paper, an attempt is made to explore the performance of MSME sector in Assam.

This paper is organised under five sections. In section-1, the broad perspective of importance of MSME sector in economic development of India as well as Assam is discussed and the objective of the paper is laid out. The section-2 discusses the materials and methods used in the study. The section-3 consists of detailed discussion of the performance of MSME in Assam. Section-4 sum ups discussion in the paper and draws conclusion based on findings of the study.

The main objectives of this paper are as follows:

- To know the performance of MSME sector in Assam in the context of MSME units, employment, production and investment
- To know the performance of Khadi and Village Industry (KVI) of Assam
- To compare the performance of the Assam's MSME with the best performer state in India as per the NSS 73rd Round and Annual Reports of Ministry of MSME

Materials and Methods

This study is purely based on secondary data. In the first instance, an attempt has made to examine the overall performance of MSME sector in Assam. For this purpose, the data on year-wise registration of number of MSME units, total number of employment, total amount of fixed investments etc. are collected from various annual reports of the Ministry of MSME, reports of RBI, Udayam registration, all India

report of Sixth Economic Census. Then compare the performance of Top three performer states with performance of Assam using the state wise distribution of parameters like employment, MSMEs units etc. Descriptive statistics (rate, ratio, percentage, Cumulative Annual Growth Rate etc.) are used for analysis.

Discussion

As per the data released by the Economic and Political Weekly Research Foundation, Mumbai in 2003, the share of industry to Assam's GSDP was only 25.02 percent in 1999-2000, while shares of agriculture and services were around 36 and 40 percent respectively. For an economy to prosper there should be synchronized growth of all the sectors. But despite of heavy resource base, the performance of industry in Assam is abysmally poor. In the industrial sector, the role of MSME is very significant in Assam. It basically acts as a connecting bond between the agricultural and industrial sectors. The total number of units in North Eastern states was only 2 percent of the total units of MSMEs in India as per the study conducted by the Indian Institute of Entrepreneurship (IIE) on Small Scale Industries on North –East Region in 2003. This picture is more desperate for Assam as it is one of the North Eastern states of India.

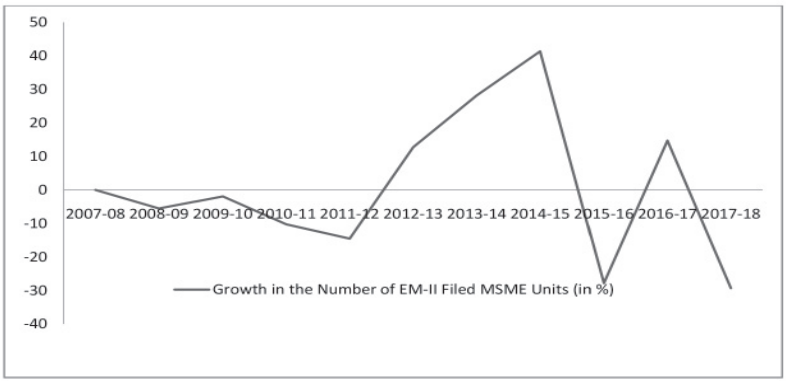
There is prevalent of registered and non- registered units of MSMEs in India. in India, there is about 99.7 percent of enterprises are in the unorganized sector of which about two-third do not have registration and a lump sum part of these enterprises are MSME (Kapoor & Kowadkar, 2022). There was a system of registration by small scale units to the District Industries Centres (DICs) prior to the MSMED Act, 2006. Then, after the implementation of MSMED act, MSMEs used to file Entrepreneurs Memorandum (Part-I) at DICs before starting an enterprise and after commencement of production, the entrepreneur used to file Entrepreneurs Memorandum (Part-II or EM-II). After that, on 26 June, 2020, Ministry of Micro, Small and

Medium Enterprises introduced an online registration portal known as 'Udyam' (Ministry of Micro S. a., 2022).

There were 19,864 MSME units (registered and non-registered) in Assam in 2006-07. This figure increased to 21,618 in 2007-08 and finally 1,274,165 in 2021-22. The Compound Annual Growth Rate (CAGR) of Total MSME units for period 2006-07 to 2021-22 is 12.32 percent Assam. The units of MSMEs registered to EM-II are more accountable for the production of the MSME sector in an economy. It includes only registered units. The chart 1 depicts the annual growth rates of MSME units registered in EM-II in Assam. The annual growth rates show a non-uniform pattern. It was 1811 in 2007-08 in Assam. This number declined till 2012-13 and then increased to 1860 in 2013-14. Then again it declined to 1539 units in 2017-18. The CAGR of units of EM-II filed MSME in Assam from 2007-08 to 2017-18 was -1.61 percent. This negative decadal CAGR is due to the existence of bottlenecks like lack of proper business environment, lack of access to credit and banking facilities, poor access to market and lack of adequate skills (Sarkar, 2016).

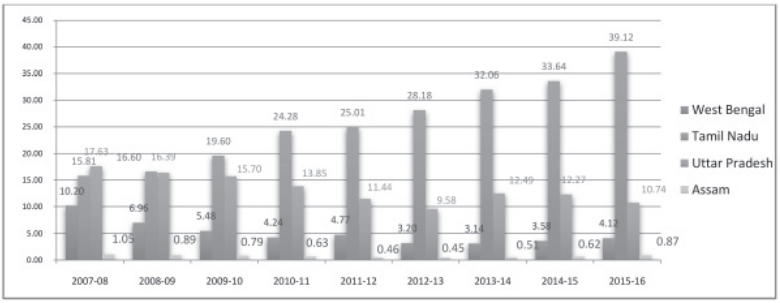
Chart 1: Year-wise Growth Rate of EM-II Filed MSMEs in Assam

Source: MSME. Annual Reports 2011-12, 2015-16 & 2019-20, Ministry of MSME, GOI



As per all the annual reports published by the Ministry of Micro, Small and Medium Enterprises, GOI as well as NSS 73rd Round, 2015-16, Tamil Nadu, Uttar Pradesh and West Bengal are the three best performer states among the top ten performer states in the MSME sector of India. Although Assam is among worse performer in the MSME sector of India but it is the best performer among the North Eastern States of India. Therefore, there is a rationale to analyse the gap in the performance in Assam and best performer states to cope the development in these states. The number of MSME units in these states is huge compared to Assam. In case of units of EM-II filed MSME, share of MSME units to the total MSME of India is the highest in Tamil Nadu from 2008-09 to 2015-16 (chart 2). Among these three states also, Tamil Nadu state's share to the total MSME units in India is continuously increasing over the years. In case of Assam, the share of EM-II filed MSME units to the total EM-II filed MSME units of India was slightly greater than one percent only in 2007-08, while in other years, it was less than one percent.

Chart2: Share of MSMEs of the States to the Total MSMEs in India

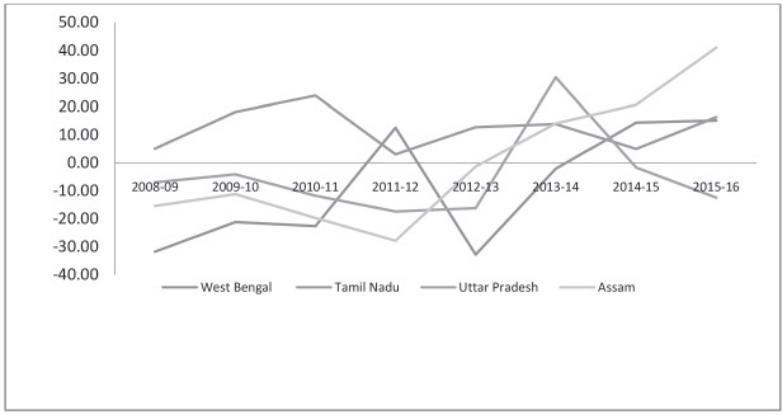


Source: MSME, Annual Reports &NSS 73rd Round, 2015-16

In all India level, the registered (EM-II) MSMEs increased annually. In 2007-08, it was 1,72,703units and in 2014-15, it was increased

to 4,25,358 units with annual growth rate of 17 percent. But, it was declined to 2,17,854 units in 2015-16. Considering the annual growth rate of share of MSMEs in a state to total MSMEs in India, only Tamil Nadu maintains a steady trend, otherwise, other two best performer states (West Bengal & Uttar Pradesh) showed up and downs over different years. However, the number of registered EM-II MSMEs in Assam is abysmally poor, but annual growth rate of share of Assam's EM-II filed MSMEs to India's total was showing an upward trend (Chart 3).

Chart 3: Annual Growth Rate of Share of MSMEs of States to Total MSMEs of India:



Source: MSME, Annual Reports &NSS 73rd Round, 2015-16

In 2006-07, there were 2,10,507 workers employed in MSME in Assam and in 2010-11, this figure rose to 2,84,933 with CAGR for this period of 5 years was 6.24 percent. According to the data of NSS 73rd round, there were 18.15 lakhs people engaged in MSME sector of which 1.78 lakhs and 16.37 lakhs were female and males respectively in Assam in 2015-16. These 18.15 lakhs employees was only 1.6 percent of total people employed in MSME sector in India. In Tamil Nadu, there were 99.73 lakhs people engaged with

the MSME sector in 2015-16 of which 32.27 and 64.45 persons were male and female respectively. While in Uttar Pradesh, there were 165.26 lakhs employees of which 27.27 lakhs were females and 137.92 lakhs were males. In West Bengal, there was a total of 135.52 lakhs people engaged in MSME of which 43.51 lakhs were females and 91.95 lakhs were males. In the same year, in all India level 23.79 per cent of total employments in MSMEs were females. In West Bengal, Tamil Nadu and Uttar Pradesh, the share of female to the total employment in MSME of the respective state were 32.11 per 33.36 per cent and 16.50 per cent respectively, while, in Assam, this figure was only 9.80 per cent.

Table 1: Distribution of Employment, Investment &Production of MSMEs in Assam

Year	Employment (in numbers) (Registered +Unregistered	Fixed Investments in Crore	Production in Crore
2006-07	210507	5867.40	9389.20
2007-08	229095	6385.49	10218.27
2008-09	246379	6867.26	10989.20
2009-10	264162	7362.90	11782.35
2010-11	284933	7941.84	12708.79

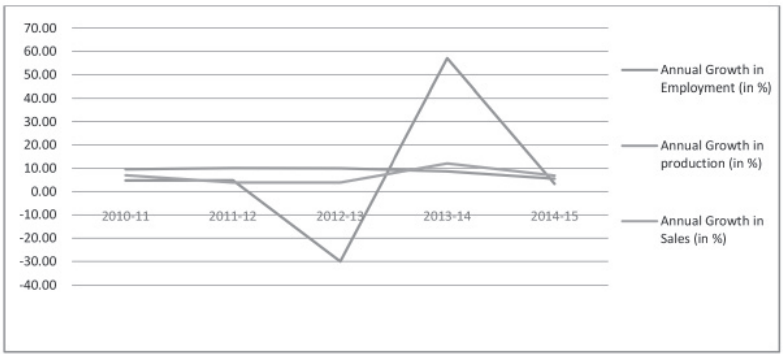
Source: MSME, Annual Report 2011-12, Ministry of MSME, GOI

In 2006-07, the fixed investment was 5867.40 crores which rose to 7941.84 crores in 2010-11 with a CAGR of 6.24 per cent for the period 2006-07 to 2010-11. The fixed investment is the investment in the new fixed assets to increase the production capacity of an enterprise. As per the data provided in the table 1, the annual growth rate of fixed investment, employment and production from 2006-07 to 2007-08 was 8.83 per cent, from 2008-09 was 7.54 per cent, from 2009-10 was 7.22 per cent and from 2010-11 was 7.86 per

cent. Moreover, the 5 year CAGR for each of employment and production category was 6.24 per cent from period 2006-07 to 2010-11 in Assam. Again, the average employment with respect to total MSMEs was constant at 10.60 persons in each year from 2006-07 to 2010-11. Similarly, the average fixed investment was also constant at 29.54 lakhs from 2006-07 to 2010-11 and average production was also fixed at 47.26 crores from year 2006-07 to 2010-11. This study confines its analysis up to the year 2010-11 due to lack of data of state-wise distribution of employment, production and fixed investment in annual reports of MSME.

Assam is significant for its traditional and indigenous industry. Majority of these industries are very small in size and performed in unorganized sector and operated in family level. The handloom industry, brass industry, bamboo, jute, wooden craft industries are some of the examples of this category. The indigenous fabrics of Assam i.e, Pat, Muga and Ari Silks are well known for their quality. This industry is covered under the Khadi and Village Industries Commission (KVIC).

Chart 4: Year-wise Growth Rates in Employment, Production and Sales in KVI in Assam:



Source: MSME, Annual Reports of 2011-12, 2015-16, GOI

There were 3.76 lakhs persons employed in KVI in 2009-10 which

rose to 6.08 lakhs in 2020-21 with 12 year CAGR of 4.09 percent. However, the annual growth of employment is shown with blue line is negative in 2012-13, and then it was increased by 50 percent in 2013-14. In 2015-16, annual growth rate increased only by 3.30 percent. The annual growth of production was almost consistent from period 2010-11 to 2014-15. In case of sales, annual growth rate is highest in 2013-14.

Conclusion

It is clear from the above discussion, that MSME play a vital role in generation of employment in Assam. The performance of the MSME sector in Assam is poor compared to other industrially developed states like West Bengal, Tamil Nadu and Uttar Pradesh. The lower employment of workers in this sector in Assam is due to infrastructural backwardness of Assam compared to these states. Assam has to devote quality effort to bridge the gap in performance in this sector. The Government India also provides many initiatives for development of MSME in Assam as well as other NE states.

The above discussion shows that the MSMEs create employment opportunities for people of Assam though its value is low. Assam maintains a positive growth rate in production in recent years which is a good sign for better future of this sector in Assam. The new initiatives have taken by the Ministry of MSME, GOI for providing skills development training and programmes will definitely increase the employability of the people of this region.

There is scope for development of KVI in Assam because Assam is traditionally rich for its culture and tradition. The traditional and village industries play a great role in recognition of identity of Assam in World. The Government of India and the people of Assam try further for development for and promotion of KVI in Assam which has great potential of export.

References

Das, B. (2014). Role of Khadi and Village Industries Commission (KVIC) in Promoting Micro Enterprises in Assam- A Study of Kamrup (Rural) District. *Thesis* . Assam, India: shodhganga.

Kapoor, A., & Kowadkar, S. (2022, April 27). Gradual shift from informal to formal for MSMEs. *The Economics TImes* . India.

Ministry of Micro, S. a. (2022). *Annual Report 2021-22.* Ministry of MSMEs.

Ministry of Micro, S. a. (2021, June). MSME INSIDER. *MOnthly e-Newsletter of Ministry of MSME , XXXIV* . India: Ministry of MSME.

Ministry of Micro, Small and Medium Enterprises, GOI. (2022). Retrieved July 20, 2022, from Ministry of Micro, Small and Medium Enterprises, GOI: https://msme.gov.in/

Ministry of Micro, S. a. (2022, March-May). MSME INSIDER. *XLII* . India.

Papola T. S and Misra V. N. (1980). *Economic and Political Weekly , 15* (41/43), 1733-1746.

Sarkar, B. (2016). Problems of MSMEs in Arunachal Pradesh & Assam. *International Educational Scientific Research Journal , 2* (6), 31-32.

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CHAPTER 5

Analysis of PRISM: Schemes and Polices for MSMEs with special reference to Assam

Dr Ajoy Mitra

Abstract

The 'Technopreneur Promotion Programme' (TePP) was launched in the year 1998-99 to promote the development of technology. More than two decades later, this scheme has been revamped, to be called the Promoting Innovations in Individuals, Start-ups and MSME (PRISM) scheme. It is an initiative of the Ministry of Science and Technology, from the Government of India, to transform an individual innovator into a successful technopreneur by promoting and encouraging entrepreneurs. Technology is the way forward. To keep up with the global tech race, Government of India has introduced the PRISM scheme to encourage start-ups, small businesses, and innovators. Through this scheme, they can get access to much-needed funding.This initiative is expected to help in generating rural livelihood, inclusive innovation & socio-economic benefit. The main goal of this paper is to understand various schemes and polices in relation to individual innovators in technology and MSMEs.

Keywords: *Start up, MSME, PRISM, Innovation*

Introduction

Today, technology plays an essential role in many industries and to keep up with the global tech race; the Indian Government has introduced the PRISM Scheme to encourage start-ups, innovators, and businesses. With this scheme, they can get access to much-required funding. In the area of science, start-ups have been gaining huge traction lately. To promote science-related technology solutions, the Government has come up with this scheme. Scroll down to check more information regarding the PRISM Scheme in India.

Promoting Innovations in Individuals, Startups and MSMEs (PRISM) is an initiative of the Department of Scientific and Industrial Research (DSIR) aimed at transforming an individual innovator into a successful technopreneur by promoting, supporting, and funding implementable and commercially viable innovations created for the society.

The ***TePP or Technopreneur Promotion Programme*** was introduced in the year 1998-99 to promote technology development. More than 20 years later, PRISM Scheme has been restored, to be called the ***Promoting Innovations in Individuals, Start-ups and MSME (PRISM).*** It's an initiative of the Ministry of Science & Technology from the Government of India to transform an individual innovator into an effective technopreneur by promoting & encouraging entrepreneurs.

This scheme offers to fund for unleashing the creativity of innovators in the technology field. This scheme is not just for established professional entrepreneurs or tech experts but also comprises student innovators as a category. Hence, anyone having an implementable, commercially viable, unique innovation is considered for the scheme.

Under the initiative, an innovator of Indian nationality - student, professional and common citizen - is provided technical, strategic, and financial assistance by DSIR-PRISM for idea development, prototype development and pilot scaling, and patenting. The programme is implemented across various sectors from energy to healthcare to waste management and others.

Objective of the PRISM Scheme

- It is an initiative of the ***DSIR or the Department of Scientific & Industrial Research*** to promote innovation;
- Under the initiative, professionals, Indian students, and common citizens are provided strategic, financial assistance, and technical by the DSIR (Department of Scientific & Industrial Research) to boost conceptual prototype development and pilot scaling (an initial study on a small scale) and patenting. In this, the grant is provided in two phases;
- It is aimed at transforming individual innovators into effective technopreneurs by encouraging, funding, and supporting commercially viable innovations created for society;
- The program is implemented across different sectors from healthcare, waste management, energy, green technology clean energy, and others. The **Ministry of Science & Technology** has started an awareness event for the publicity of the DSIR-PRISM Scheme.

Advantages of PRISM Scheme for Start-ups in India

Following are some advantages of the PRISM Scheme for Start-ups in India:

1. This scheme also helps PRISM Scheme for Start-ups in India innovators to get their fundamentals of patenting in order;
2. The technical, financial & evaluations viability studies assisted by the Government can help a tech start-up identify key areas that need improvement;
3. It is unlike most other loan assistance or backing programs available for start-ups. The grant-in-aid is provided by the Ministry of Science & Technology. Additionally, this grant can be utilised for prototype development & commercialization of the project;
4. With the rise of several initiatives like Make in India, Digital India, and Start-up India, there has been a renewed importance of innovation in the technology space, especially because it supports almost every other business & industry. Hence, the PRISM Scheme is aimed at furthering this innovation spirit;
5. The experts also guide the start-ups in strategic & technical assistance for the commercialization of the project, right from the stage of idea development.

Areas of Focus under the Scheme

While the scheme is open for all technology projects and startups, there is a preference for certain thrust areas. These are:

- Green technology
- Clean energy
- Industrially utilisable smart materials
- Waste to wealth
- Affordable healthcare
- Water and sewage management
- Any other technology in a knowledge-intensive area

A startup idea, prototype, or concept in these areas is more likely to be considered on a priority basis for grant of funds by the Ministry of Science & Technology. In case of abandonment of the project by beneficiaries, innovators have to return the funding disbursed, along with 12% interest, to the DSIR.

Who can apply for this scheme?

Any Indian citizen having a creative or an innovative idea and want to translate their idea into a working model, prototype, or process; public-funded organisations, viz. independent Society or Organisation registered under the ***Societies Registration Act, 1860 / Indian Trusts Act, 1882*** involved in the promotion of innovation.

Eligibility Criteria for Start-ups under the PRISM Scheme in India

Programme	Eligibility
PRISM Phase-1	
Category-1: Proof of Prototypes or Models or Concept Maximum support may be up to Rs. 2 lakhs or 90% of the total project cost, whichever is lower.	Any Indian citizen, including student innovators, can avail of support to develop their unique idea into demonstrable prototypes of models.
Category-2: Fabrication of working processor model or testing & trial or patenting or technology transfer etc. (Innovation Incubation) Maximum support may be limited to Rs. 2o lakhs or 90% of the total project cost, whichever is lower.	Any Indian citizen has innovative ideas.

PRISM – Phase –II (Enterprise Incubation)	
Maximum support may be up to Rs. 50 lakhs up to 50% of the total project cost. The support may be given for increasing technology-based innovations, comprising Design Registration or Trademark Registration or Patenting or technology transfer to developing a marketable product or process for enterprise creation.	Effective PRISM innovators who have successfully demonstrated proof of concept with the support of other Government agencies or institutions.
PRISM – R&D Proposals	
Maximum support up to Rs. 50 lakhs up to 50% of the total project cost for developing technology solutions aimed at helping MSME clusters.	Any R&D institute or independent institutions or public-funded labs or academic institutes & so on.

Startup Policy Scenario in Assam

IIT Guwahati in collaboration with Department of Scientific and Industrial Research (DSIR) has established **"TePP Outreach cum Cluster Innovation Centre (TOCIC) IIT Guwahati"** to promote innovation in the North-Eastern region of India. "Technopreneur Promotion Program (TePP)" is run by the DSIR to promote individual innovators to become technology - based entrepreneurs (Technopreneurs).

TOCIC IIT Guwahati is inviting proposals from individual innovators from North east and recommends them to DSIR based on experts' review reports.

There are various schemes under the TePP program to fund various stages of technology development and needs of individual innovators.

A State's Startup Policy is critical in providing the essential funding, mentorship, and market access support required by startups to grow as important contributors to the State's economy in terms of revenue and job creation. Additionally, it also contains provisions to incentivise key startup stakeholders such as incubators, and institutions of higher education among others so as to promote holistic development for India's startup ecosystem. The Startup India team provides active support to States in formulation and operationalization of their startup policies.

The Assam Government aims to create an ecosystem for start-ups in Assam and to establish Assam as the entrepreneurial hub of Northeast India. The Assam Startup policy primarily focuses on generating employment, nurturing start-ups in the initial stage, and stimulating Startup culture in the state.

The key highlights of the Assam Startup Policy Draft 2017 include four pillars

- **Digital Startup Ecosystem:** This includes the development of a Startup portal and app which will facilitate information aggregation and infrastructure booking. The portal shall also include online learning and development programs. A dedicated helpline will also be made operational.
- **Development of Infrastructure:** Creation of Startup incubator space will take place in Guwahati in the first phase and then in Dibrugarh and Silchar along with the establishment of ESDM (Electronic Systems and Design Manufacturing) innovation center. Funding and Other Incentives: Registered start-ups shall get fiscal incentives and benefits along with loan schemes with interest subsidy among other reimbursements.
- **Human Capital and Skill Development:** In order to boost

innovation, the government plans to create a conducive environment at the school and college level. Compulsory EDCs (Entrepreneurship Development Cells) shall also be established in every college.

There are approximately over 67,000 industries in Assam, out of which 88 per cent are micro, 11.5 per cent are small and medium. Recently, the central government has sanctioned over Rs 1,536 crore to set up micro, small and medium enterprises under the Atmanirbhar Bharat Abhiyan. There exists enormous threats and challenges for the survival and growth of MSMEs. The rate of growth occupation and wealth in Assam cannot pace with this high rate of population growth, creating problems of unemployment, poverty and income inequality in the region.

It has been observed that the biggest challenge to the MSMEs is unavailability of timely capital and as a result, they suffer from either shrinking of operations or liquefying the enterprise itself. However, the liquidity can be solved if there is an alternate mechanism to organise timely competitive credit.

In 2020-21, Rs 690.23 crore projects were received and the projects completed were worth Rs 3,398.66 crore. The report found that the MSME sector is the fastest growing in Assam in terms of output, investment, number of units and employment generation. This sector is dominant in the state as compared with other Northeastern states with 61.48 per cent of the units being concentrated in Assam and the rest 38.52 per cent in the other.

Investment projects worth Rs 7,67,518.72 crore have been outstanding in Assam since 2018-19 against projects valued at Rs 6,49,313.63 crore being implemented in the same period, a new study has found. A report brought out by the MSME Export Promotion Council jointly with knowledge firm BillMart FinTech has revealed that Assam is increasingly emerging as an epicenter for investment, both for the government and private sectors.

According to the report, during the current financial year, Assam may generate over one lakh direct and indirect jobs provided the COVID-19 pandemic subsides. It also highlighted the state of affairs regarding pending projects worth several lakh crore, thereby delaying the much-needed economic impetus to Assam.

The Government of Assam has launched the **'Startup Assam'** initiative to promote sustainable economic growth and generate large scale employment opportunities in the state of Assam. Under Assam Startup Policy 2017, various incubation centres were set up by the state government to facilitate the growth of at least 1,000 new startups over the upcoming years. In this article, we look at the "Startup Assam" in detail.

Objectives of the Scheme

The Objectives of the 'Start-up Assam' are as follows:

- To provide the funding required to enable startups in Assam.
- To develop a mechanism of problem-solving and the culture of entrepreneurship in the state.
- To enable the citizens of the state to associate with the startups to have a higher quality of life.
- To establish a state-owned business incubator.
- To facilitate the growth of at least 1,000 new startups over the next 5 years.

Eligibility Criteria for Startup Registration

The given below eligibility criteria may register under Startup Assam policy:

- The company to be formed should be a limited liability partnership/ **private limited company**/ **partnership firm**.

- It should be a new firm or existing firm not older than 7 years, and the annual turnover of the company not exceeding Rs. 25 crores.
- The firm must work towards innovative schemes, development, deployment or commercialization of new products.
- The firm should not be an expansion or extension of an existing business.

Incentives for Startups

Digital Upgradation Subsidy

The State Government will provide 50% subsidy for the purchase of computers, related hardware and software if all the following conditions are satisfied:

- The startup with the legal bill as proof of purchase.
- The date of purchase should be after the notification of the policy circulated.
- The self-attested note needs to be enclosed specifying the use of purchased items and ensuring that the items purchased will not be resold for 1 year from date of purchase.

Lease Rental Reimbursement

The State Government will provide subsidy up to 50% subject to a maximum of 5 lakhs of the rental cost for the first three years if the following conditions are satisfied:

- The startup should employ at least 5 people on a full-time basis.
- The startup has rented a property for its official purpose. This may cover rent paid to incubators, co-working or shared spaces.

- The rent/lease agreement should be in the name of the startup or one of its directors.
- The startup is holding the proof of rent paid by way of receipts or bank statements.

Power Subsidy

The State Government will provide subsidy up to 50% subject to a maximum of 1 lakh for 5 years under the following conditions:

- The startup has received a proper electricity bill in the name of the startup or one of its directors.
- The electricity bills generated after the release of the Startup Assam policy will be considered. Any bill older than 12 months will not be considered for reimbursement.
- The Startup should have proof of payment against the electricity bill.

Note: The Startups operating out of co-working spaces/ shared spaces/ incubators will not be eligible for this benefit.

Patent Filing Cost reimbursement

The cost for filing a patent application will be reimbursed to the startup companies with the limit of Rs. 1 lakh per Indian patent awarded. For awarded foreign patents, maximum limit up to Rs. 5 lakhs can be reimbursed.

The startup benefits can be availed only if the startup has MASI recognition and if the following conditions are satisfied:

- The startup should have filed for a patent and should hold the Application Filing Report (AFR), Form 1, Form 5, Form 18 or other invoice receipts, if applicable.
- The startup should have a copy of the patent certificate issued to them.

Incentives for Women, Transgender and Differently abled

The one-time incentive of Rs.5000 for hiring women, transgender and differently abled will be given for 3 years under the following conditions:

- The employee must be a woman, a transgender or a differently abled individual.
- The employee may be a founder or director of the company.
- The employee must be employed for a minimum period of 12 months before the startup applies for the scheme.

One-Time Idea Grant

Any innovative idea developed into a new product or service, which generates revenue for the startups will be funded with the amount of Rs.5,00,000 per startup.

Marketing and promotion assistance

The cost for marketing and promotion, including travel incurred by the startup will be reimbursed to the startup companies with the limit of Rs. 5 lakh per startup.

Incentive for Entrepreneurs

Any entrepreneur who establishes Start-ups will be eligible for an allowance of Rs 20,000 per month per Start-Up for one year under the following conditions:

- The startups should have a validated prototype or working model.
- The entrepreneurs of the Start-Up entity should have an alternate source of income.
- It has to be at least one-woman entrepreneur in the Start-Up entity.

My Assam Startup ID (MASI)

My Startup Assam ID (MASI) is a unique ID granted to "Startups" that apply for recognition in the Assam Startup Portal and are duly approved by the concerned authority. Startups with valid MASI become eligible to apply for benefits under the Assam Start-up Policy subject to other criteria laid out by the concerned authority.

Documents Required for MASI Recognition

The following set of documents has to be submitted while registering for Startup recognition:

- Certified copy of Incorporation
- Proof of innovation has to be enclosed as per any of the following:
    - Certificate of DIPP Startup India recognition with a one-page write-up on Innovation.
    - The patent filed in the entity name and the nature of business being promoted with one page write up on Innovation
    - Assurance Letter of the grant provided by the Government of India to the entity to promote innovation with one page write up about innovation.
    - Letter of grant issued by any Angel Fund/ Private Equity Fund/ Incubation Fund/ Accelerator/ Angel Network duly registered with (SEBI) Securities and Exchange Board of India.

Note: If an entity doesn't own any of the above mentioned four documents, they may submit a one-page write-up/note explaining the innovative nature of the entity. The applicant is encouraged to share its business plan along with the letter on innovation.

Registration Procedure

To register for Startup Assam, visit the official website of Assam Startup. The eligible entities can register for a startup using the startup registration link. After registration, the application will be reviewed by the Officer from Department of Commerce and Industries (Nodal Department), the state startup certificate will be issued within 10 days of applying after all the submitted documents are verified.

Under Assam Startup Policy 2017, various incubation centers were set up by the state government to facilitate the growth of at least 1,000 new startups over the upcoming years.

Benefits to the citizens

- The State Government will provide 50% subsidy for the purchase of computers, related hardware and software
- The State Government will provide subsidy up to 50% subject to a maximum of 5 lakhs of the rental cost for the first three years
- The State Government will provide subsidy up to 50% subject to a maximum of 1 lakh for 5 years
- The cost for filing a patent application will be reimbursed to the startup companies with the limit of Rs. 1 lakh per Indian patent awarded. For awarded foreign patents, maximum limit up to Rs. 5 lakhs can be reimbursed.
- The one-time incentive of Rs.5000 for hiring women, transgender and differently abled will be given for 3 years
- Any innovative idea developed into a new product or service, which generates revenue for the startups will be funded with the amount of Rs.5,00,000 per startup.
- The cost for marketing and promotion, including travel incurred by the startup will be reimbursed to the startup

companies with the limit of Rs. 5 lakh per startup.

- Any entrepreneur who establishes Start-ups will be eligible for an allowance of Rs 20,000 per month per Start-Up for one year under the following conditions:
    - The startups should have a validated prototype or working model.
    - The entrepreneurs of the Start-Up entity should have an alternate source of income.
    - It has to be at least one-woman entrepreneur in the Start-Up entity.

Eligibility

The given below eligibility criteria may register under Startup Assam policy:

- The company to be formed should be a limited liability partnership/ private limited company/ partnership firm.
- It should be a new firm or existing firm not older than 7 years, and the annual turnover of the company not exceeding Rs. 25 crores.
- The firm must work towards innovative schemes, development, deployment or commercialization of new products.
- The firm should not be an expansion or extension of an existing business.

To register for Startup Assam, visit the official website of Assam Startup. The eligible entities can register for a startup using the startup registration link. After registration, the application will be reviewed by the Officer from Department of Commerce and Industries (Nodal Department), the state startup certificate will be issued within 10 days of applying after all the submitted documents are verified.

Success stories so far

According to the states' start-up ranking 2021, Assam has been recognised as a 'Leader' in Category A states (population over 1 crore) in developing a strong start-up ecosystem by the Department for Promotion of Industry and Internal Trade (DPIIT) which functions under the Ministry of Commerce and Industry. This is steep progress from its previous recognition of being an Emerging Start-up Ecosystem. The DPIIT has appreciated the state for facilitating the launch of the state-of-the-art incubator, 'Assam Start-up - the Nest', providing incentives and financial help to women entrepreneurs and conducting a high number of outreach programmes. The incubator has gained special recognition as a Mentorship Champion for building a large mentorship network for start-ups.

Start-up Assam's vision is to create a platform for entrepreneurs to connect to Angels and Venture Capitalists, Mentors and Industry experts. They want to create a problem-solving ecosystem where start-ups can get easy access to resources, evolve and co-exist. Here is a list of some of the successful start-ups in Guwahati (Assam).

1. Digital Ant
2. Redlemon Communications
3. Olatus Systems
4. MotoHut
5. Dawai Lo
6. Dimensions
7. PriceBoard
8. PicknDel
9. BlueWhale
10. Alchemy Media Lab
11. Brahmaputra Fables
12. Web.com

Conclusion

Basically, PRISM Scheme aims to support individual innovators to achieve the agenda of inclusive development. It would also provide support to organisations set up as Autonomous organizations under a specific statute. The Indian startup ecosystem is transitioning from a young, undeveloped ecosystem to a mature ecosystem as the current economic scenario in India is on expansion mode. The Indian government is increasingly showing greater enthusiasm to increase the GDP rate of growth from grass root levels with introduction of liberal policies and initiatives for entrepreneurs like 'Make in India', 'Startup India', MUDRA etc. With government going full hog on developing entrepreneurs, it could arrest brain drain and provide an environment to improve availability of local talent for hiring by startup firms.

State governments to raise awareness about the Indian startup ecosystem and increase its outreach throughout the state. The states are evaluated based on awareness of startups created through workshops, national and international events including bootcamps and hackathons/ grand challenges. In order to promote startups, the state encourages participatory and inclusive processes for linking startups with angel investors and high net worth individuals. Maximum participation is encouraged for exchange of valuable knowledge amongst startups, and pitching sessions for angel investments with widespread propagation.

References

- https://corpbiz.io/learning/all-you-need-to-know-about-prism-scheme-in-india/
- https://economictimes.indiatimes.com/small-biz/sme-sector/over-rs-7-lakh-cr-worth-projects-outstanding-in-assam-in-3-yrs-msme-report/articleshow/91653985.cms
- https://www.indiafilings.com/learn/startup-assam/

- https://vikaspedia.in/schemesall/state-specific-schemes/welfare-schemes-of-assam/startup-assam
- https://economictimes.indiatimes.com/news/india/assam-recognised-as-leader-in-states-startup-ranking-by-centre/articleshow/92727532.cms
- https://startuptalky.com/guwahati-startups/
- https://www.startupindia.gov.in/srf/reports/Assam_Report_Updated_26072020.pdf

Bibliography:

1. Chaudhary, Varnana. The Biggest Roadblocks Faced by Startups in India, 2015.
2. Chokhani Rohit. Principal Founder, White Unicorn Ventures, Challenges and opportunities for Indian startups; Key points to note, 2017.
3. Grant Thoron, (2016) Startups India an over view
4. Pandey A.P and Shivesh, (2007). Indian SMEs and their uniqueness in the country
5. Shane, S.A. and Venkataraman, S. (2000). The Promise of Entrepreneurship as a Field of Research. Academy of Management Review
6. Song, Podoynitsyna ,Bij & Halman, (2008). Success factors in new ventures, a meta-analysis. Journal of product innovation management
7. Timmons, J.A. and Spinelli, S. (2004). New Venture Creation: Entrepreneurship for the 21st Century. New York: McGraw-Hill/Irwin.
8. Kamdar M, Singh D ,(2013). Role of Business Incubation Centres in promoting entrepreneurship

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CHAPTER 6

Economics of Climate Change and its impact on the tea industry in Assam

Dhritiraj Sarma

Abstract

Tea is an important plantation crop in Assam as well as India. It plays a significant role in the state's economy. Assam tea contributes significantly in the state's GDP and supports the livelihoods of a large proportion of the population. However, tea is highly vulnerable to climate change and variability. It is a rain fed crop which is mainly dependent on abundant rainfall and other climatic factors like good sunshine, humidity, fog, dew etc. But recently, due to increase in rainfall variability due to climate change has led to adverse impact on tea plantation in the state of Assam. Therefore, this study aims at determining statistically the correlation between precipitation variability and tea production in Assam. The chapter mainly focuses on how precipitation variability impacts tea productivity in Assam and what steps government can take to mitigate and minimise the vulnerability of the industry. The study also throws light on seasonal precipitation variations and annual variations of rainfall and tea productivity of the past 10 years' data to analyse the situation of

recent climate change and its impact on tea industry in the state of Assam. Results of correlation and regression analysis showed that there is a positive correlation between rainfall variability and tea yield however there are other parameters too which leads to change in tea production which is out of our scope of study. Regression analysis shows that 42.4 per cent of the variance in variability in tea production can be accounted for rainfall.

Keywords: *Tea, Climate Change, Correlation, Rainfall, Regression, Temperature, Tea Productivity, Assam*

Introduction

The economics of climate change has been focused on modelling the implications of growth for emissions, examining and modelling the economics of technological options, calculating 'social costs of carbon', and exploring taxation policy, market and other structures. Growth and climate change are highly inter-related and therefore the importance of adaptation to reduce the impact of climate change is essential. The origins and consequences of climate change (caused by the rich countries, but affecting the poor the most) make an argument for increased development assistance even higher. As a result, adaptation is a necessary policy response, and the international community must identify measures to aid adaptation, particularly in the most vulnerable countries (Stern, 2006).

The economics of climate change concern the economic aspects and indicators where government can implement policies in response to mitigate the negative impacts of climate change. Examples include emission projections, carbon tax, cost-benefit analysis, adaptation and mitigation policies, regulatory policies, price and subsidy policies, international insurance, market liberalisation, market-oriented reforms, cost estimates, environmental auditing and assessment, adaptive capacity systems, research and development on geo-engineering etc. (Wikipedia).

Climate change is a negative externality. It is worth mentioning that since the onset of industrial revolution, economics in all aspects is ahead of environment. This led to widespread loss of environmental quality in the long run. Gradually it resulted into global climate change where a number of environmental problems such as global warming, pollution, ozone layer depletion, decreasing wetlands, acid rain, loss of biodiversity and rainfall variability leading to draughts and floods are observed. These environmental problems create back negative economic impact especially in the developing countries that are mostly dependent on rainfall. The Indira Gandhi Institute of Development Research has found that, if the estimations related to global warming made by the Intergovernmental Panel on Climate Change is fulfilled, it could cause India's GDP to decline by up to 9 per cent. This can impact production of major crops such as rice to fall by 40 per cent (Purkayastha, 2016). Change in rainfall variability in the developing countries will make it very hard to produce crops as most of the agricultural lands in less developed countries are rain-fed with poor agricultural infrastructure.

According to the standard economic theory, market failure can be corrected using standard policy measures. These include Pigouvian taxes, or allocation of property rights through some kind of bargaining (Coasian approach). Although economic policy planning follows these principles in the case of climate change, on the most basic level, it must consider a wide variety of economic factors such as assessing climate change effects and dealing with extreme uncertainty, defining the effects on growth, development, and technical change and global policy initiatives (Economides, et al. 2018). Producing future economic development scenarios is one of the economic aspects of climate change. Future economic developments, for example, can influence how vulnerable society is to future climate change, as well as the magnitude of future climate change consequences and GHG emissions.

In addition to these economic concerns, economic policy should consider climate change and dynamic linkages between the climate and the economy. This is an enormous task that has resulted in a big and important body of scholarly research as well as numerous relevant applications at both the national and international levels.

Tea Industry in Assam

Assam's tea industry is roughly 172 years old. It has a significant presence and contributes significantly to the national economy. Since tea has grown wide spread popularity and is widely consumed beverages after water, therefore tea cultivation was extended to other parts of the country between 1950s and 1960s. However, Assam tea has maintained its international reputation and holds significant share in the global tea market (Economic Survey of Assam, 2016-17).

Tea cultivation is basically grown in the lowlands of Assam on both side of the river Brahmaputra. Assam tea is manufactured specifically from the plant *Camellia sinensis*. Assam-type var. *Assamica* is the predominant tea variety produced in Assam which is one of the most economical crops of the region (De Costa, Mohotti, & Wijeratne, 2007).

In general, Assam tea is harvested twice, once in the "first flush" and once in the "second flush." Late in March, the first flush is harvested. The highly valued "tippy tea," named for the gold spots that develop on the leaves, comes from the second flush, which is plucked later. This tippy tea from the second flush is sweeter and more full-bodied than the first flush tea and is widely regarded as superior (Dutta, et al., 2020). One of the busiest and largest tea trading facilities, Guwahati Tea Auction Centre since its establishment in 1970 has been actively involved in the trading of tea grown mostly in the North-eastern states and has seen the largest volume of CTC tea auction in the world.

The small tea growers in Assam are emerging economic force for the state. According to a survey conducted by the Industries & Commerce Department it has been found that total numbers of small growers in 14 surveyed districts of Brahmaputra Valley is 68,465 with maximum growth occurs from 1996 to 2005. However, the green leaf productions of small tea growers are unable to meet the demands of the tea market. Apart from this, it has been also observed that there is a wide technological gap between skilled and unskilled small tea growers which is one of the major problems of small tea growers. Also, climate change and ecological imbalances are bound to have a major negative impact on the tea industry in Assam.

Tea is one of the most popular and lowest cost beverages in the world and is consumed by a large population globally. The tea industry occupies a significant position in Assam and plays an extremely important role in the state economy. Assam alone produces more than half of India's tea production and about $1/6^{th}$ of the tea produced in the world which is roughly around 17 per cent (Dikshit & Dikshit, 2014). Assam produces around 642 thousand tonnes annually in 304 thousand hectares of land. Tea industry in Assam provides average daily employment to more than 6.86 lakh persons in the state, which is around 50 per cent of the total average daily number of labour employed (Economic Survey of Assam, 2016-17). It supports the livelihoods of approx. 1.2 million labourers in the State (Dikshit & Dikshit, 2014).

Tea gardens are the lifeblood of the state, without which Assam would have remained impoverished and economically disadvantaged. The tea sector is now the state's largest, producing employment, revenue and development. Ideally, Assam receives adequate rainfall along with climate which varies between cool and dry winter followed by humid, rainy and hot summer which is prolific for tea production. Assam's tea productivity growth rate is higher than the national rate; however, it has been dropping recently. Although tea production is

influenced by the area under tea, it is also influenced by variables such as old tea bushes, high production costs, unskilled labour, financial restraints, political instability, and so on. Furthermore, a large number of tea gardens in the state have become sick over time due to old gardens, insufficient rainfall, rising costs of production, general drop in tea prices, rising water levels in the Brahmaputra River, frequent pest attacks, a lack of infrastructure, modernization, and a lukewarm attitude of tea planters toward tea garden workers, as well as inefficient management. Lesser-known tea producing countries such as Indonesia, Sri Lanka, and Japan began to explode in the international market as a result of unethical conduct and unregulated market behaviour by India-owned tea gardens. Also, due to better quality tea supplied by nations such as Sri Lanka, Cuba, Kenya, and China, demand for Assam tea is already in decline (Rahman).

Influence of Climate on Tea Productivity

Climate is a critical factor in determining both where the tea plant can be grown and the quality of tea grown in a particular area. Climate change is expected to have a major impact on global tea production. Since tea depends on abundant and evenly distributed rainfall, rising temperatures and changes in rainfall pattern will affect the quantity as well as quality of tea production, posing a threat to the entire tea industry.

Tea plants are highly versatile and adaptable and can be grown in a wide range of climatic conditions. However, it is a rain-fed crop. It needs 150 cm to 300 cm of annual downfall that ought to be distributed throughout the year. Whereas prolonged dry spell is harmful for tea, significant humidity and dew and morning fog favour speedy development of young leaves (Banerjee, 1993).

However, in this study, only precipitation data is considered for analysis. Other factors such as sunshine, total day light hours,

relative humidity, Co2 content etc. were not taken into consideration due to time constraint which is another probable drawback of the study.

The study does not focus on various socio-economic parameters like increase in the cost of production, political instability, low prices, unorganised growth, management issues, lower wage and tea workers' protest etc. due to time constraint and may be a scope for further study for a more robust analysis.

Review of Literature

The state of Assam is well-known for its tea production. Many scholars, institutions, and research centres have recently conducted research on the tea industry in Assam and India, enriching many literatures in the process.

Arya (2013) pointed out that Assam's tea industry is roughly 180 years old. This industry has a significant impact on both the state and national economies. In the year 1838, the first Indian tea made in Assam was shipped to the United Kingdom for public sale. After that, between the 1950s and 1960s, tea cultivation was expanded to other parts of the country. Assam tea has maintained its popularity even now. Assam tea has maintained its worldwide standard and has a substantial market share in the world today. He focused mainly on district wise tea production from 1989 to 2007-2008 and compared monthly tea production in Assam and monthly export of tea from North and All India (2008-09).

In a study by (Dutta, 2014) predicted future climate scenarios and their influence on tea production in Assam by 2050, finding that there is a chance of a 2-degree Celsius increase in average temperature by 2050, with little variance in rainfall patterns. By 2050, this predicted a shift in Assam's peak tea output season. The study used the CUPPA tea simulation model, which demonstrated

that variations in photoperiod and temperature result in significant yield changes, as well as the DIVA GIS model, which is beneficial for mapping and analysing bio diverse data. The actual impact on tea output, however, could not be determined.

In their study, (Kumar, Pradhan & Ranjan 2016) discovered that increasing warmth, decreased precipitation, and increased carbon dioxide concentration in the atmosphere will result in a drop in tea output in the state of Assam. Due to the obvious state's limited land for tea growing, there will be a demand-supply mismatch as the world's population grows, causing a demand-supply mismatch. Assam's economic progress may be hampered, and the state may face a significant unemployment crisis. The report emphasises the influence of climate change on tea growing and the importance of making sensible measures to mitigate climate change's negative consequences.

Monthly temperatures exceeding 26.6 degrees Celsius have a detrimental influence on tea output productivity in Assam, according to (Duncan et al, 2016). Drought severity has no effect on tea output, whereas precipitation intensity has a negative impact on tea yield, according to the study. According to the authors, an extra one degree of warming at a monthly average temperature of 28 degrees Celsius would result in a 3.8 percent decrease in tea output. Whereas, (Sitienei, Juma, and Opere, 2017) forecasted the consequences of climate change on Kenyan tea plantations, namely in Nandi East and Sub-County of Nandi County. Using statistical models, they discovered a positive trend in rainfall patterns as well as an increase in the frequency of yearly droughts. The investigation also revealed that the minimum temperature is rising, and the frequency of severe occurrences is also rising. They also claimed that 70% of model predictions were incorrect. The findings also revealed that at least half of the observed occurrences were accurately predicted, with the majority being right.

In their study, Roy et al (2019) discovered that biotic variables such as crop plants, weeds, insect pests, diseases, and nematodes, as well as abiotic elements such as temperature, humidity, day-length, rainfall, soil parameters, and so on, are essential criteria in affecting tea production. Increased carbon dioxide concentration in the atmosphere, increased insect and pest attack resistance in tea plantations, increased vulnerability and unpredictability of precipitation, increasing trends in temperature and reduced rainfall, increasing carbon dioxide concentration in the atmosphere, and increasing insect and pest attack resistance in tea plantations significantly reduce tea production in the state of Assam. Whereas, Temperature, range, relative humidity range, rainfall, and brilliant sun shine hours were reported to be favourable for tea production in Assam by (Dutta, et al., 2020). The study also noted that, beginning in 1992, average tea output began to decline, a pattern that remained until 2009; however, beginning in 2010, average tea production began to climb. According to the study, lengthy periods of rain result in lower tea output than brief periods of rain. This is because protracted wet spells inhibit strong sunlight and tea leaf photosynthesis.

After studying relevant literatures, it has been found that no studies are conducted till now where there is a systematic structured year wise precipitation data and tea production data are represented statistically. Also, it has been seen that most of the research papers focused mainly on the data which are of limited use at the present situation due to focusing of outdated data of 70s, 80s and 90s. Those are out of date, as the impacts of global warming and climate change are a recent phenomenon. Also, it has been observed that there is a lack of recent research directly correlating climate change and tea productivity in Assam which focuses seasonal as well as annual data together for a robust study.

Study by (Duncan et al. 2016) found that drought intensity does

not affect tea yield and precipitation intensity negatively affect tea yield; however, it can be seen that due to large rainfall deficit from January to May 2021 there is a very low production of tea in Assam. Dutta (2014) in his study predicted temperature and rainfall variability of 2020 and 2050 by considering data for the period 1950-2000 and found that by 2050 only temperature variability can be seen and not much rainfall variability will be observed. However, presently we can see that both temperature and more specifically, rainfall variability particularly in the state of Assam is observed due to climate change.

However, in this study the primary focus is on the latest data trends of rainfall and tea yield of the recent years. In the winter of 2021, it was observed that due to a huge rainfall deficit followed by a long dry spell in Assam, the tea production was badly affected. According to a report published in The Assam Tribune[1] on May 5th, 2021, Assam's tea production decreased by 20 to 25% due to a lack of rain. According to tea industry experts, Assam's draught-like situation has adversely impacted tea production in the first quarter of this year compared to the previous year. Meanwhile, in comparison to the same period last year, tea production in the state has decreased by more than 39% till March of this year. Overall tea production in the country was 99.84 million kg in March this year, compared to 103.61 million kg in 2019. Due to a lack of rainfall and a nationwide lockdown, it dropped to 74.34 million kg last year (2020).

Another source published by Hindustan Times[2] found that due to inadequate rainfall across the state, Assam tea has experienced a 40 per cent crop deficit in the first five months of this year. According to a research undertaken by the North Eastern Tea Association (NETA), the crop deficit from January to May will be around 60 million kg, down 40% from 2019.

1 www.assamtribune.com, 5th May,2021

2 www.hindustantimes.com, 19th May, 2021

According to NETA, the average rainfall deficit is about 45 per cent between January and April this year compared with same period last year. According to the Indian Meteorological Department (IMD), Assam has witnessed large rainfall deficiency of 40 per cent.

A source published by The Sentinel[3] revealed that even when the monsoon season is at its peak, several districts in Assam have had below-average rainfall. The districts in upper Assam, which generally receive heavy to extremely high rainfall between July and August, have experienced meagre rainfall this year according to an official at the RMC (Regional Meteorological Centre) in Borjhar. The percentage of monsoon rainfall in lower and central Assam is similarly quite low, with the exception of a few districts. In the Barak Valley, the situation is essentially the same. In many parts of Assam, the lack of rain has rendered the situation sweltering and humid. This has led to a crisis faced by the tea industry in Assam.

Similar scenario has been witnessed in 2015 where the state witnessed erratic weather conditions accompanied with low tea output. But apart from erratic weather conditions, other factors such as lower prices and increase in the cost of production have paralysed the tea industry in Assam.

Since the effect of climate change has been mostly seen in the recent past, so the need for a robust study comprising rainfall data and tea production data of the recent decade is much needed. Therefore, the study aims to focus on how level of precipitation and tea productivity are well correlated will be the main point of interest.

Methodology

Data Source: This study is based upon secondary data. Monthly rainfall data spanning from 2013 to 2021 was obtained from Indian Meteorological Department (IMD), while monthly tea yield was obtained from Tea Board of India, spanning from 2013 to 2021.

3 www.sentinelassam.com, 13th July, 2021

Other secondary data are collected from govt. reports and regional newspapers and national newspapers, National and International Journals, books etc. Secondary data has been collected with great care to ensure that the objectives are met.

Study Site: Assam has been taken for the study site. (Fig.1) Assam extends from 22°19' to 28°16' North Latitude and 89°42' to 96°30' East Longitude with an area of 78,438 km sq. Assam has tropical monsoon climate and is a temperate region which experiences heavy rainfall accompanied with high relative humidity. The climate is characterised by heavy monsoon downpour and, foggy morning & nights in winters. Springs and autumns are usually pleasant.

Fig.1 Study Site Map
Source: (freeworldmaps.net)

Fig.2 Map of Assam depicting locations of major tea gardens
Source: (Duncan, 2016)

Methods

Correlation Analysis

Correlation analysis is used to determine the relationship between tea yield and variation in rainfall. It is the degree of relationship between two variables. In this study, the Karl Pearson's Correlation Coefficient was used to determine the correlation between tea yield and variation in rainfall. Before running correlation coefficient, certain tests were carried out in order to test the normality of the data. Firstly, a normal curve on histogram was tested for the data for a general view of normality. Secondly, using descriptive statistics, skewness and kurtosis were checked for all the data whether the normal curve is right tail or left tail or symmetric. Finally, normality was checked using Kolmogorov-Smirnoff and Shapiro-Wilk test.

After testing the normality, Pearson's Correlation Coefficient is calculated. To test whether the correlation is significant, the null hypothesis that the rainfall variability does not impact tea yield and the alternative hypothesis that the rainfall variability does impact tea yield was assumed. Apart from correlation analysis, mean and standard deviation are also calculated to check the nature of variability of the data.

Simple Linear Regression Analysis

Linear regression model is used to show the relationship between two factors or variables. Regression analysis is about how one variable affects another or what changes it triggers in the other. In our case it is used to determine how change in precipitation effect change in tea yield. The simple linear regression model is represented by:, where, rainfall is an independent variable and tea production (yield) is dependent variable.

Both Correlation and Regression analysis were performed in IBM SPSS software.

Findings

The research is carried out in many phases. First the rainfall data and tea production data were collected and compiled. Table 1 below depict monthly actual rainfall in mm and normal rainfall for the particular months in Assam. Table 2 show seasonal rainfall (in mm) from 2012 to 2021 in the state of Assam and table 3 show departure of seasonal rainfall from 2012 to pre-monsoon of 2021. Lastly, Table 4 shows monthly tea production from 2013 to May 2021 in the state of Assam.

Table 1: Monthly actual rainfall (in mm) from 2012 to 2019 along with normal rainfall

	Yearly Rainfall (in mm)								
MONTH	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**NOR-MAL**
JAN	2.6	6.5	1.1	20.3	11.2	2.5	1.3	8.3	16.2
FEB	26	16.5	42	19.6	13.4	28.7	9	6.2	32
MARCH	50.7	76.7	100.1	69.5	31	27.5	51.5	22.1	78.1
APRIL	179.3	133.5	286.6	345.7	228.5	50.5	113.5	232	172.9
MAY	374.1	229.3	250.4	340.4	307	325	332.5	172.4	304.2
JUNE	313.9	351.9	375.2	328	485.6	364.8	257.6	621.7	427.3
JULY	550.6	308.3	376.5	406.5	290.5	335.3	373.9	376	454.2
AUG	188.7	265.9	380.2	182.6	477.2	387.4	284	243.3	356.7
SEPT	280.5	285.9	314.6	273.6	219.4	342.7	224	321.1	285.7
OCT	147.7	44.5	192.8	108.4	58.4	30.9	119.1	149.8	131.8
NOV	10.8	20	9.3	39.1	14.5	3.2	0.9	10.9	24.9
DEC	2.8	27.6	10	6.9	18.4	0.4	2.3	3.7	11.8
TOTAL	**2128.6**	**1807**	**2338.8**	**2140.6**	**2155.1**	**1899**	**1769.6**	**2167.5**	**2295.8**

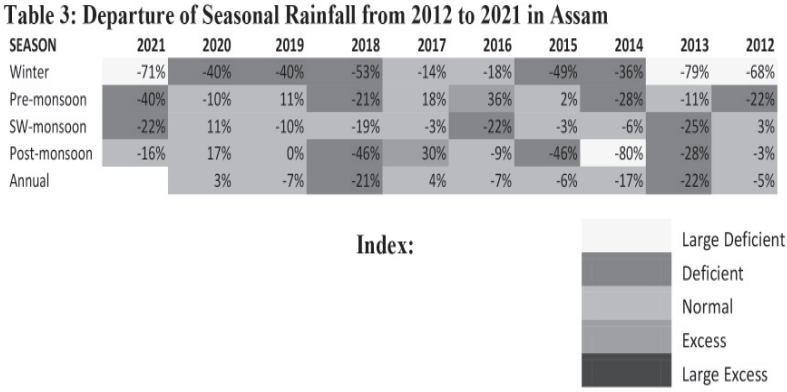
Source: IMD (compiled by author)

Table 2: Seasonal Rainfall (in mm) from 2012 to 2021 in Assam

SEASON	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	NORMAL
Winter	13.9	28.47	28.7	23	41.6	39.9	24.6	31.2	10.1	15.5	48.4
Pre-monsoon	327.6	489.9	604.9	439.5	654.4	755.5	566.5	403	497.4	433	556.1
SW-monsoon	1151.9	1651	1333.8	1233	1482.2	1190.6	1472.7	1430.2	1147	1562.1	1523.4
Post-monsoon	135	189.2	161.2	92	220.2	154.4	91.4	34.6	122.3	164.4	168.9
Annual	1628.4	2358.6	2127.7	1807.1	2398.3	2140.5	2155.3	1899	1797.7	2193.2	2296.8

Source: IMD (compiled by author)

Table 3: Departure of Seasonal Rainfall from 2012 to 2021 in Assam



Source: IMD, (compiled by author)

Table 4: Monthly Tea Production (in Million Kgs) from 2013 to 2021 in Assam

MONTHS	2021	2020	2019	2018	2017	2016	2015	2014	2013
JAN	0	0.03	0	1.42	1.31	0.74	0.98	1.51	0.5
FEB	0.23	0.24	0.44	0.46	0.37	0.57	0.23	0.45	0.14
MARCH	20.05	11.97	32.91	21.9	21	33.56	11.87	15.53	9.38
APRIL	31.5	13.11	44.98	48.32	44.24	32.38	35.14	27.17	42.46
MAY	36.7	41.43	66.58	56.59	62.53	57.86	59.85	45.56	47.51
JUNE	90.85	66.24	75.2	78.55	70.48	76.04	63.07	72.46	74.56
JULY	103.24	89.52	97.19	93.71	91.09	84.99	91.43	94.38	94.71
AUG	97.23	86.55	97.89	115.49	102.61	89.08	92.91	99.57	94.95
SEPT	91.55	107.79	109.02	100.57	85.47	112.22	94.37	88.72	88.73
OCT	109.23	97.83	98.9	98.1	104.13	88.35	96.85	96.43	92.76
NOV	60.66	79.24	70.51	60.91	62.8	68.2	60.54	48.37	55.29
DEC	19.22	24.57	22.87	15.76	29.05	25.35	23.74	20.82	20.59
TOTAL	660.46	618.52	716.49	691.78	675.08	669.34	630.98	610.97	621.58

Source: TBI (compiled by author)

Results

Results from Correlation Analysis:

Correlation analysis was done between tea production and rainfall in three ways i.e. seasonal, monthly and annually. For seasonal analysis, data was taken from 2013 to 2021 for all the seasons i.e. winter, pre-monsoon, south west monsoon and post monsoon respectively. For monthly and annual correlation analysis data was taken from 2013 to 2019 respectively.

Results from seasonal rainfall (in mm) and tea production (in M.kgs) suggest the following results:

i) Correlation analysis for winter season suggests that there is a moderate positive correlation of 0.486 but is not statistically significant. Figure 3 below shows the correlation analysis of winter season (Jan- Feb) spanning from 2013 to 2021.

Fig 3. Correlation of Tea Prod and Rainfall for winter season

		Tea_Prod	Rainfall
Tea_Prod	Pearson Correlation	1	.486
	Sig. (2-tailed)		.185
	N	9	9
Rainfall	Pearson Correlation	.486	1
	Sig. (2-tailed)	.185	
	N	9	9

ii) Correlation analysis for pre- monsoon season suggests a moderate positive correlation of 0.588 which is statistically not significant. Figure 4 below depicts the correlation analysis of pre- monsoon season (March- May) spanning from 2013 to 2021.

Fig 4. Correlation of Tea Prod & Rainfall for Pre-Monsoon season

		Tea_Prod	Rainfall
Tea_Prod	Pearson Correlation	1	.588
	Sig. (2-tailed)		.096
	N	9	9

Rainfall	Pearson Correlation	.588	1
	Sig. (2-tailed)	.096	
	N	9	9

iii) Correlation analysis for south-west monsoon season suggests a moderate negative correlation of -0.587 which is statistically not significant. Figure 5 below depicts the correlation analysis of SW season (June- Sept) spanning from 2013 to 2021.

Fig 5. Correlation of Tea Prod & Rainfall for SW-Monsoon season			
		Tea_Prod	Rainfall
Tea_Prod	Pearson Correlation	1	-.587
	Sig. (2-tailed)		.096
	N	9	9
Rainfall	Pearson Correlation	-.587	1
	Sig. (2-tailed)	.096	
	N	9	9

iv) Correlation analysis for post-monsoon season suggests a strong positive correlation of 0.849 which is statistically significant at 0.01 level of significance. Figure 6 below depicts the correlation analysis of Post monsoon season (Oct- Dec) spanning from 2013 to 2021.

Fig 6. Correlation of Tea Prod & Rainfall for Post Monsoon season			
		Tea_Prod	Rainfall
Tea_Prod	Pearson Correlation	1	.849**
	Sig. (2-tailed)		.004
	N	9	9
Rainfall	Pearson Correlation	.849**	1
	Sig. (2-tailed)	.004	
	N	9	9
**. Correlation is significant at the 0.01 level (2-tailed).			

Results from monthly rainfall (in mm) and tea production (in M.kgs) suggest the following results:

For monthly correlation analysis, data of monthly rainfall and tea

production spanning from January 2013 to December 2019 has been considered for the study, which makes a total observation of 84. Figure 7 below depicts a moderate positive correlation which is statistically significant at 99% confidence interval.

Fig 7. Monthly Correlation of Tea Prod & Rainfall			
		Tea_Prod	Rainfall
Tea_Prod	Pearson Correlation	1	.651**
	Sig. (2-tailed)		.000
	N	84	84
Rainfall	Pearson Correlation	.651**	1
	Sig. (2-tailed)	.000	
	N	84	84
**. Correlation is significant at the 0.01 level (2-tailed).			

Results from Annual rainfall (in mm) and tea production (in M.kgs) suggest the following results:

For annual correlation analysis, data of annual rainfall and tea production spanning from January 2013 to December 2019 has been considered for the study. Below is a tabular representation of the results of the correlation analysis annually.

Table 5: Annual Correlation of Tea Production and Rainfall

Year	Correlation Coefficient	Remarks
2013	0.727**	Correlation is significant at the 0.01 level (2-tailed)
2014	0.698*	Correlation is significant at the 0.05 level (2-tailed)
2015	0.527	Correlation is insignificant
2016	0.534	Correlation is insignificant
2017	0.737**	Correlation is significant at the 0.01 level (2-tailed)

2018	0.702*	Correlation is significant at the 0.05 level (2-tailed)
2019	0.659*	Correlation is significant at the 0.05 level (2-tailed)

From the above table 5, it is clearly seen that all the years are having positive correlation. The findings also depict that 2013, 2017 and 2018 are having strong positive correlation which are statistically significant at 99% for 2013 and 2017 and 95% for 2018 respectively.

Results from Regression Analysis

From the regression analysis it is found that R value is 0.651 which depicts a moderately strong relationship between both the variables and the value of R squared is 0.424, which means 42.4% of the variation of tea production (dependent variable) is explained by rainfall (independent variable). This suggests that rainfall is not only the variable which determines tea yield but there might be other factors such as relative humidity, average sunshine per day, temperature and socio-economic factors which is beyond the scope of this chapter.

Below figure 8 depicts the model summary of our regression analysis.

Figure 8. Model Summary

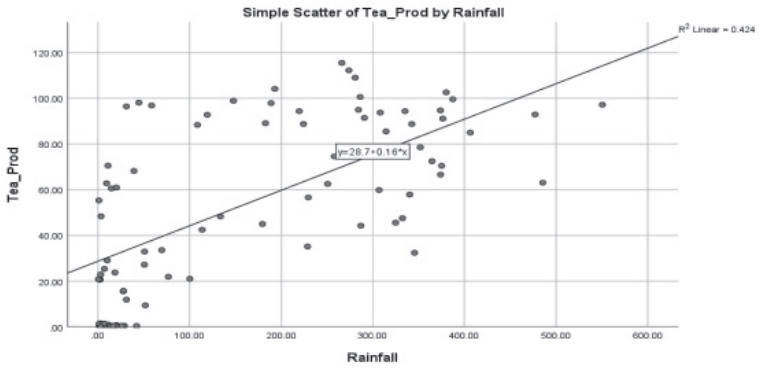
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.651[a]	.424	.417	28.05814

a. Predictors: (Constant), Rainfall

In the figure 9 below, the pattern of dots indicates an upward direction which determines that there is a positive relationship between the dependent and the independent variable. For the tea production and rainfall, the scatterplot displays a moderate positive relation. As rainfall increases, tea production also tends to increase. However, it can be observed that the clustering of the data points is

not that tight with few outliers thus implying a moderate strength relationship among the variables.

Figure 9. Fitted Simple Scatter of Tea Production by Rainfall



Conclusion

Tea is extremely vulnerable to climate change. Because tea cultivation has specific temperature and precipitation requirements, climate change poses a significant threat to tea production. In practically in all tea gardens; untimely rainfall, inadequate or no rainfall during crop season, extended dry spells, occasionally flood-like situations, rising temperatures, and so on are key issues.

As a result, the annual operation cycle is halved, from 9 to 10 months to 8 to 9 months or less. Climate change has an impact on the quality and quantity of tea production, as well as in the timing, intensity, and frequency of insect and disease attacks, inappropriate growth of new buds, and soil fertility loss, among other things. Variation in tea production is largely due to changes in climatic conditions. Because to the nearly uniform weather conditions in south India, tea productivity is higher. Winter in North India is cold, which causes the tea bushes to become dormant, resulting in lower productivity throughout the winter months. Climate affects both production and quality of leaf harvested (Shah & Pate, 2016).

The current study sheds light on environmental factors that have a significant impact in tea production in Assam. Though precipitation variability is a significant influence in influencing tea output, it is neither the only nor even the most important component. Other unknown influences such as rising production costs, socio-political instability in the state, the current pandemic and epidemiological crisis in the region, and so on, might all have a detrimental impact on tea plantations. To obtain accurate results, a thorough examination of both environmental and non-environmental factors affecting the tea sector in Assam is necessary.

It may be concluded from this study that changing climate, particularly rainfall, may have an influence on tea output. Low tea productivity is caused by erratic rainfall, which is especially noticeable in the winter as well as the pre-monsoon seasons of 2013, 2014, and 2021. The peak production season is likewise thought to be from April to September, however this is heavily reliant on the state's changeable rainfall patterns. The state's economy will suffer as a result of the sudden rise and fall of precipitation, as well as the uneven distribution of rainfall throughout the year, resulting in increased unemployment, increased poverty and crime, lower per capita income, low investment, and a BOP deficit as a result of the loss of revenue. Because Assam's population is growing and the cultivation area is fixed, any decrease in precipitation might have an influence on productivity, causing a demand-supply mismatch that could lead to tea price inflation. Apart from that, any growth in tea output in other regions of the world would be detrimental to India's tea exports.

Therefore, to prevent such situations important policy measures should be implemented by the government. Some adaptation measures can be taken such as multi-cropping system expansion to lessen the risk of mono-cropping and improved irrigation infrastructure and efficient drainage to minimise water logging

in low-lying areas during protracted dry spells. Training and research and development should be prioritised, with an emphasis on modernising the sector through changes in manufacturing techniques, management excellence, and infrastructural development. Market diversification is a significant strategy for increasing Indian tea exports which can help small tea farmers to get exposure to marketing, management, and improved support services. Potential positive externalities in the form of tourism may be explored in tea plantation regions by building new resorts, tourist spots, hotels, trekking, and other activities. Darjeeling, Sikkim, and the Nilgiri hills provide an excellent illustration. Efficient energy utilisation and infrastructure development, such as transportation and communication networks, roadway improvements, and inland waterways, can assist reduce production costs and efficiency in the long run.

Recently, to further promote and support the tea sector, which suffered a setback due to changing climatic conditions and other factors, the government granted full exemption from payment of Agricultural Income Tax with effect from April 1, 2020 for a period of three years as per the latest Assam State Budget 2021-22[4].

Future Scope: Further studies can be carried out by considering other climatic parameters as well as non- climatic factors such as socio-economic, political factors etc. in order to determine tea yield for a more detailed study. Studies can also be carried out by using primary data in the tea growing regions of Assam for more précised conclusion.

References

Arya, N. (2013). Growth and Development of Tea Industry in Assam. *International Journal of Scientific & Engineering Research , 4* (7).

4 www.assamtribune.com, 17th July,2021

Barkakoty, B. (2015). Challenges and opportunities in the tea sector. Retrieved from NEZINE:https://www.nezine.com/info/QUN0azRIaVNZZkowSWVMaHIzYWdHUT09/challenges-and-opportunities-in-the-tea-sector.html

De Costa, W., Mohotti, A., & Wijeratne, M. (2007). Ecophysiology of Tea. https://doi.org/10.1590/S1677-04202007000400005 .

Dikshit, K., & Dikshit, J. (2014). North-east India: Land, people and economy. Netherlands: Springer: Dordrecht.

Duncan, J., Saikia, S., Gupta, N., & Biggs, E. (2016). Observing climate impacts on tea yield in Assam, India. *Applied Geography , 77*, 64-71.

Dutta, P., Kaushik, H., Bhuyan, R., Kaman, P. K., Kumari, A., Das, A., et al. (2020). Relation of Climatic Parameter on Tea Production in Organic Condition Specific to Assam.

Dutta, P., Kaushik, H., Bhuyan, R., Kaman, P. K., Kumari, A., Das, A., et al. (2020). Relation of Climatic Parameter on Tea Production in Organic Condition Specific to Assam. *International Journal of Current Microbiology and Applied Sciences , 9*, 2243-2249.

Dutta, R. (2014). Climate change and its impact on tea in Northeast India. *Journal of Water and Climate Change* , 625-632.

(2016-17). Economic Survey of Assam. Assam: Directorate of Economics and Statistics, Assam.

Economides, G., Papandreou, A., Sartzetakis, E., & Xepapadeas, A. (2018). The Economics of Climate Change. Bank of Greece.

Kumar, S., Pradhan, S., & Ranjan, R. (2016). Impact of Major Climatic Factors on Tea (Camelliasinensis) Ecosystem of Assam. *International Conference on Emerging Technologies in Agricultural and Food Engineering , 53*, 517-525.

Patil, D. P. (2019, October 30). Assam tea industry faces economic crisis. Retrieved from Trade Promotion Council of India: https://www.tpci.in/indiabusinesstrade/blogs/assam-tea-industry-faces-economic-crisis/

Purkayastha, G. (2016). In G. Purkayastha, *Environmental Economics* (p. 288). Kalyani Publishers.

Rahman, J. (n.d.). Tea Industry of Assam. Retrieved from Abhipedia: https://abhipedia.abhimanu.com/Article/State/NDY2MgEEQQVVEEQQVV/Tea-Industry-of-Assam-Assam-State

Roy, S., Barooah, A. K., Ahmed, K. Z., Baruah, R. D., Prasad, A. K., & Mukhopadhay, A. (2019). Impact of Climate change on tea pest status in northeast India and effective plans for mitigation. *Acta Ecologica Sinica* .

Shah, S. K., & Pate, V. A. (2016). Tea Production in India: Challenges and Opportunities. *Journal of Tea Science Research , 6*.

Sitienei, B. J., Juma, S. G., & Opere, E. (2017). On the Use of Regression Models to Predict Tea Crop Yield Responses to Climate Change: A Case of Nandi East, Sub-County of Nandi Country, Kenya. *Climate MDPI* .

Stern, N. (2006). What is the Economics of Climate Change. *World Economics , 7* (2), 1-10.

TRA. (2015). Assam Tea. Retrieved from Wikipedia: https://en.wikipedia.org/wiki/Assam_tea

TRA. (n.d.). Tea Cultivation. Retrieved from Tea Research Association: https://www.tocklai.org/activities/tea-cultivation/

Wikipedia. (n.d.). Retrieved from Wikipedia: https://en.wikipedia.org/wiki/Economics_of_climate_change

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CHAPTER 7

Food Processing Industry in North East Region – Its status, constraints, and prospects in income generation

Dr. Mrinmoyee Bhattacharyya

Abstract

India's North East Region is a triggered trove with magnificent beauty processing undulating hills and thrilling flora and fauna. The region with its agro friendly climatic and agrarian roots has the potential to be a sun rise zone for food processing industry. The availability of large amount of agri-horti surplus produce provides opportunities to NER to process the produce. The processing of produce will lead to better value edition and return to the growers. Food processing benefits not only the growers of agricultural produce but also creates employment in service sector like transportation, packaging, advertising and marketing. The present paper aims to explore the prospects and present scenario of food processing sector prevailing in the region. Although the central and state government have come out with various policies and schemes, but the growth of entrepreneurial opportunities has not achieved up to the mark as several barriers hinder in this sector. A strong awareness regarding entrepreneurial development and farmers revolution of agri and horti business can be catalytic for the development of food processing industry in NER.

Keywords: *Food processing, Agri Business, Constrains, Entrepreneur and Income generation, Government Policies*

Introduction

The North Eastern Region is recognized as "Astalakshmi" comprises eight sisters' states endowed with rich agricultural resources (fruits, vegetables, medicinal plants, other Argo products). The climate in the North East Region is suitable for several exotic crops and one of the richest bio diversity zone in the country. The favourable argo climatic condition makes India's North East Region a natural organic hub of a variety of high value fruits and vegetables. In the present scenario, a continuing problem in the North East Region is storing the surplus produce and percentage of wastage is very high as most of the horticulture crops are perishable. To overcome the problem of wastage, there is need to find out other sustainable ways, which will make proper use of surplus produce, support the needs of undernourished and also to create employment and income generation. The food processing industry provides a way out to get rid of this problem.

A brief history of Indian food processing industry

The Indian food processing industry is primarily export oriented. India's agri and processed foods export stood at Rs 116,331.68crore (US$18.65 billion) during April -March 2012-13, as compared to Rs 82,480.25 crore (US$ 13.22 billion) in the corresponding period last year, according to data compiled by the agricultural and Processed Food Products Export Development Authority (APEDA) (Ministry of Commerce and Industry, 2013b). Investments in the Indian food processing sector grew at 20 percent per annum in five years and total investments at present is estimated at Rs 150,000

crore (USS$ 24.04 billion), employing over 10 million. Further, the Government of India expects US$ 21.9 billion of investments in food processing infrastructure4 by 2015.

The industry registered a compound annual growth rate (CAGR) of 15.6 per cent during FY07-FY12 (MOFPI, 2012). In India, the industry is largely dominated by the ready -to eat segment, which contributed nearly 90 percent of the total sales of packaged foods in India FY12 (MOFPI, 2012)

Food Processing Industry in NER

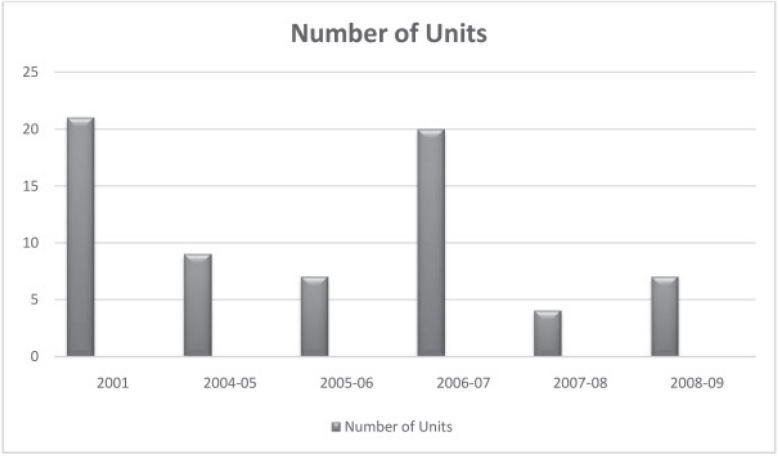
Like other parts of India NER state have observed high production of fruits, as NER has agro friendly climate and agrarian roots make NER a sunrise zone for food processing and agri business. Agriculture sector in India as a whole, contributes a Gross Value Added (GVA) of about 15.87 per cent of region's population depend on Agriculture for livelihood support, the production of food grains accounts for only 3 percent of the country's total production primarily due to marginal and small farmers having 78.92 per ce4nt share of land, thereby making the region a net importer of food grains even for its own consumption.

Food Processing in NER sector needs more organized entrepreneurial initiative to suffice the demands of growing middle -class consumers and improve rural employment generation, augment farm income and raise revenue through intensified participation in export trade.

In the present scenario, the food processing industry is mainly operated on a small scale and in small numbers. In 2009, in North east only 85 units received licenses under the FPO (Fruit Products Order) act and out of these only 32 are functional units (MSME, 2009)

Figure 1

Year Wise Number of Food Processing Units Registered in North East India



Source: Indistat .com, Lok Sabha Starred Question No 848, dated on 09.07.2009

In tune with the rest of India, the food processing industry in the NER is mainly unorganized and works on a smaller scale. Own -account enterprises hold the highest share in the unorganized sector. The Huge presence of the unorganized sector can be attributed to the fact that most of the units in the unorganized sector can be attributed to the fact that most of the units in the unorganized sector are less capital intensive, and the easy availability of raw materials makes it more attractive for small entrepreneurs.

TABLE 1

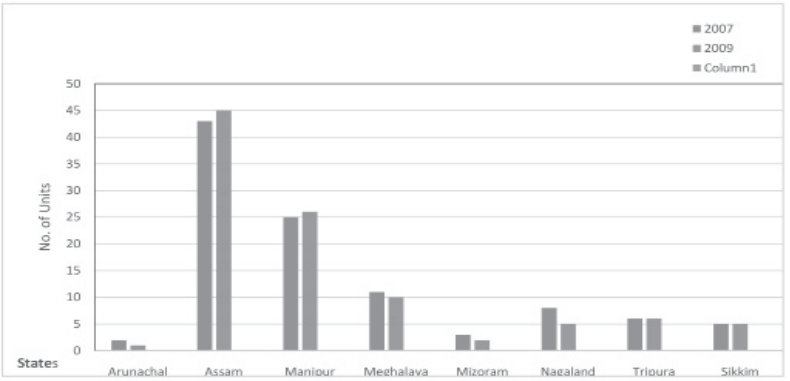
Number of unorganized manufacturing enterprises present in Food processing industry in north eastern states (2010-11)

States	No of Own Account Enterprises (OAE)	No of Enterprises (Establishment)
Arunachal Pradesh	186	197
Assam	22847	14310
Manipur	1093	516
Meghalaya	946	304
Mizoram	1224	96
Nagaland	804	162
Tripura	13782	4843
Sikkim	12	21

Source: NSSO 67th Round November 2012

Figure 2 Source: Indiastat.com

Number of Fruit and Vegetable Processing Units in North Eastern States (2007 and 2009)



Among all the sectors in food processing industry, the sector which has an advantage in NER over the rest of India is the horticulture industry. Diverse agro climatic conditions ranging from temperature to tropical, fertile soils and abundance of rainfall offer immense

scope for development of this sector. The major horticulture crops of the region are potato, onion, tapioca, sweet potato among vegetables and tuber crops; ginger, turmeric and chilies among spices; banana, pineapple, orange/other citrus fruits, mango, litchi, jackfruit among fruit crops and coconut and areca nut among fruit nuts. Other horticulture crops, which are produced to a somewhat smaller extent are cabbage, brinjal, cauliflower among vegetables and apple, pears, plums, peach and passion fruit among fruit crops. the horticulture crops are found in surplus for the local population.

The presence of large amounts of surplus provides the NER with two options – either to export this surplus in its raw state, or to process the produce. The processing of produce still provides a much better option and after processing of produce still provides a much better option and after processing the products can be exported, provides higher gains to the producers and others along the value chain. The processing sector not only benefits the people involved in this sector but also people involved with services like transportation, restaurant, packaging, advertising and marketing. In all processing of surplus will create more employment and income generation opportunities. Apart from that NER shares international boundaries South Asia (Bangladesh, Bhutan) and Southeast Asian Countries (China, Myanmar). This renders immense potential for border trade and export. The existing India-Myanmar-Thailand trilateral highway also facilitates access to the fast-growing potential markets of Southeast Asia. The setting up of various Agricultural and Food Processing tap the potential scope of export in the region. The NER is a gateway to Southeast Asia and hence the reason has a good prospect for border trade. The availability of exportable resources coupled with the fact that the region is situated in a strategic location leads to enormous potential to transform the NER into a successful international commercial hub of agro based products.

Constraints in the promotion of Food Processing in NER

Although there is a huge scope for the growth of agriculture and food processing sector in NER, the ground reality is that the processing activity is still at a premature stage with low penetration. The reason for low penetrations of this sector is due to several inhibiting constraints consisting of technical, institutional, and financial shortcomings in the region which are being discussed below:

Poor Infrastructure

Inadequate infrastructures in transportation communication and marketing challenge the sustenance and growth of agribusiness. For example, food processing accounts only a small percentage of the region's total agricultural produce. In 2015, the total installed capacity for food processing was about 6,000 MT but the utilization is only about 20 per cent of the capacity due to ill management leading to heavy losses.

Inadequate finance support mechanism

Funding constraints for investments in agribusiness venture is one of the major issues of budding entrepreneurs in the region. Small landholding system prevailing in the region and outdated land record system may hinder the agribusiness initiative due to inadequate collateral security fund during seeking loans from banks for first generation entrepreneurs. For example, in Assam, researchers found that primarily microfinance is the only viable option to provide entrepreneurs opportunities to the poor who can't get larger financing such as bank loans.

Ineffective institutional support mechanism

Limited informational access limits the prospective drive-in commercial farming activities resulting in a handful of participation in agri-business and underutilization of potential resources.

Inadequate research and development support mechanism

The research findings of the academia often remain in documents which need to be transferred to entrepreneurs and industry to strengthen commercial agribusiness sector. This is also due to the lack of linkages among stakeholders such as producers, processing enterprises and R&D institutions, which inhibit the sharing of knowledge and business connections amongst them.

Apart from the above constraints the insufficient, well equipped cold storage facilities and processing of farm produce, weak capital base food value chain, lack of market access both domestic and international, limited flow of labor and material, poor post-harvest technology facilities are also responsible for premature stage of food processing industry.

Government Initiatives to boost up the food Processing industry

1. The scheme is the signature initiative of the central Ministry of Food Processing Industries. The scheme covers setting up technology upgradation/modernization/ establishment of food processing industries in fruits and vegetables, milk products, meat, poultry, fishery, oil seeds and such other agri- horticultural sectors, including food flavors and comarket sector, namely rice milling, flour milling, pulse processing units are also eligible for availing of grant under this scheme. The government of the NER is also trying to implement this scheme, but the results have not been satisfactory as implementation has been held up in red tapism, with very low approval rates. Table 4 tabulates number of project proposals received, approved pending, closed and rejected in NER under this scheme till 2006. Under the same scheme, there is subsidy for setting up of food processing industries. Under the same scheme, entrepreneurs from NER were also given grant.

Table 4

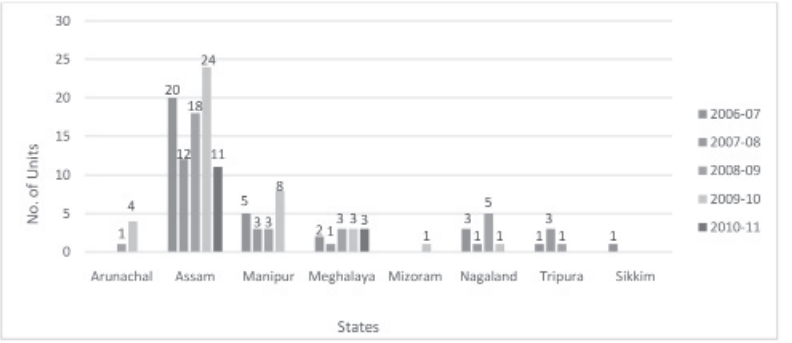
Number of project proposals, received, approved, pending, closed and rejected under Scheme for Technology upgradation, establishment and modernization of food processing industries in North Eastern India (up to 2006)

States	Received	Approved	Pending	Closed	Rejected
Arunachal Pradesh	6	0	5	1	0
Assam	54	27	22	9	1
Manipur	13	3	5	4	0
Meghalaya	7	3	4	1	0
Mizoram	4	0	1	2	1
Nagaland	22	2	12	4	3
Sikkim	1	0	1	0	0
Tripura	2	3	0	1	0

Source: Indiastat. Com, Rajya Sabha Unstarred Questions No. 409, dated 27.11.2006

Figure3

State Wise Number of Projects approved under food processing sector in NER FROM 2006-07 TO 2010-11



Source: Indiastat.com, Lok Sabha Unstarred Question No 583, dated on 11.11.2010

2. **Mega Food Park Scheme**

Mega and mini food parks provide a vital market link to the grower and generate employment. The mega food park scheme of the Ministry of Food Processing facilities the establishment of food processing units equipped with a robust supply chain. Around 25-30 food processing units in a Mega Food Park with a collective investment of Rs 250 crore is estimated to lead to an annual turnover of about Rs. 450-500 crore and the creation of direct/indirect employment of about 5,000 persons benefitting about 25,000 farmers which demonstrates the role it plays in providing the market linkage to the growers besides employment and livelihood generation.

3. **Horticulture mission for North East and Himalayan States**

Horticulture mission for North East and Himalayan States (HMNEH), Assam had 3.83 lakh hectare (9.83%) under horticulture crop against the total gross cropped area of 38.96 lakh Ha which increased to 6.4 lakh Ha (15.67%) in 2014-15 following implementation on NMHEH. The production was also more than double from 33.95 lakh MT to 71.15 lakh MT while productivity increased by 25%.

4. **Mission for integrated development of horticulture**

Mission for integrated development of horticulture (MIDH), a centrally sponsored scheme under which the central government contributes 90% of total outlay in the case of Northeast and Himalayan States and 60% for all other states.

5. **The scheme of Pradhan Mantri Kisan Sampada Yojana**

The scheme of Pradhan Mantri Kisan Sampada Yojana (PMKSY) has introduced many benefits to enterprisers in food processing sector. “Nivesh Bandhu” is a dedicated

investor's portal to assist potential investors in taking informed decisions in the food procession sector. A special fund of Rs 2,000 crore has also been set up in National Bank of Agriculture and Rural Development (NABARD) to provide credit at affordable rates to entities on the food processing sector. This loan is extendable to individual entrepreneurs, cooperative societies, farmer's producer organizations, companies, joint ventures and entities promoted by the Government for setting up, modernization, expansion of food processing units and also development of infrastructure in designed food parks. In addition, to that, there is a deduction of 100% of the profits and gains derived from the business of processing, preservation and packaging of fruits or vegetables or meat and meat products or poultry or marine or dairy products or from the integrated business of handling, storage and transportation of food grains for five assessment years beginning with the initial assessment year and thereafter, twenty- five per cent or more subject to certain conditions.

In view of above, the local youth must try their hand and try to uplift the social scenario. The culture of entrepreneurship should be enhanced through awareness programs of available schemes launches under the Government of India such as Startup India (2016), Atal Innovation Mission (ATM) set up by Niti Ayog, Aajeevika- National Rural Livelihood Mission (NRLM) and National Intellectual Property Rights (NIPR) (2016) which are providing entrepreneurs with access to knowledge, skill and linkages through workshops, seminars and trainings. Youth in semi urban and rural areas are provided employable skills through technical and managerial trainings to unleash their potential entrepreneurial skills by concerned academia and

organizations like Indian Institute of Entrepreneurship (IIE), Entrepreneurship Development Institute of India (EDII) and National Skill Foundation (NSFI). Industry can also participate in entrepreneurship development through their corporate social responsibility (CSR) budgets. The strategic linkages between academia, financial institutes, industry and agri entrepreneurs will allow the right exposure to seed funding, mentoring, network support and technology. In recent years ABI (ICAR for NEH) have been continuously linking with other institutions for support and facilitation of entrepreneurs. In February 2020, around 10 members of the center was shortlisted in the NAETEHUB (North East Agri Technology Entrepreneurs Hub) Boot Camp "Idea Sprout 1.0" for facilitation financial grant. Such linkages will help entrepreneurs access critical financial support.

Conclusion

Through the arrival of MNCs and implementation of Act East policy the food processing industry has made significant prospects in the NER. Improved cross border connection has also opened up huge opportunities for exporting fresh and processed horticulture products of the region. But it is unfortunate that the region which is blesses with immense potential has to limp with unemployment and poverty. To overcome these problems, it is utmost urgent to emerge an entrepreneurs or farmers revolution. Which is only possible with awareness programs into deep rural areas for increased agriculture and allied production. This can lead simultaneous improvement in logistic and other infrastructure. In the context of Act East Policy, it is the need of the hour that NER must take the opportunities to develop as the gateway to the South East Asia and flourish with trade and commerce.

References

1. Agro-based Food Processing Industries, Indiatat.com, http:// www.indiastat.com/ table/ industries/ 18 agrobasedand foodprocsssingindistries /43461023/ data.aspx

2. Barah, B.C (2006) *Agriculture Development in North East India Challenges and Opportunities*, NCAER, New Delhi

3. Basu, A Adak K. Analysis of factors of advantages and disadvantages in the business scenario of Northeast India: The Entrepreneur's Perspective. In: Rajagopal, Behl R(Eds) Business Governance and Society. Palgrave Macmillan, Cham; 2019.

   FICCI (2010) *Survey on challenges in food processing sector*, Mumbai

4. Government of India, Ministry of Agriculture (2012a), 3rd advance estimates of Crop production for 2011-12; Press Information Bureau, New Delhi

5. Government of India, Ministry of Food Processing Industries, APEDA (2005), *Report on export potential of horticulture products from North- eastern states* (2004-2005), New Delhi

6. Government of India, Ministry of Food Processing Industries, (2006-07), Annual Report on food processing industries in India, New Delhi

7. Government of India, Ministry of Food Processing Industries, (2011-12), Annual Report on food processing industries in India, New Delhi

8. Government of India, Ministry of statistics and Programme Implementation (204132a), Key results of Survey on Unincorporated Non-Agricultural Enterprises (excluding Constructions) in India, 2010-11, New Delhi

9. https://www.sentinelassam.com/editorial/developing-ne-as-food-processing-hub- 502455

10. http://indiastat.com/table/industries/18/agrobasefoodprocessingindustries

11. Jatinder S. New age skills -Generating opportunities for youth. Yojana. 2018;33-36.

12. Jana H Basu. Agricultural backwardness analysis of North East India: A cause of concern for national development, International Journal of Current Research. 2018;10(12):76825-76831

13. North Eastern Regional Agricultural Marketing Corp. Limited Study Report on to set up food processing industry in the state of Assam Mizoram and Tripura. ITV Agro &Food Technologies Pvt. Ltd., New Delhi;2015

14. North Eastern Regional Agricultural Marketing Corp. Limited Study Report on to set up food processing industry in the state of Assam Mizoram and Tripura. ITV Agro &Food Technologies Pvt. Ltd., New Delhi;2015

15. Sharma and Bora. Role of microfinance in women entrepreneurship. Eleventh biennial conference on entrepreneurship. Ahmedabad, Gandhinagar, Gujrat: Bookwell. 2015; (1):688-693

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CHAPTER 8

Water Hyacinth- A Golden Opportunity to Achieve Economic Survival and build lives towards a Prosperous Future

Tulika Chowdhury
Nabanita Deka

Abstract

The handicraft sector plays a significant and important role in the economy of a country. It provides ample opportunities for employment in rural and semi-urban areas even with low capital investment and it becomes a prominent medium for foreign earnings. Different regions of Assam are known for their different forms of art and handicrafts. Now- a- days water hyacinth handicraft products have emerged in the market. Water hyacinth is a free- floating perennial plant that can grow to a height of 3 feet. Although water hyacinth is seen in many countries as a weed and is responsible for many problems, many individuals, groups and institutions have been able to turn the problem around and find useful applications for the plant because the scope of water hyacinth is huge. Water hyacinth fiber has been applied to create various products such as yoga mat, flower vase, fruit tray, table mat, purse etc. in Assam.

These eco-friendly products help the rural women to improve their socio –economic status and sustainable livelihood. This article tries to show the uses of the waste water weed which helps the rural people turn their lives into a financial independent position and increases their confidence as well as leads to sustainable livelihood.

Keywords: Water hyacinth, NEDFi, Craft, livelihood, ASRLM, Prosperity.

Introduction

The North East Indian State Assam, is a land of wonder filled with colour, culture and traditions in each nook and corner of the region. The richness of the art and handicraft of Assam beautifully reflects the bountifulness of its culture. Different regions of Assam are known for their different forms of art and handicraft.

Handloom weaving industry is one of the oldest industries in Assam and is well known for its rich textures and designs, made by the magical hands of the craftsmen which represent the region's primitive simplicity, elegance, purity and the products that are exclusively unique.

Assamese people also have expertise in basketry, mat making, cane and bamboo craft, bell-metal and other handicrafts like japi, handmade wooden and clay jewelry. Assamese people not only add beauty to the land, but even contribute to Assam's economy and reputation as well.

Aquatic wood water hyacinth gives rise to eco-friendly handicrafts. The craft is also practiced in Arunachal Pradesh, Manipur, Meghalaya, and Tripura though in smaller scale. People in Assam utilize the stem of the water hyacinth to make gorgeous handicrafts like purses, footwear, handbags, lampshades, mat, yoga mat, bag, etc.

Objective of the study

The objective of the study is to show the prospects of water hyacinth i.e., how people use it to produce different products. The article also tries to analyze, with the help of the case study, how the craft leads to sustainable livelihood and economic liberty to make the future of the rural people, especially the women, prosper.

Methodology

The paper is descriptive in nature based on both primary and secondary data. To achieve the objective of the study the primary data i.e., the case studies are collected by conducting telephonic interview with the artisans in two different villages. Secondary data are entirely based on internet.

Positive Side of Water Hyacinth

Though water hyacinth is a very aggressive invader which can cause oxygen depletion and fish kills but it has positive qualities also. It is abundantly available, and grows readily without any need for sowing, weeding or fertilizing or it doesn't require any land space, which can be transformed into a source of income. It is edible also not only for animals but for people too. Leaves and flowers have been used as a vegetable. As a fertilizer, water hyacinth can be used on the land either as green manure or as compost. Water hyacinth fibers are also used as raw material for paper.

Now- a- days water hyacinth products have emerged into the market from many different artisans. Everybody is impressed by the strength of the material and the beauty of the products. It was in 2008-2009 that the North Eastern Development Finance Corporation (NEDFi) conducted a field study with water hyacinth as a craft to promote sustainable livelihood in the region.

Dried water hyacinth is used to make baskets in Bangladesh. In Bangladesh, the rope made by water hyacinth is used to make furniture by local people and also to wind the rope around a cane frame to produce an elegant finished product. In most of the Asian countries like Thailand, Bangkok the petioles of hyacinth are used for making many different items like floor mats, baskets, hats, bags etc.

Methods of production

Water hyacinth grows during July –November. The raw material is prepared by sun drying the stems. The producers cannot dry the stem during monsoon and in summer because if it is over dried then the fiber may lose electricity and not fit for weaving.

Hyacinth is harvested from water bodies and it's stems of 24 to 30 inches are preferred for use in weaving. After removing roots and leaves the stems are kept under sunlight for drying for 7-8 days and then stored up in plastic bags to keep them safe for moisture. After drying, the artisans make the craft pattern that they want to make. This pattern is to facilitate the manufacture of the products. At last, the artisans need to add accessories, colors to make the products more beautiful.

Need for utilizing water hyacinth for the production of craft

- Exploits natural wastes. Water hyacinth is a very aggressive invader and it covers the entire surface of the wetland, pond etc. Removal of the plant helps to conserve water and rejuvenate the environment.
- Leads to sustainable livelihood and inclusive growth in rural areas.

- Raw materials and labour needed for the production of the beautiful, attractive, and strong products of water hyacinth are free and abundant, so the cost of production is low.
- The products are eco- friendly, bio-degradable. So, it is demand driven.
- It helps to improve the socio- economic status of the rural poor specially women so the artisans are now becoming empowered.
- Creates positive atmosphere among local villagers because unemployed, underemployed rural people are able to earn income from their home and they can make their future prosperous. If they work more, earn more.

For a long time, the aquatic plant was considered only as a waste and was either cleared up or left unused. But with creativity and hard work it can be transformed into a craft that has a high selling value. Its craft's value is not less than the handcrafts from cupboard, paper, cane, bamboo etc.

Marketing of the products

Market linkage plays the crucial part for the success of an industry both small and big. Many artisans are exporting their products directly. NEDFi has its own "Water Hyacinth Craft Gallery cum Demonstration Centre" to showcase the products like bags, baskets, caps apart from beautiful jewellery made from water hyacinth. The customers can buy the products from the Gallery and the price pays by the customers will be forwarded to the artisans. A permanent exhibition platform NEDFi Haat" is in Guwahati. The Demonstration Centre is equipped with flattening machine, stitching machine, colouring dyes etc. There are number of showrooms in different places. NEDFi has been organizing exhibitions for the craft in different places of the state. The artisans directly sell their product to the retailers. They also seek to show or sale their products

at different national or international exhibitions also. And they have also participated in various exhibition in different places in India. Prices of the products are determined by the artisans themselves according to the cost of production. Many sellers earn by selling products to wholesalers and NEDFi. Hyacinth fiber handicrafts are exported by the brand name 'Aqua Weaves'. In the domestic market many retailers sell it under their own brand.

Different initiatives have also been undertaken for establishing a sustainable market linkage by the Assam Rural Livelihood Mission (ASRLM).

Discussion and Findings

The water hyacinth is an invasive species but efforts in the North east to turn it into an array of products, from bags to yoga mats is providing a livelihood to over 3,500 artisans.

The idea that water hyacinth (Scientific name: Eichornia crassipes. Pani Meteka in Assamese) is the most productive plant on earth, it could be used to start a virtual new movement in the already rich northeastern handicrafts arts cape because of its abundance and easy availability. This movement happened when NEDFi officials visited an international fair where they saw different furniture made out from water hyacinth in Bangkok. NEDFi provides phase –wise training program to the artisans. They have also introduced the district mentor to help the artisans. They also guide them to improve their quality of their products and finally they collect their products for sale

In 2012, training by member of UNIDO (United Nations Industrial Development Organization) Thailand led to the standardization of the production technique, design, and products. These trainers from Thailand were very senior people and their training helped to prepare master trainers who, in turn, have been helping others in hyacinth fibre products.

ASRLM have also designed Capacity Building Programmes and technical training in order to enhance their skills and productivity of the artisans on water hyacinth craft.

Most of the rural women work from home in the craft and it provides them with an additional income. They earn Rs. 7000 to Rs 10,000 per month by selling products which has made them financially independent. Each artisan's earning depends on the hours she spends on the craft. Some crafts men spend Rs 15,000 but they earn a profit of Rs.35, 000 per month.

To show the economic upliftment of the artisan of the water-hyacinth products elaborately two case studies have been shown below -

Case study 1

Impact of Commercial Uses of Water-Hyacinth

An women Entrepreneur who gives wings their dreams & She proved that ***dreams*** can turn into ***reality***. She has using water-hyacinth as recourse throughout her entrepreneurial journey. Her name is Dulu Mani Kalita, inhabitant of village Hirapar, P.O-Dhula under Darrang district, she had been facing lots of financial shortages during her academic period due to low income of her family as her father was a teacher. But she was self-determined and interested for doing something special in handicraft sector. She was aware about sustainable development and she believes in utilization of locally available natural resources. As she lives in village, she noticed future prospect of water hyacinth plant which are normally considered as waste but she knows about the uses of the aquatic plant. Due to the lack of technical knowledge, she couldn't start her venture.

After graduation she had undergone a training programme on Water Hyacinth Craft at Dhula, organised by NEDFi in the year of 2014.She also took another training at RSETI, Darrang on Fashion Designing in the month of December-2014.

In the last part of the year 2015, she had been a credit linked with MUDRA initiated by RSETI, Darrang, from Assam Grameen Vikash Bank, Dhula Branch an amount of Rs. 25,000/-. After getting the loan amount she had started to make Water Hyacinth Products with her innovative ideas in the year of 2015. She produces lots of products (decorative as well as personal uses) like Basket, Pen Stand, Flower pots, Hand Bag, Mat, Jacket, Sappal, Jewellery items. She had marketed the products first time to the relatives and friends according to their orders. After few months her products are able to make a sustainable demanded market. She sold her products to Assam and other state of India. With the help of the guidance given by the Director of RSETI, Darrang, she reinvests another amount of Rs. 45,000/ in her business, now her monthly turnover is near about 30 to 40,000/- and she engaged 2 nos. of permanent and 5 nos.of daily wage labour for making the products according to demand. In addition, she has also become a master trainer for Water Hyacinth Craft in the district and acts as a trainer in RSETI, Darrang and in NGO's as well as in some other agencies too.

A National Level Award gave an extra mileage & recognition to her journey. As per Email from Mr. Bishwajit Deb, District Development Manager, NABARD, Darrang, on 23rd November 2018, Mr. Tarun Kr. Bora, Director, RSETI, Darrang Dulumoni was nominatd and after that selected for the National Entrepreneurship Award 2018 in the A-1 category.

On 4th January 2019, she had been felicitated by Mr. Suresh Pravo, Hon'ble Central Minister, Ministry of Industries & Commerce and Civil Aviation along with Mr. Ananta Kr. Hegde, Hon'ble State Minister, Ministry of Skill Development & Entrepreneurship at Dr.Ambedkar International Centre, New Delhi. In the Award ceremony she had been awarded in the category on A-1, as below one lakh investor. In the Award she got Rs Five Lakh, one Trophy and a Certificate.

After the achievements she becomes more enthusiastic and tries to give more efforts to sustain & grow her business in the long run by upgrade her products with advance training of marketing, packaging and technological up - gradation.

A Part of Conversation with Dulumoni

1. Why do you choose water-hyacinth as a resource?

- The uniqueness of the Water Hyacinth products which are preparing by me are demand driven and pollution free / bio- degradable as well as competent to face other fancy items of MNC prevailing in the market. It helps sustainable livelihood & accelerated growth in rural areas.

2. What is the prospective of water-hyacinth in socio-economic & environmental point of view from your side?

- I think that, some of the unemployed youths have been motivated to do such types of works for their livelihood and make themselves as self- employed.

In the socio- economic circumstances of rural areas people can earn extra income by utilising spare times with a low investment and using locally available raw materials i.e., Water Hyacinth.

- In case of customer, they are getting handmade attractive products at a cheapest rate.

3. What is your marketing strategy and future plan?

- I have planned to set up selling point at Mangaldai town of Darrang District.
- I have been marketing through social media and participating in local Expos and ordered from customers / wholesalers etc.
- I have intended to diversify the products & produce bio-fertilizer near future.

We have done this case study to know about socio-economic impact by using water-hyacinth as commercial resource.

After peeking into her life, she upgrades her financial as well as social status & contributes in the development in her locality. She encourages women to involve in business activity for financial empowerment.

A few glimpses of her work

Finished Products of Water Hyacinth made by Dulu Moni Kalita

As a Master Traininer at RSETI, Darrang in a training on Water Hyachinth Manufacturing Products

As a Master Traininer at District Jail, Darrang in a training on Water Hyachinth Craft

Moments of Receiving National Entrepreneurship Award 2018 at Dr. B.R. Ambedkar International Centre, New Delhi on 4th Jan. 2019

Certificate received by Ministry of Skill development and enterpreneureship

A precious moment with Hon'ble Mr. P. Santosh, NDR, NACER, Mr. Rabishankar, Mr. Lingaraj, NACER, Mr. H. Sarma & Mr. Bag From IIT, Guwahati, Assam

Case Study 2

Water Hyacinth Handicraft Products Lead to Sustainable Livelihood

"Where there is will there is a way"-Munmi Dewraja proves this statement by her actions. She Believes that **"Work is worship, without action, human life is stagnant."** This mantra helps her to become an inspiration to other in society.

Her native village is Borchilla, P.O: Borchilla under District: Morigaon, Assam. She belongs to a lower middle class family background so she had faced financial problems. As an educated woman, she understood the importance of women's financial empowerment despite being busy with household activities after her marriage.

She starts her journey from 2017.In the month of September 2017, an awareness meeting on work culture was conducted by Assam State Rural Livelihood Mission. The topic of the meeting was "Production of Utility Goods from Water Hyacinth" where she was attended and there, she came to know the uses of water hyacinth. Then she was shocked. After a few days she had undergone a Basic Training on Production of water hyacinth handicraft Product along

with her SHG members which was sponsored by ASRLM at her own village. She was aware about product diversification & market competition so she had an advance training on the said programme sponsored by NEDFI at Khatri.

She was the member of Sonai Puriya Atma Shayak Got (Sonai Puria SHG), After training the SHG's members decided to utilize their RF amount i.e., 20,000/- to produce water hyacinth handicraft products. They got first order from NEDFi. Munmi led the group and they have never looked back after starting the journey. They produce file cover, yoga mat, decorative items, coaster, slippers, basket, hat, fruit tray, handbag, and women purse etc. They sell their products in Assam and another state also. These help the members of the said SHG to earn profit and doubling their RF amount.

Munmi, opted water hyacinth handicraft product production as a primary source of livelihood and has been associated with the Dolong-ghat Handicraft Co-operative Society. She has earning around 10,000 to 15,000 per month by selling products. She worked as assistant in water hyacinth handicraft CFC under Borchilla GP and tries to make aware the village women about the benefit of the plant which can help their sustainable livelihood. She works as trainer cum mentor and her roles reflected in the fields of training to fellow trainees, inspection of finished products & share new ideas of the crafts with trainees. Besides these she also took part of Handcraft Exhibition, Trade fare in different state of India. In the Month of June,2022 she had joined a SHG Workshop & Sell Exhibition at **Lal Bahadur Shastri National Academy of Administration** (**LBSNAA**), Mussoorie, Uttarakhand from 27th June to 28th June.

A Part of Conversation with Munmi Deuraja

1.Why do you choose water-hyacinth as a resource?

- 1.It is free and plentiful. It reduces the cost of raw material.

Water Hyacinth products are bio-degradable, eco-friendly so it is demand driven.

2. What is the prospective of water-hyacinth as resource/raw material in socio-economic & environmental point of view from your side?

- It can create opportunity to promote rural livelihoods. In her words" In rural area unemployed people can opt and utilize this as source of income and uplift their life style. If Individual cannot start solely then SHG can brings a revolutionary change in rural livelihood.
- She said that Production of Water Hyacinth's goods, fertilizer, biogas plays a vital to create sustainable, eco-friendly rural economy.

3. What is your marketing strategy & future plan?

- I have planned to export my products abroad in very near future.
- I have been marketing through mouth-to-mouth marketing strategy, participating in Exhibitions, social media and online marketing like Flipkart.
- I will connect with more people because I have a dream to engage them in production of water hyacinth craft products which will promote a sustainable and feasible rural economy.
- Another future plan is to diversify the products.
- She additionally added that they have faced problem like market linkage, Capital to increase production and lack of advance training.

After doing the case study, we find out that rural people are understanding the importance of water hyacinth utilization as a raw material in their production process. Team -work can give

extra courage and fuel to do better. In this regard Munmi Deuraja is a front-line worker to promote and aware the villagers about the product. But they need more support in market linkage, capital fund and modern technology.

Conclusion

At last, we can say that to make use of what is so called natural waste and turn them into marketable goods which can yield income for the rural people. The water-hyacinth craft now- a- days gained popularity as it requires minimal effort to produce the input needed for making eco-friendly products for both regular use and decorative items. It should be mentioned here that sophisticated and structured training on making and promoting the craft is a necessity for the rural people so that they can compete with the foreign imported goods and machine-made goods. Therefore, concern government authority, non-profit organizations, entrepreneurs and other concerned stakeholders should come forward to promote and develop water-hyacinth as commercial uses in a diversified

approach, so that it will become a revolutionary step. Proper steps should also be taken to encourage more local villagers to participate in the process of product making, which would generate income in return, especially for those who are seasonal and underemployed workers, so that they can make their future prosper.

References

https://30stades.com>2021/09/08, 'Aquatic weed water hyacinth gives rise to eco-friendly handicrafts'

http://ik.in>volume –pdfs PDF, '*Water Hyacinth (Eichhornia crassipes): A Potential Raw*,

https://trifed.tribal.go.in>files '*TRIFED northeast region weekly newsletter'*.

https://inditogether.org>craft-econ (5th June,2013), '*Pearl of water transforming lives -India Together'*

https://www.researchgate.net>2705, '*Water Hyacinth Craft: A Livelihood*' NEDFi- Research Gate

https://www.telegraphindia.com>cid, '*NEDFi forms group on water hyacinth'* –Tele- graph India

Handicrafts Made from Water Hyacinth (23rd april'2014), YouTube NABARD Online

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CHAPTER 9

Rural Healthcare System and North East India: A Way Forward

Gayatri Gogoi

Abstract

The purpose of this article is to examine the rural healthcare infrastructure in India's North-eastern states. India's rural health-care system still has a long way to go in terms of growth. The study examines how rural healthcare has changed in recent years and provides an overview of rural health facilities and health indicators in the Northeast, which is considered a developing section of the country. In addition, the study discusses health manpower, the function of ASHAs, ANMs, and medical professionals in the rural health care system, and their remuneration for providing services to the rural people. Simultaneously, the report depicts the terrible reality of rural health practitioners, particularly in Assam.

Key words: Rural Health Care, Health workforce, Human Resource for Health, rural development, Northeast Region, National Rural Health Mission

Introduction

India has a long history in healthcare system, including Ayurveda, around 2500-3000 BC, upto Sir Joseph Bhore Committee Report

of 1946 AD. India has made major strides on many fronts in the health sector since its independence in 1947. There was an essential thing to be done is to strengthen the rural health infrastructure, which also started with the establishment of first few primary health centres in Najafgarh (Delhi), Poonamalle (Tamil Nadu) and Singur (West Bengal), under Community Development Programme (CDP) in mid 1950s. Still the picture remains blur because India's picture for rural health care development is yet very challenging, although of its unprecedented economic growth in the post reform decades. In terms of the state of health-care infrastructure and many health indicators such as life expectancy at birth, infant mortality and under-five mortality levels etc. India has been lagging behind other developing countries like China, Sri Lanka, and Bangladesh (Government of India, 2005, 2012b). The Government of India launched the National Health Policy in 2002 and the National Rural Health Mission (NRHM) in 2005 recognising the role of health in development and to strengthen the rural health-care infrastructure in the country. The states which have poor health indicators and inadequate public health infrastructure facilities, NRHM aims to provide health-care to the rural population in an effective way. The main focus of NRHM is to improve accessibility to equitable and affordable primary health-care services such as women's health, child health, water, sanitation & hygiene, immunisation and nutrition, etc. to the rural people, especially women and children.

Northeast India's health-care facilities are distinct from those in the rest of the country. Northeast India has a lot of natural resources and a lot of potential for development, but it isn't growing as fast as it should be; differences in geographical conditions and difficult terrain cause differences in economic growth rates, which act as a constraint and a barrier to providing potential health infrastructure in this region (Ashokvardhan, 2004). Despite the fact that Northeast India is one of the "special priority states" with a 10% budget for health and family welfare, the overall health outcomes remain poor.

The average availability of health workers in Northeast India, such as total number of government allopathic doctors and total number of registered nurses and midwives, is the lowest in the country.

Recent Developments in India since 2002 upto 2017

- National Health Policy (NHP-2002)
- Universal Health Insurance Scheme (UHIS- 2002-03)
- National Rural Health Mission (NRHM- 2005)
- Rashtriya Swathya Bima Yojana (RSBY- 2008)
- Jan Aushadhi Yojana in 2008 (relaunched as Pradhan Mantri Bhartiya Janaushadi Pariyojana (PMBJP- 2016)
- State specific social health insurance schemes for specific target populations (2008-2017)
- Report of High-Level Expert Group (HLEG) on Universal Health Coverage (UHC)
- India reported last case of Wild Polio Virus
- Intensive discourses on operationalisation of Universal Health Coverage (UHC) in India started (2012)
- India is declared polio non-endemic country; National Urban Health Mission (NUHM), with this NRHM renamed as National Health Mission (NHM) in 2013
- South East Asia region of WHO is declared polio free; Mission Indradhanush to increase routine immunization coverage launched; National Mental Health Policy (NMHP) released; High Priority districts (HPDs) for interventions under NRHM in India started (2014)
- India validated maternal and neonatal tetanus elimination; Country becomes Yaws free as well (2015)
- Task force on comprehensive primary health care (PHC) in India (2015-16)

- ❖ National Health Policy (NHP-2017); National Mental Healthcare Act; Report on state specific burden of disease in India (2017)

Review of Literature

Venkatesh, S & Satpathy, S.K (2005) discusses the various types of human resources for health (HRH) managing the public health system in India. The paper discusses many aspects of National Rural Health Mission, its accessibility strategies in meeting the HRH needs. The paper deeply analysis the role of Accredited Social Health Activist (ASHA) in the different layers of rural healthcare system; sub-health centres, primary health centres, community health centres. Another important challenge mentioned is the creation of a sustainable health system by improving the training facilities for health workers, and top link HRH to NRHM in addressing health workforce issues. Hossain, F. (2019) examines the indicators such as health profile, health infrastructure, health care utilisation, and health expenditure, which collectively form the core instrument of the health care system, are used to assess the healthcare services facilities in Northeast India. In Northeast India, the study looks at the disparities in healthcare utilisation and expenditure patterns between rural and urban areas. Comparative statistics of several health indicators such as Infant Mortality Rate (IMR), Crude Birth Rate (CBR), Crude Death Rate (CDR), and Total Fertility Rate (TFR) show that Northeast Indian states did significantly better than the national average. CBR and CDR differ from one state to the next. The state with the highest CDR is Assam. In another study conducted by Thayyil, J. & Jeeya, M.C (2013) has rightly mentioned the shortage of manpower in rural areas because of skewed prioritization and distribution of resources. They addresses the role of National Rural Health Mission, the Ministry of Health and Family Welfare and the Medical Council of India

in creating new cadre of doctors catering to rural communities. There are 1.4 million trained medical practitioners in the country, including 0.7 million graduate allopaths. In metropolitan areas, the number of allopathic doctors is four times higher than in rural areas. Rural areas, on the other hand, are still unable to use the services of the allopaths. Seventy-four percent of graduate doctors live in the United States. Only 28 percent of the country's population lives in cities, while because of scarcity, the rural population remains mainly unserved. However, this is primarily due to inequity in distribution. As a result, the rural population is forced to rely on the services of 'quacks,' who charge exorbitant fees in such regions. Banerji, D.(2005) addresses the role of National Rural Health Mission in improving their health status, but still as earlier, under questionable premises. Furthermore, while the Mission had identified 18 states in the country with "weak public health indicators and/or weak infrastructure," namely Arunachal Pradesh, Assam, Bihar, Chhatisgarh, Himachal Pradesh, Jharkhand, Jammu and Kashmir, Manipur, Mizoram, Meghalaya, Madhya Pradesh, Nagaland, Orrisa, Rajasthan, Sikkim, Tripura, Uttaranchal, Uttar Pradesh, Uttaranchal, Uttar Pradesh.

Overview of Rural Health Care System of North East India

In India, the rural health-care infrastructure has been established as a three-tiered system, including Sub-Centres (SC), Primary Health Centres (PHC), and Community Health Centres (CHC).

The three pillars are the Community Health Center (CHC). In Plain areas, population norms of 5000 per SubCentre, 30000 per PHC, and 120000 per CHC were used, while in Hilly/Tribal/Desert areas, population norms of 3000 per SubCentre, 20000 per PHC, and 80000 per CHC were used. Furthermore, each PHC will have six Sub-Centres and each CHC would have four PHCs (GOI, 2011).

The expansion of these health-care facilities, particularly the Sub-Centres, is necessary for the overall advancement of the system. The community and the basic health-care system Sub-Centres are staffed by one Auxiliary Nurse Midwife (ANM)/Female Health Worker and one Auxiliary Nurse Midwife (ANM)/Female Health Worker. Male Health Care Provider (and one additional second ANM under NRHM), are intended to offer services in the areas of maternity and child health. family well-being, nutrition, immunisation, and diarrhoea prevention and control programmes for communicable diseases There are 148124 Sub-Centres in the system. As of March 2011, there were 7259 people working in the country (4.9 percent) are found in the Northeastern Region.The Primary Health Center (PHC) is the first contact place of between village community and medical officer. A PHC includes a Medical Officer and 14 paramedical and other staff, serves as a referral unit for 6 Sub-Centres and acts as a referral unit for 6 Sub-Centres. Patients are accommodated in 4 to 6 beds. The goal of PHCs is to establish an integrated health care system to the rural residents with curative and preventive health services. In March of this year there are 23887 PHCs in India, of which 1510 (6.3%) of which are private in NER.

In rural areas, a three-tiered health-care infrastructure has been built, based on the following population norms:

Table 1

Centre	Population Norms*	
	Plain Area	**Hilly/Tribal/Difficult Area**
Sub-Centre	5000	3000
Primary Health Centre	30000	20000
Community Health Centre	120000	80000

*Number of persons covered under the services of a particular Facility (SC, PHC & CHC)

Source: Rural Health Statistics

In rural areas of the country, there are 155404 Sub Centres (SC), 24918 Primary Health Centres (PHCs), and 5183 Community Health Centres (CHCs) as of March 31, 2020.

Table 2

Number of Sub-Centres (SC's), PHC's, and CHC's functioning in rural areas

State/Ut	2005			2020			2021		
	Sc's	Phc's	Chc's	Sc's	Phc's	Chc's	Sc's	Phc's	Chc's
Arunachal Pradesh	379	85	31	356	119	60	337	122	57
Assam	5109	610	100	4659	946	190	4663	948	197
Manipur	420	72	16	418	85	17	416	86	17
Meghalaya	401	101	24	440	119	28	448	121	28
Mizoram	366	57	9	311	57	9	340	62	9
Nagaland	394	87	21	395	130	21	427	131	21
Sikkim	147	24	4	147	24	2	147	24	2
Tripura	539	73	10	965	107	22	967	108	22
All India	146026	23236	3346	155404	24918	5183	156101	25140	5481

Source: Rural Health Statistics, 2019-20, 2020-21

Health Manpower: Evidence from Northeastern states of India

One of the most significant prerequisites for the proper operation of Rural Health services is the availability of manpower. As of March 31, 2021, the overall gap in HW(F) / ANM posts (excluding the existing excess in some States) was 2.9 percent of the total required, based on the norm of one HW(F) / ANM per Sub Centre and PHC. The entire deficit is mostly due to shortfalls in Uttar Pradesh (1871), Himachal Pradesh (1253), Gujarat (616), Odisha (397), Tripura (380), and Uttarakhand (252). In the case of HW (M), a deficiency of 66.1 percent of the required exists. Even among the sanctioned positions, a considerable number of vacancies exist at all levels. For example, 21.1 percent of HW (Female)/ ANM (at SCs & PHCs) sanctioned posts are unfilled, compared to 41.9 percent of Health Worker (Male) vacancies in 2021 at SCs. In 2021, 64.2 percent

of the sanctioned Health Assistant (Male & Female) positions and 21.8 percent of the sanctioned Doctors positions at PHCs are unfilled. When looking at the state-by-state picture, it's clear that the increase in ANMs in-position is primarily due to significant increases in West Bengal (9089), Rajasthan (4029), Uttar Pradesh (3684), Gujarat (3515), Karnataka (2850), Jammu Kashmir (2830), and Madhya Pradesh (2636) between 2005 and 2021. Similarly, the number of doctors at PHCs in Gujarat (831), Rajasthan (595), Tamil Nadu (468), Madhya Pradesh (468), Jammu & Kashmir (322), and Uttarakhand has increased significantly (119).

Table 3

State/Ut	2005			2020			2021		
	Health Worker [Female] / Anm								
	Re-quired	Sanc-tioned	In Po-sition	R	S	P	R	S	P
Arunachal Pradesh	464	454	454	475	Na	471	459	486	596
Assam	5719	5719	5719	5605	5216	8614	5611	9094	8650
Manipur	492	463	463	503	962	1002	502	1140	1006
Meghalaya	502	667	608	559	478	1041	569	1074	1122
Mizoram	423	366	345	368	Na	346	402	Na	324
Nagaland	481	342	342	525	747	900	558	647	1008
Sikkim	171	267	260	171	218	268	171	296	318
Tripura	612	525	561	1072	Na	683	1075	Na	695
India	169262	139798	133194	180322	239096	212593	1075	Na	695

Source: Rural Health Statistics

Table 4

State/UT	2005			2020			2021		
	Doctors at PHC's								
	Re-quired	Sanc-tioned	In-Po-sition	R	S	P	R	S	P
Arunachal Pradesh	85	78	78	119	NA	194	122	114	135
Assam	610	NA	NA	946	906	1424	948	1677	1383
Manipur	72	95	67	85	170	311	86	337	308

Meghalaya	101	127	123	119	91	190	121	175	162
Mizoram	57	57	35	57	NA	58	62	0	58
Nagaland	87	53	53	130	113	120	131	97	123
Sikkim	24	48	48	24	48	34	24	39	38
Tripura	73	161	152	107	NA	222	108	NA	230
India	23236	24476	20308	24918	35890	28516	25140	40143	31716

Source: Rural Health Statistics

Rural Medical/ Health Practitioners: A sad story of Assam

A important aspect in addressing the difficulty of enhancing access to health care services and coverage for rural and underserved populations is the shortage and uneven distribution of health workers. Furthermore, the lack of qualified professionals in these locations leads to poor health outcomes, as informal practitioners are the only providers of care. One of the WHO's proposals for long-term solutions to the acute shortage of trained workers in rural and remote areas is to implement an educational approach. State governments have established educational methods with the goal of admitting only students who are likely to serve in underserved areas and shaping education to keep them there. States such as Chhattisgarh and Assam have instituted a three-year programme to train medical personnel. The Assam Rural Health Regulatory Act of 2004 established an authority to regulate and register Diploma Holders in Medicine and Rural Health Care (DMRHC) and their medical practise in rural regions. In September 2005, the Jorhat Rural Medical Institute began the first batch of DMRHC training, which included 98 students. Candidates from a rural background who have completed 10+2 (Physics/Chemistry/Biology) with a pass mark of 50% for general candidates and 45 percent for reserved candidates are eligible to apply. Pre-clinical, para-clinical, and clinical subjects are taught in the first, second, and third years, respectively, followed by a six-month internship. The government of Assam deployed 86 RHPs in SCs in high focus districts (HFDs) to deliver comprehensive health care services in April 2010 after the

first batch graduated in September 2008. In addition to the National Health Program, these RHPs provided all of the essential services (preventive, promotive, curative, and emergency care) as outlined in the IPHS. RHPs had been deployed in 370 of the 5610 SCs across all 27 districts as of March 2013.

The Act was published in the Assam Gazette Extraordinary on September 18, 2004, with the primary goal of: (a) establishing medical institutes to provide education and training for the DMRHC programme.

(c) To supervise and register diploma holders at the DMRHC.

The DMRHC course was started at the Jorhat Rural Medical Institute in response to the aforesaid Act. A holder of a diploma in medicine and rural health care who has registered with the Authority and earned a certificate and a registration number is defined as a "Rural Health Practitioner" under the Act. The Authority is made up of the Director of Medical Education (Chairman), Assam, an officer of the Directorate of Health Services, one principle of a medical college, three reputable medical practitioners, and Principals of medical schools.

RHPs said they were involved in a variety of activities at health facilities. OPD services were offered for four major kinds of cases: minor ailments, communicable diseases, non-communicable diseases, and emergency situations. A significant number of RHPs (95.6%) said they provided symptomatic management of minor ailments (common cold, fever, diarrhoea, etc.) and 94.5 percent said they provided non-communicable services such as I conducting physical examinations (ii) laboratory investigations, and (iii) specific services. The majority of RHPs (94.5%) said they did physical examinations during ANC check-ups. RHPs conducted physical examinations that included lower abdomen examinations, diagnosing symptoms of anaemia, and so on. Laboratory services, such as routine blood and urine tests for pregnant women, were

provided by 79 percent of RHPs, whereas 54.9 percent were involved in provision.

Students who desire to pursue higher education and better professional chances have limited options with the current Diploma course. Its conversion to a Bachelor's degree would not only help to upgrade the course, but it would also raise the potential for higher enrollment in order to close the skills gap in rural and distant locations. A Bachelor's degree would also make it easier for motivated individuals to seek a Master's degree in order to advance their careers. In light of the study's results, there is also a need to broaden the scope of the state's three-and-a-half-year DMRHC programme. Although this course is geared toward providing basic health care services to rural populations, shifting epidemiological trends have increased the necessity for better screening and management of diseases.

RHPs do not have any opportunities for advancement in the current situation, especially as they are hired on a contract basis. It is necessary to establish a regular cadre for RHP in order to sustain this paradigm. Now at present, there are 856 RHP fighting for their continuation of their course and to be included in the AMC Act 1999 and also to create permanent post for the same. Whereas, the RMA of Chattisgarh designated as Assistant Medical Officer, but in Assam, they are still fighting for their degree. The earlier government led by Congress developed the course for the development of rural regions but it was their incapacity to make their duties and degrees to existence and instead their degree were held as unconstitutional. Since then they were fighting for their work status, degree but at the same time continuing in providing services to the various health aspects of the rural population. In the covid times, they acted as real covid warriors in providing and guiding people from every district of Assam. Most of the RHPs even consider that their duties were degraded after the inclusion of GNMs under 'Community Health Officer' category, which is mostly paramedical in nature, unlike medical professionals.

Conclusion

The Human Resource for Health challenge can be met by addressing (i) the creation of a sustainable health system by improving the training curriculum and improving the training facilities for health workers; (ii) the coverage strategy should not only address the numeric adequacy but also the appropriate skills-mix and outreach to vulnerable populations; and (iii) motivational issues such as a positive work environment, adequate remuneration/compensation, career development, and a supportive healer. Even after six decades of planned development in India, the country's health-care system remains inadequate. The National Rural Health Mission (NRHM) (2005-2012), which was started by the Indian government in 2005, has achieved significant progress in the country's health-care infrastructure, but the success has been unequal among areas, with large-scale inter-state variances. In many rural communities and backward portions of the country, access to health-care services is exceedingly limited. More critically, the NER's rural health-care sector faces a scarcity of well-trained health workers, including specialists, nurses, and other health professionals. Despite the fact that several cadres of health workers have been sanctioned, many of them are vacant in practically all states, resulting in under-utilisation of existing health-care facilities and, as a result, closure of those institutions. In remote places across all of the northeastern states, finding public health-care facilities within safe physical reach is a challenge. The northeastern states outperform the national average in terms of cleanliness, but all but Arunachal Pradesh and Sikkim fall short of the national average when it comes to access to improved sources of drinking water. All of these challenges have a negative impact on the delivery of rural healthcare services. Given these constraints, it is reasonable to conclude that health-care services in rural regions across the northeastern states are of poor quality, which has a negative impact on the region's performance in meeting fundamental health metrics. As a result, there is a pressing need for concerted measures to develop rural health-care systems.

In order to prioritise the main areas, a roadmap must be created with the system in mind. State governments should take a more direct approach to establishing new health centres, particularly Sub-Centres, and upgrading existing centres to the next level. Furthermore, the current situation of health manpower must be improved, particularly for ASHAs, ANMs, and RHPs, by ensuring that their jobs are permanent. RHPs, in particular, are deserving of more than they now have. At the same time, the function of ASHAs, Anganwadis, and ANMs is equally crucial for the inclusive health plan, and by improving their remuneration structure, we may encourage many more female employees to join the health sector, potentially increasing a state's workforce.

References

Baru, R., Acharya, A., Acharya, S., Shiva Kumar, A.K. and Nagaraj, K. (2010). Inequities in Access to Health Services in India: Caste, Class and Region. Economic and Political Weekly, 45(38): 49-58.

Bhandari, L. and Dutta, S. (2007). Health Infrastructure in Rural India. P. Kalra and A. Rastogi (eds) India Infrastructure Report 2007, New Delhi: Oxford University Press.

Government of India (2019-2020). Bulletin on Rural Health Statistics in India 2019-20, Ministry of Health & Family Welfare, Government of India, New Delhi.

Government of India (2020-2021). Bulletin on Rural Health Statistics in India 2020-21, Ministry of Health & Family Welfare, Government of India, New Delhi.

Hazarika, I. (2013). Health workforce in India: assessment of availability, production and distribution. South-East Asia Journal of Public Health, 2(2): 106-112.

Hossain, F. (2019). Levels of Health Care and Health Outcomes

in Northeast India. Indian Journal of Human Development. 13(2) 221-232.

Saikia, D. and Das, K.K. (2014). Access to Public Health Care in the Rural Northeast India. The NEHU Journal, Vol. XII, No.2, pp. 77-100.

Thayyil, J. and Jeeja, C. (2013). Issues of creating a new cadre of doctors for rural India. International Journal of Medicine and Public Health, Vol. 3, Issue 1, pp. 8-11.

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CHAPTER 10

A Research Study on The Expenditure Related to Industrial Perspective Under Different Government Departments of The State of Meghalaya

Dr. Hemanta Kalita

Abstract

The industry plays a pivotal role for accelerating the pace of economic progress. The growths of industrial activities are influenced by the state government finance. The budgetary allocation of the state government for industry was not progressively increased in 2000-01 to 2009-10. Another noticeable fact is that the state government allocated average 58% amount for capital expenditure of Industry and 42% amount for revenue expenditure. The rural economy can build the plinth of economic edifice of the nation. The rural economy of the state depends on village & small industries and other agro based activities. The budgetary allocation for village & small industry was increased by 2.11 times in 2000-01 to 2009-10 (i.e., from Rs.25.22 crore to Rs.53.11 crore) The Government of Meghalaya is giving more importance for developmental expenditure in comparison to non -developmental expenditure. The proportion of development expenditure is very high. But the state government requires revising the policy of allocating budgetary

grants. As per the Annual Financial Statement of the Government of Meghalaya, the development expenditure comprises the expenditure for social services and economic services. A welfare government always gives importance for developmental activities of the state. The increased developmental expenditures are consequence of increasing developmental activities.

Introduction

The state government expenditures are usually incurred for maintenance of different administrative functions and execution of various policies for the acceleration of socio-economic development. Therefore, the state government's disbursements can be divided as development expenditure and non-development expenditure. The RBI defined "The development Expenditure is as one that leads to human capital formation.

As per the Annual Financial Statement of the Government of Meghalaya, the development expenditure comprises the expenditure for social services and economic services. The non-development expenditure includes only General Services. A welfare government always gives importance for developmental activities of the state. The increased developmental expenditures are consequence of increasing developmental activities. The table-F.1 shows that 70.28%to 76.73%amount of the total expenditure of the consolidated fund were incurred by the state government for developmental expenditure. The non-developmental expenditure were increased by 2.5 times whereas developmental expenditure were increased by 3 times in the period of 2000-01 to 2009-10.It indicates that the government is giving more importance for developmental programs in comparison to other regular administrative functions. The non – developmental expenditure were increased due to the increased interest burden of public debt and other administrative expenditure. The result of developmental expenditure can be analyzed department

wise. In this study, as we have given emphasis on economic impact of government expenditure, so the seven government departments under economic service category have been chosen. The departments are 1) Agricultural 2) Forestry & Wild life 3) Industry 4) Village & Small Industries 5) Tourism department.6) Transport department 7) Mines & Mineral department

Objectives of The Study

1) To examine the budgetary allocation of revenue expenditure on economic services of the Govt. of Meghalaya.
2) To study the actual utilization of revenue expenditure on economic activities of the Govt. of Meghalaya.
3) To analyse the performance of economic activities for socio-economic development of the State.

Methodology of The Study

The study is mainly based on secondary source of data. The researcher has collected information from the Annual Financial Statement and Finance Account of The Government of Meghalaya. The investigation covers the periods 2001-02 to 2009-10.

Scenario of Expenditure of Sampled Departments.

To analyse the financial discipline of the state government of Meghalaya, the review of all items of government expenditure has been carried out in this study.

Table : 1

Developmental and Non-Developmental Expenditure (Rs.in crore)

Items	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Development Expenditure	1162.80 (72.24%)	1259.34 (70.54%)	1320.87 (70.28%)	1535.17 (72.82%)	1474.37 (71.48%)	1716.50 (73.00%)	1961.41 (73.14%)	2676.72 (76.73%)	3079.38 (76.73%)	3512.62 (76.00%)
Non-Development Expenditure	446.76 (27.76%)	525.81 (29.46%)	558.76 (29.72%)	572.91 (27.18%)	588.35 (28.52%)	634.51 (27.00%)	720.20 (26.86%)	811.09 (23.27%)	934.34 (23.27%)	1109.99 (24.00%)
Total Expenditure of Consolidated Fund	1609.56 (100%)	1785.15 (100%)	1879.63 (100%)	2108.09 (100%)	2062.72 (100%)	2351.01 (100%)	2681.61 (100%)	3487.81 (100%)	4013.72 (100%)	4622.61 (100%)

Source- Annual Financial statement of Government of Meghalaya, 2000-01 to 2009-10.

Agriculture Department: Agriculture is the key to rural prosperity and food security, and to the generation of surpluses that enable productive investment as well as spending to catalyze growth, stress will be on achieving higher levels of productivity and production to improve food security and reduce the deficit of the state in food grain production. The agriculture department will be encouraged to further evolve as knowledge-based entity, providing technology, skills and know-how to the farming community.

A significant amount of economic services have been spent for Agriculture Department. The budget provision of Agricultural Department for the years 2000-01 to 2009-10 are shown in table - 2. It has been observed that the budgetary allocation for agriculture was increased by 3.2 times in the period of the study (i.e from Rs.123.9 crore to Rs.391.32 crore in 2000-01 to 2009-10) but, the percentage of budgetary allocation for agriculture out of the total budgetary grant was not enhanced in a steady trend. It was fluctuating more in 2000-01 to 2009-10. The average percentage of the budgetary grant for agriculture in this period was 7.3%.

It shows that the Department of Agriculture could not draw more preference of the state government during the time of the budget preparation. The expenditure of the Department of Agriculture can be divided as revenue expenditure and capital expenditure.

Both the budgeted revenue expenditure and capital expenditure of agriculture increased by 3.2 times. In utilizing resources, the proportion of unutilized amount is more in case of capital expenditure in comparison to revenue expenditure. The unutilized amount for capital expenditure was 41% and in case of revenue expenditure it was 23% of the budgetary allocation. It implies the inadequate importance in utilizing resources in asset creation and infrastructural development for agriculture.

Table –2

Budgeted and Actual of Agriculture Department (Rs. In Crore)

years	Revenue expenditure			Capital expenditure		
	Budget-ed	**Actual**	**Differ-ence**	**Bud-geted**	**Actual**	**Differ-ence**
2000-01	118.01 (100%)	87.5 (74%)	30.51 (26%)	5.88 (100%)	2.9 (49%)	2.98 (51%)
2001-02	128.3 (100%)	96.99 (76%)	31.31 (24%)	5.35 (100%)	3.95 (74%)	1.4 (26%)
2002-03	129.09 (100%)	90 (70%)	39.09 (30%)	8.53 (100%)	5 (59%)	3.53 (41%)
2003-04	117.81 (100%)	94.56 (80%)	23.25 (20%)	7.86 (100%)	4.2 (53%)	3.66 (47%)
2004-05	135.55 (100%)	108.27 (80%)	27.28 (20%)	7.09 (100%)	3.94 (56%)	3.15 (44%)
2005-06	141.02 (100%)	127.75 (91%)	13.27 (9%)	7.95 (100%)	5.01 (63%)	2.94 (37%)
2006-07	161.81 (100%)	140.92 (87%)	20.89 (13%)	6.31 (100%)	4.54 (72%)	1.77 (28%)
2007-08	255.98 (100%)	16. 9 (63%)	94.08 (37%)	8.31 (100%)	4.94 (59%)	3.37 (41%)
2008-09	255.15 (100%)	201.01 (79%)	54.14 (21%)	7.7 (100%)	6.36 (83%	1.34 (17%)
2009-10	373.8 (100%)	296.94 (79%)	76.86 (21%)	17.51 (100%)	7.6 (43%)	9.91 (57%)
Total	1816.52 100%)	1405.84 (77%) **(Av-erage utilized amount 77 %**	410.68 (23%) **(Aver-age un-utilized amount 23%**	82.49 (100%)	48.44 (59%) **(Av-erage utilized amount 59%**	34.05 (41%) **(Average unuti-lized amount 41%**

Source- a) Annual Financial Statement, Government of Meghalaya. 2000-01 to 2009-10

b) The Finance Account, Government of Meghalaya. 2000-01 to 2009-10

Forestry & Wild Life

The activity of Forestry & Wild life has economic and environmental importance. The state government also provides enhanced budgetary grant. The average percentage of revenue expenditure for this head was 88%. In utilizing resources, though the performance of this department is expectable but 11.20% amount of the budgetary allocation for revenue expenditure was unutilized and the unutilized amount of the budgetary allocation became 35.72% in case of capital expenditure. It shows the negligence of the Department of Forestry &Wild life in implementing the budgetary policy. Therefore, the government of Meghalaya should give more importance on forestry & wild life for creation of revenue.

Table –3

Budgeted and Actual of Forest & Wild Life Department (Rs. in Crore)

years	Revenue expenditure			Capital expenditure		
	Budgeted	Actual	Difference	Budgeted	Actual	Difference
2000-01	29.8 (100%)	24.50 (82%)	5.30 (18%)	5.89 (100%)	0.05 (1%)	5.84 (99%)
2001-02	32.61 (100%)	28.20 (86%)	4.41 (14%)	0.52 (100%)	0.08 (15%)	0.44 (85%)
2002-03	35.64 (100%)	28.17 (79%)	7.47 (21%)	0.1 (100%)	0 (0%)	0.1 (100%)
2003-04	30.65 (100%)	27.40 (89%)	3.25 (11%)	3.55 (100%)	4.20 (119%)	-0.67 (-19%)
2004-05	40.26 (100%)	32.76 (81%)	7.50 (19%)	0.85 (100%)	6.33 (745%)	-5.48 (-645%)
2005-06	48.71 (100%)	36.41 (75%)	12.30 (25%)	1.22 (100%)	0.59 (48%)	0.63 (52%)
2006-07	55.02 (100%)	37.08 (67%)	17.94 (33%)	9.04 (100%)	0.05 (1%)	8.99 (99%)
2007-08	57.35 (100%)	57.03 (99%)	0.32 (1%)	9.95 (100%)	8.41 (85%)	1.54 (15%)

2008-09	61.19 (100%)	53.19 (87%)	8.00 (13%)	9.25 (100%)	9.13 (98.7%)	0.12 (1.3%)
2009-10	77.32 (100%)	69.81 (90.2%)	7.51 (9.8%)	23.11 (100%)	11.95 (52%)	11.16 (48%)
Total	468.55 (100%)	394.55 (88.8%) **(Average utilised amount 88.8%)**	74.00 (11.2%) **(Average unutilised amount 11.2%**	63.46 (100%)	40.79 (64.28%) **(Average utilized amount (64.28%)**	22.67 (35.72%) **(Average unutilised amount 35.72%)**

Source- a)Annual Financial Statement, Government of Meghalaya. 2000-01 to 2009-10

b) The Finance Account, Government of Meghalaya. 2000-01 to 2009-10

Industry

The industry plays a pivotal role for accelerating the pace of economic progress. The growths of industrial activities are influenced by the state government finance. The budgetary allocation of the state government for industry was not progressively increased in 2000-01 to 2009-10. Another noticeable fact is that the state government allocated average 58% amount for capital expenditure of Industry and 42% amount for revenue expenditure. Here capital expenditure comprises of issuing of loan and asset creation. Since, the state government requires providing financial assistance for industrial activities; therefore, capital expenditure became larger than revenue expenditure. It is also observed that in case of revenue expenditure, the total disbursement of the state government was more than the total budgeted expenditure, but the average unutilized amount for capital expenditure of the Department of Industry was only 11%.

Therefore, the government should give more emphasis on creation of assets.

Table -4
Budgeted And Actual Of Industry Department (Rs. in Crore)

years	Revenue expenditure						Capital expenditure					
	Budgeted		Actual		Difference		Budgeted		Actual		Difference	
2000-01	2.67	(100%)	2.01	(75%)	0.66	(25%)	4.25	(100%)	6.4	(151%)	-2.15	(-51%)
2001-02	2.61	(100%)	2.17	(83%)	0.44	(17%)	5.4	(100%)	8.6	(159%)	-3.2	(-59%)
2002-03	3.12	(100%)	2.65	(85%)	0.47	(15%)	8	(100%)	5	(63%)	3	(38%)
2003-04	2.78	(100%)	2.6	(94%)	0.18	(6%)	5	(100%)	4	(80%)	1	(20%)
2004-05	2.92	(100%)	2.6	(89%)	0.32	(11%)	3	(100%)	3	(100%)	0	(0%)
2005-06	2.97	(100%)	10.97	(369%)	-8	(-269%)	7.25	(100%)	3.15	(43%)	4.1	(57%)
2006-07	3.3	(100%)	3.24	(98%)	0.06	(2%)	5.2	(100%)	5.2	(100%)	0	(0%)
2007-08	3.96	(100%)	3.19	(81%)	0.77	(19%)	2.02	(100%)	2.02	(100%)	0	(0%)
2008-09	3.68	(100%)	3.11	(85%)	0.57	(15%)	4	(100%)	4	(100%)	0	(0%)
2009-10	5.38	(100%)	5.66	(105%)	-0.28	(-5%)	2.72	(100%)	0.49	(18%)	2.23	(82%)
Total figures and average percentage	33.39	(100%)	38.2	(114%)	-4.81	(-14%)	46.84	(100%)	41.86	(89%)	4.98	(11%)
			(Average utilised amount 114 %		**(Average un-utilised amount (-14%)**				**(Average utilised amount 89%**		**(Average unutilised amount11 %**	

Source: - a)Annual Financial Statement of Government of Meghalaya 2000-01 to 2009-10.

b)The Finance Account of the Government of Meghalaya, 2000-01 to 2009-10

Village & Small Industry

The rural economy can build the plinth of economic edifice of the nation. The rural economy of the state depends on village & small industries and other agro-based activities. The budgetary allocation for village & small industry was increased by 2.11 times in 2000-01 to 2009-10 (i.e. from Rs.25.22 crore to Rs.53.11 crore) The budgetary allocation of the village &small industry can be further categorized as revenue and capital expenditure. It has been observed in that 77% to 99% of the budgetary grant of village & small Industry was allocated for revenue expenditure and 1% to 23% was allocated for capital expenditure. In fact, the state government spends fewer amounts for issuing loan and asset creation in the field of entrepreneurial activities of the rural areas. Therefore, the budgetary allocation for capital expenditure is lesser than the revenue expenditure. Another important fact is that the average utilisations of the budgetary grants for revenue and capital expenditure of village & small industries were 98% and 97%. It shows that the degree of utilisation of the budgetary grant is more in village and small-scale industries, in comparison to agriculture.

Table -5

Budgeted And Actual of Village & Small Industry Department (Rs. in Crore)

years	Revenue expenditure						Capital expenditure					
	Budgeted		Actual		Difference		Budgeted		Actual		Difference	
2000-01	22.33	(100%)	16.13	(72%)	6.2	(28%)	2.89	(100%)	6.1	(21%)	-3.21	(-111%)
2001-02	18.74	(100%)	20.75	(111%)	-2.01	(-11%)	0.89	(100%)	7.96	(894%)	-7.07	-794
2002-03	22.56	(100%)	18.98	(84%)	3.58	(16%)	4.23	(100%)	0.19	(4%)	4.04	96
2003-04	23.79	(100%)	20.59	(87%)	3.2	(13%)	2.1	(100%)	0.22	(10%)	1.88	90
2004-05	23.6	(100%)	22.42	(95%)	1.18	(5%)	2.23	(100%)	2.19	(98%)	0.04	2
2005-06	23.35	(100%)	22.62	(97%)	0.73	(3%)	4.26	(100%)	5.26	(123%)	-1	-23
2006-07	25.1	(100%)	30.68	(122%)	-5.58	(-22%)	7.48	(100%)	7.48	(100%)	0	0
2007-08	37.49	(100%)	34.16	(91%)	3.33	(9%)	7.1	(100%)	0.81	(11%)	6.29	89
2008-09	36.51	(100%)	39.22	(107%)	-2.71	(-7%)	0.47	(100%)	0.44	(94%)	0.03	6
2009-10	52.42	(100%)	54.4	(104%)	-1.98	(-4%)	0.69	(100%)	0.62	(90%)	0.07	(10%)
Total figures and average percentage	**285.89**	**(100%)**	**279.95**	**98**	**5.94**	**2**	**32.34**	**(100%)**	**31.27**	**97**	**1.07**	**3**
			(Average utilised amount 98%		**(Average unutilised amount 2%)**				**(Average utilised amount 97%**		**(Average unutilised amount 3%**	

Source: -a) Annual Financial Statement of Government of Meghalaya 2000-01 to 2009-10.
b) The Finance Account of the Government of Meghalaya, 2000-01 to 2009-10.

Tourism Department

The entire north east region has high potentiality for tourism. Especially, scenic environment, weather and life style of different ethnic groups give tremendous scope to Meghalaya for promoting tourism in the state. The progress in tourism industries may escort the socio-economic race of the region in terms of income level, employment, living standard and cultural enrichment. It has been observed in table-6 that the budgetary allocation for tourism was increased by 4.2 times in the period of the study, i.e. from Rs.2.85crore to Rs.12.31crore in 2000-01 to 2009-10. It is notable that the percentage of the budgetary allocation for Tourism Department is very negligible in comparison to other Departments. It shows that the tourism is not given more preference in annual budget of Meghalaya. The budgetary grant for tourism can be further divided as budgetary grants for revenue expenditure and capital expenditure. In case of utilization of the budgetary grant, the average un-utilisation of the budgetary grant for revenue expenditure was 33% and for capital expenditure, it was 72%. The huge amount of unutilized grant for capital expenditure indicates that the asset creation and infrastructural development were neglected for tourism in the state.

Table -6
Budgeted and Actual of Tourism Department (Rs. in Crore)

years	Revenue expenditure						Capital expenditure					
	Budgeted		Actual		Difference		Budgeted		Actual		Difference	
2000-01	2.35	(100%)	2.1	(89%)	0.25	(11%)	0.5	(100%)	0.12	(24%)	0.38	(76%)
2001-02	2.84	(100%)	2.64	93	0.2	7	1.1	(100%)	0.14	13	0.96	87
2002-03	12.17	(100%)	2.17	18	10	82	0.55	(100%)	0	0	0.55	100
2003-04	3.54	(100%)	1.83	52	1.71	48	0.46	(100%)	0.09	20	0.37	80
2004-05	3.63	(100%)	12.61	347	-8.98	-247	0.46	(100%)	0.19	41	0.27	59
2005-06	3.56	(100%)	2.56	72	1	28	0.2	(100%)	0.4	200	-0.2	-100
2006-07	3.86	(100%)	3.35	87	0.51	13	0.21	(100%)	0.06	29	0.15	71
2007-08	30.88	(100%)	3.85	12	27.03	88	0.1	(100%)	0	0	0.1	100
2008-09	5.27	(100%)	4.28	81	0.99	19	0.11	(100%)	0.05	45	0.06	55
2009-10	12.26	(100%)	18.45	(150%)	-6.19	(-50%)	0.05	(100%)	0	(0%)	0.05	(100%)
Total figures and average percentage	80.36	(100%)	53.84	(67%)	26.52	(33%)	3.74	(100%)	1.05	(28%)	2.69	(72%)
			(Average utilised amount 67 %		**(Average unutilised amount33 %)**				**(Average utilised amount 28%**		**(Average un-utilized 72% amount**	

Source- a) Annual Financial Statement, Government of Meghalaya. 2000-01 to 2009-10

b) The Finance Account, Government of Meghalaya. 2000-01 to 2009-10

Transport Department

The transportation is an important component for economic services of the state. The road connectivity can contribute to the economy of the state with transportation. The state government provides facilities for smooth transportation in the state through the adequate budgetary allocation to the Department of Transportation. It has been observed in Table- 7 that the percentage of budget provision for transportation out of the total budgeted grant was 5.3% to 9.79%. The average percentage of the budgetary grant for transportation in the period of study was 7.58% tourism, agriculture, industry forestry & wild life, village & small-scale industries. The budgetary grant for capital expenditure of transportation is more than the budgetary grant for revenue expenditure. Though the proportion of budgetary allocation is more in case of capital expenditure, the percentage of utilization of the budgetary grant is lesser than the percentage of utilisation of the budgetary grant of revenue expenditure.

Table -7

Budgeted and Actual of Transport Department (Rs. in Crore)

years	Revenue expenditure						Capital expenditure					
	Budgeted		Actual		Difference		Budgeted		Actual		Difference	
2000-01	34.92	(100%)	36.05	103	-1.13	-3	79.03	(100%)	45.4	57	33.63	43
2001-02	37.36	(100%)	36.14	97	1.22	3	92.05	(100%)	50.15	54	41.9	46
2002-03	42.96	(100%)	38.42	89	4.54	11	89.78	(100%)	87.39	97	2.39	3
2003-04	40	(100%)	40.21	101	-0.21	-1	69.49	(100%)	91.84	132	-22.35	-32
2004-05	50	(100%)	50.05	100	-0.05	0	85.13	(100%)	90.18	106	-5.05	-6
2005-06	52.5	(100%)	52.53	100	-0.03	0	111.52	(100%)	86.02	77	25.5	23
2006-07	76.72	(100%)	76.54	100	0.18	0	158.81	(100%)	107.58	68	51.23	32
2007-08	79.48	(100%)	79.38	100	0.1	0	247.6	(100%)	117.44	47	130.16	53
2008-09	85.2	(100%)	74.78	88	10.42	12	201.81	(100%)	162.79	81	39.02	19
2009-10	102.8	(100%)	97.81	95	4.99	5	232.65	(100%)	166.07	71	66.58	29
Total figures and average percentage	**601.94**	**(100%)**	**581.91**	**97**	**20.03**	**3**	**1367.87**	**(100%)**	**1004.86**	**73**	**363.01**	**27**
			(Average utilised amount 97 %		**(Average unutilised amount3 %)**				**(Average utilised amount 73%**		**(Average unutilised amount 27%**	

Source: - a) Annual Financial Statement of Government of Meghalaya 2000-01 to 2009-10.

b)The Finance Account of the Government of Meghalaya, 2000-01 to 2009-10.

Mines and Minerals Department

Meghalaya has economic potentiality for mines and minerals. Meghalaya is rich for mineral resources. The government requires allocating sufficient financial grants for efficient utilisation of mine and minerals. It has been seen that the percentage of the budgetary grant was 2.65% in 2000-01, it increased to 3.16% in 2001-02, after that it reduced to 0.62% in 2009-10. This information indicates that the budgetary allocation for mine &mineral was not increased progressively. The government did not give more preference for mines and mineral during the time of preparing budget.

Table-8

Budgeted and Actual of Mines & Minerals Department (Rs. in Crore)

Years	Revenue Expenditure of Mines & Minerals			Capital Expenditure of Mines &Minerals		
	Budgeted	Actual	Difference	Budgeted	Actual	Difference
2000-01	42.38 (100%)	14.85 (35%)	27.53 (65%)	0.2 (100%)	-	0.2 (100%)
2001-02	56.22 (100%)	17.15 (31%)	39.07 (69%)	0.2 (100%)	0.14 (70%)	0.06 (30%)
2002-03	20.15 (100%)	19.91 (99%)	0.24 (1%	0.15 (100%)	-	0.15 (100%
2003-04	17.38 (100%)	17.39 (100%)	-0.01 (0%	0.1 (100%)	-	0.1 (100%
2004-05	18.79 (100%)	28.82 (153%)	-10.03 (-53%	0.1 (100%)	-	0.1 (100%
2005-06	19.72 (100%)	36.21 (184%)	-16.49 (-84%	0.12 (100%)	-	0.12 (100%
2006-07	20.7 (100%)	28.69 (139%)	-7.99 (-39%	0.24 (100%)	-	0.24 (100%
2007-08	22.48 (100%)	31.75 (141%)	-9.27 (-41%	0.25 (100%)	-	0.25 (100%
2008-09	24.89 (100%)	46.16 (185%)	-21.27 (-85%	0.01 (100%)	-	0.01 (100%

2009-10	28.52 (100%)	57.13 (200%)	-28.61 (-100%)	- -	-	-
Total figures and average per-centage	**271.23** (100%)	**298.06** (**Average utiliseda-mount** (110%)	**-26.83** (**Average unutilized amount** (-10%)	**1.37** (100%)	**0.14** (**Average utilised amount** (10.22%)	**1.23** (**Average unutilised amount** (89.78%)

Source: - a)Annual Financial Statement of Government of Meghalaya 2000-01 to 2009-10.

b) The Finance Account of the Government of Meghalaya, 2000-01 to 2009-10.

In case of utilization of the budgetary grant, it has been seen in table-8 that actual revenue expenditure were more than original budgeted estimate of expenditure in 6 years out of 10 years of the period study. But, in case of capital expenditure, average unutilized budgeted grant was 89.78%. It implies the casual attitude of the state government in utilizing budgetary grant for capital expenditure. It has been seen in table-12 that the average utilization of the budgetary grant for revenue expenditure of the sample departments was 81% in the period of the study. It is also observed that the average expenditure of 2 departments,

Table-9

Utilisation of Budgetary Allocation In Sample Departments (Rs. in Crore)

Sample De-partments	Budgetary Allo-cation		Average Actual Utilisation		Average Un utilisation	
Agriculture & Allied	1898.92	(100%)	1454.28	(77%)	444.64	(23%)
Forestry & Wild life	532.03	(100%)	435.34	(82%)	96.69	(18%)
Industry	79.23	(100%)	80.06	(101%)	-0.83	(-1%)
Village & Small Industry	318.26	(100%)	311.22	(98%)	7.04	(2%)

Tourism	84.1	(100%)	54.89	(65%)	29.21	**(35%)**
Transport	1979.81	(100%)	1586.77	(80%)	393.04	(20%)
Mines & Minerals	272.69	(100%)	298.2	(109%)	-25.51	(-9%)
Average	743.5	(100%)	**604.6**	(81%)	**138.9**	(19%)

source: - a) Annual Financial Statement of Government of Meghalaya 2000-01 to 2009-10.

b) The Finance Account of the Government of Meghalaya, 2000-01 to 2009-10.

(viz Industry and Mines& minerals) were more than the budget estimates. In fact, the excess expenditure over the budgeted grant approved by the legislature is considered as financial anomaly. But, as the researcher undertook original budget estimates instead of estimate of revised budget for the study, therefore, the actual expenditure may exceed the budget estimates of some departments.

In fact, the utilization of the budgetary grant may reflect properly operational efficiency of the concerning departments, if the budgetary allocation is made among various activities with judicious consideration of real need of the departments. The needs of the financial resource can be evaluated with the expenditure trend of the departments. Therefore, before allocating budgetary grants, finance department of the state should asses the expenditure pattern of the respective departments. In other word, there should have correlation between budgeted grant and actual expenditure of the departments

Conclusion

The Government of Meghalaya is giving more importance for developmental expenditure in comparison to non -developmental expenditure. The proportion of development expenditure is very high. But the state government requires revising the policy of allocating budgetary grants. There should have adequate criteria in

determining priority for resource allocation. It has been observed that Mines and Minerals, Village and Small-Scale Industries have not been given adequate importance. The state government should give more emphasis to sufficient utilizing the resources. Tourism is a potential activity for Meghalaya, but there is huge unutilized amount. Particularly, the state government was showing less importance in incurring expenditure for asset creation as per the budget target. In fact, the state government should fix budget target on the basis of the past records of actual utilization of the resources under conventional system of budgeting. The government should make experiment for application of Zero-based Budgeting Techniques in select activities.

Reference

- Annual Financial Statement of Government of Meghalaya 2000-01 to 2009-10.
- The Finance Account of the Government of Meghalaya, 2000-01 to 2009-10.
- The Appropriation Accounts of Government of Meghalaya, 2000-01 to 2009-10
- The budget speech of Government of Meghalaya, 2000-01 to 2009-10
- The economic hand book of Government of Meghalaya, 2000-01 to 2009-10

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CHAPTER 11

Industrial Development in North East India

Leena Bhagawati

Abstract

Regional development of industry sector of North Eastern Region as compared to other parts of India has been showing a dismal picture of sectoral growth over the years. With the aim of improvisation of industrial scenario of NER, Government of India initiated industrial policies of the region in the year 1997 and 2007. NEIP (1997) and NEIIPP (2007) have made some considerable positive impact on manufacturing sector of the region. However, industrial sector of NER has not been succeeded in generating employment to its people. Over the years, industrial dominance of Assam has been declined and process of industrialization has been defused to the other states of NER which is hopefully going to benefit the region in terms of balanced economic development in the future.

Keywords: Industrial policy, Manufacturing Sector, NER, NVA, Value of output.

Introduction

North Eastern part of India is characterised by diversity of culture,

ethnicity and difficult geographical terrain. The region consists of seven sister states namely Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland, Tripura and Sikkim was included as one of the states of NER in the year 2002. The industrial development of the region is not remarkable even after implementation of Industrial Policy of North East India (NEI), 1997. During the colonial period, manufacturing sector especially handloom, craft and other MSMEs were at subsistence level as British Government did not give any attention to develop them and focused only on resource extraction. After independence, agricultural sector got the highest priority as more than 2/3rd population earned livelihood from that sector. Industry sector was almost neglected until the country's liberalization period. For the development of small and medium enterprises in NER, a state financial institution namely "North Eastern Development Finance Corporation (NEDFi)" was established in 1995 under the Companies Act, 1956. Afterwards, the first Industrial Policy of NER was undertaken in the year 1997 for the development of MSMEs as well as large and heavy industries. The policy identified various factors associated with industrial backwardness of NER and recommended public-private partnership in the domain of industry sector of this region. Under this policy investment subsidy up to 30 lakh has been provided for the initiation of industrial base in NEI. The Industrial Policy, 1997 was revised in 2007 as "North Eastern Industrial and Investment Promotion Policy" and in 2017 it was again revised as "North East Industrial Development Scheme". NEIIP (2007) extended the state financial assistance up to 1.5 crore which was further extended up to 5 crore for industrial unit operating in manufacturing sector and 3 crore for industrial unit operating in service sector (Bhattacharjee & Bhattacharya, 2018). However, industrial policy and development schemes of NER have not been succeeded in promoting favourable environment for the growth of industries in spite of having vast natural resources in this region. The region has the lowest industrial

share to GDP as compared to other states of the country (Thomas, 2015). Regional disparity in terms of development is quite visible in this region. This paper analyses the industrial performance of North East India over the years in terms of industry variables like number of factories, working capital, value of output and employment provided by industry sector etc.

Literature Review

Development of industrial base in India or in North Eastern part of the country has a colonial history. During the colonial period North Eastern states of India were treated as periphery, British government extracted natural resources and raw materials from NER for the development of core industries at centre resulting in huge regional disparity among different parts of the country (Bagchi, 2010).

In the post-independence period especially after liberalization, industry-led development strategy was the main focus. Trivedi et al (2011) conducted a study on Indian manufacturing sector's productivity and found that growth of manufacturing sector between 1970-71 and 2007-08 was around 2.6 percent. Under manufacturing sector, unorganized sector accounted for 80 percent of employment. Interestingly, Maharashtra, Gujrat and Tamil Nadu are the three states that generated highest employment under organized sector. Moreover, Metal, Machine and Transport equipment industry provided the highest GVA during the study period. Hrahsel & Umdor (2019) did a study about growth of manufacturing sector of NER pre and post implementation of North Eastern Industrial Policy (NEIP) and found that the average percentage share of manufacturing sector of different states of NER to GSDP has increased from 18 percent to 20.5 percent in post NEIP period. However, the growth rates were quite below than all Indian average. Among the NE states Assam accounts for most of the shares in terms of fixed capital, value of output, NVA and employment generation. There are variations among seven sister states of North Eastern Region in terms of number of factories and industrial environment (Bahadur, 2009).

Regon (2021) remarked that regional disparity is visible among the states of NER in terms of infrastructural development, industrialization and economic growth. Sectoral contribution towards GDP is very low of NE states; especially the share of manufacturing sector is less than half of the all India share. The author recommended regional planning as a solution to the problem of regional disparity of North Eastern states. In analysing the situation of industrial underdevelopment, Sarma & Bezbaruah (2009) viewed that lack of local entrepreneurship and local markets as well as transportation bottlenecks are the main reason of industrial backwardness of NER.

Data Source and Methodology

The study is based on secondary data collected from various government report and publications, publication of other organizations such as Reserve Bank of India, NEDFi, Directorate of Economics and Statistics etc. The study period chosen for analysis of industry variables such as gross fixed capital formation, productive capital, NVA, Value of output, number of factories and total persons engaged is 1990-91 to 2018-19 as per the availability of data. However, analysis of sectoral growth has been done from 2004-05 to 2019-20. ASI survey data for industry variables is not available for Mizoram. Again, for Arunachal Pradesh and Sikkim data are available from 2014-15 and 2009-10 respectively. So, as per the availability of data, Mizoram is not included in this study and data analysis for Arunachal and Sikkim has been done from 2014-15 and 2009-10 respectively. For analysing data, growth rates, tables and diagrams are used. The available data has been converted to the same base-year 2011-12.

Sectoral Contribution towards NSDP

The sectoral contribution of NER towards all India Net Domestic Product (NDP) has been minimal over the years. The contribution of agriculture, industry and service sector of NE states towards NSDP is shown in table-1

Table-1: Share of sectoral NVA towards NSDP at constant price: NE States: (Base Year-2011-12)												
	Arunachal			Assam			Manipur			Meghalaya		
	Agri	InD	Serv	Agri	InD	Serv	Agri	InD	Serv	Agri	InD	Serv
2004-05	21.7%	19.3%	30.3%	17.1%	36.8%	46.4%	12.2%	19.6%	46.7%	11.7%	30.7%	42.7%
2005-06	19.7%	19.8%	31.5%	16.8%	33.9%	49.4%	11.5%	19.9%	47.8%	11.7%	31.0%	43.1%
2006-07	22.4%	18.1%	32.4%	16.3%	32.4%	50.3%	11.2%	20.0%	48.3%	11.0%	32.8%	43.0%
2007-08	25.4%	18.9%	31.2%	16.2%	30.5%	53.2%	12.1%	19.3%	48.5%	10.6%	33.1%	43.7%
2008-09	20.1%	21.3%	32.6%	15.8%	30.9%	51.1%	12.9%	18.4%	49.6%	9.8%	34.7%	44.0%
2009-10	18.1%	17.7%	40.5%	15.3%	31.2%	49.2%	14.2%	18.4%	47.6%	9.3%	34.4%	44.9%
2010-11	21.8%	19.4%	35.7%	15.1%	29.8%	50.7%	11.0%	15.7%	59.5%	8.5%	34.5%	46.2%
2011-12	24.3%	17.6%	36.8%	14.6%	29.6%	49.4%	10.5%	14.7%	63.7%	8.1%	38.5%	43.8%
2012-13	26.3%	17.8%	36.5%	17.3%	27.3%	63.6%	12.2%	13.5%	64.4%	9.6%	35.2%	45.4%
2013-14	25.6%	17.8%	37.1%	15.7%	28.2%	55.6%	11.8%	14.1%	62.5%	9.7%	33.1%	47.4%
2014-15	22.5%	24.0%	33.0%	14.4%	28.4%	50.6%	11.4%	16.8%	61.8%	10.4%	26.0%	53.4%
2015-16	20.1%	22.0%	36.0%	13.6%	34.7%	39.1%	8.9%	18.2%	61.8%	10.4%	19.4%	56.1%
2016-17	13.6%	23.7%	38.6%	13.3%	36.2%	36.8%	7.9%	16.3%	61.5%	9.8%	17.2%	57.2%
2017-18	13.3%	23.6%	40.7%	12.4%	37.5%	33.0%	14.5%	15.0%	57.7%	9.6%	18.9%	61.5%
2018-19	12.6%	21.2%	37.5%	12.0%	36.8%	32.7%	12.3%	14.7%	60.0%	8.8%	17.2%	63.3%
2019-20	13.7%	21.1%	39.4%	10.9%	35.2%	30.9%	14.6%	13.6%	58.8%	8.3%	16.2%	0.0%
Mean	**20.1%**	**20.22%**	**35.61%**	**14.8%**	**32.45%**	**46.37%**	**11.8%**	**16.75%**	**56.25%**	**9.8%**	**28.3%**	**46.0%**
CAGR	**-3.01%**	**0.57%**	**1.77%**	**-2.99%**	**-0.31%**	**-2.69%**	**1.20%**	**-2.42%**	**1.56%**	**-2.21%**	**-4.18%**	**2.85%**

	Mizoram			Nagaland			Tripura			Sikkim		
	Agri	**InD**	**Serv**	**Agri**	**InD**	**Serv**	**Agri**	**InD**	**Serv**	**Agri**	**InD**	**Serv**
2004-05	9.6%	18.9%	58.4%	19.9%	13.0%	47.6%	9.2%	19.5%	48.4%	10.7%	30.3%	47.0%
2005-06	9.2%	23.3%	56.3%	18.4%	13.8%	49.1%	9.3%	20.8%	47.9%	10.2%	31.3%	47.0%
2006-07	9.1%	22.4%	58.1%	17.1%	14.8%	50.2%	9.7%	21.4%	47.4%	9.8%	31.5%	47.5%
2007-08	10.2%	22.6%	57.0%	15.9%	15.1%	51.9%	10.9%	20.0%	46.4%	9.9%	30.7%	48.3%
2008-09	11.0%	23.9%	56.3%	16.1%	16.3%	50.3%	10.9%	19.9%	47.4%	9.5%	33.6%	46.7%
2009-10	11.1%	21.9%	58.3%	15.7%	16.2%	51.1%	10.1%	20.3%	48.4%	5.7%	56.0%	33.7%
2010-11	11.3%	19.3%	60.7%	15.7%	12.4%	54.8%	10.2%	19.4%	48.9%	5.4%	61.5%	29.5%
2011-12	11.1%	20.0%	60.2%	15.3%	13.0%	54.9%	10.2%	19.4%	49.9%	7.0%	62.2%	26.8%
2012-13	10.0%	17.9%	63.8%	16.9%	12.4%	55.6%	9.2%	20.9%	49.2%	7.1%	59.1%	29.3%
2013-14	9.9%	20.8%	58.2%	18.9%	8.9%	57.7%	10.1%	18.9%	48.7%	6.7%	58.4%	29.3%
2014-15	8.3%	17.9%	48.2%	19.0%	9.6%	57.7%	10.3%	28.1%	43.7%	6.2%	59.9%	28.4%
2015-16	7.1%	18.0%	49.2%	18.5%	12.3%	57.4%	9.9%	26.1%	41.0%	5.7%	60.0%	27.8%
2016-17	6.8%	18.4%	48.8%	17.4%	11.3%	56.4%	10.4%	27.0%	40.5%	6.0%	60.7%	26.0%
2017-18	6.0%	27.2%	46.1%	15.8%	12.8%	57.0%	10.6%	25.3%	45.5%	6.3%	59.7%	23.9%
2018-19	6.4%	22.9%	47.9%	13.4%	11.5%	62.6%	11.7%	25.7%	44.3%	6.8%	60.6%	25.3%
2019-20	5.8%	23.5%	49.9%	13.4%	13.3%	61.3%	13.5%	23.2%	46.1%	6.7%	57.1%	29.2%
Mean	**8.9%**	**21.2%**	**54.8%**	**16.7%**	**12.9%**	**54.7%**	**17.7%**	**22.2%**	**46.5%**	**7.5%**	**50.8%**	**8.2%**
CAGR	**-3.28%**	**1.46%**	**-1.04%**	**-2.59%**	**0.18%**	**1.70%**	**2.58%**	**1.18%**	**-0.33%**	**-3.09%**	**4.31%**	**-3.12%**

	NER			All India		
	Agriculture	**Industry**	**Service**	**Agriculture**	**Industry**	**Service**
2004-05	16.7%	31.6%	39.9%	15.5%	29.9%	39.9%
2005-06	16.2%	30.0%	41.3%	14.9%	30.1%	40.5%
2006-07	15.9%	29.1%	42.4%	14.1%	30.9%	40.8%
2007-08	16.2%	27.7%	43.2%	13.7%	30.9%	41.3%
2008-09	15.5%	28.3%	43.5%	12.9%	29.7%	42.8%
2009-10	14.7%	29.3%	43.7%	12.0%	30.0%	43.5%
2010-11	14.4%	28.3%	45.1%	12.0%	29.7%	43.8%
2011-12	14.1%	28.5%	45.5%	11.8%	28.9%	44.6%
z2012-13	16.1%	26.6%	45.8%	11.3%	28.2%	45.6%
2013-14	15.2%	26.6%	46.1%	11.2%	27.6%	45.9%
2014-15	14.0%	27.4%	45.9%	10.1%	27.3%	46.9%
2015-16	13.1%	30.9%	43.2%	8.8%	28.5%	46.5%
2016-17	12.5%	31.7%	41.3%	8.9%	29.1%	45.4%
2017-18	12.1%	32.9%	42.3%	8.6%	29.0%	45.2%
2018-19	11.6%	32.1%	41.1%	7.8%	29.1%	45.6%
2019-20	11.1%	30.5%	38.7%	8.0%	28.3%	46.2%
Mean	14.3%	29.5%	43.0%	11.4%	29.2%	44.0%
CAGR	-2.71%	-0.24%	-0.21%	-4.32%	-0.36%	0.98%

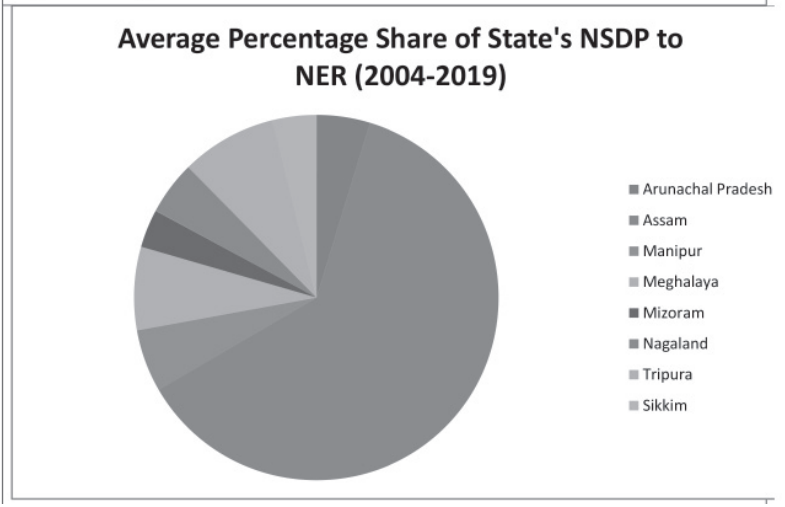
Source: Author's calculation based on data from Handbook of Statistics on Indian States, RBI

From table-1 it is seen that average share of agricultural Net Value Added (NVA) to NSDP from 2004-2019 is found to be highest in Arunachal Pradesh (20.1%), followed by Tripura (17.7%), Nagaland (16.7%) and Assam (14.8). The agricultural share of these states to NSDP is higher than share of entire North Eastern Region (14.3%) as well as All India average (11.4%). The compounded growth rate of share of agricultural NVA has been negative for both NER and India over the years. Among the NE states, Mizoram, Sikkim, Tripura and Manipur have shown positive growth rate of agricultural share during the study period.

The mean share of industrial NVA to state's NDP for the period 2004-2019 was highest for Sikkim (50.8%), followed by Assam (32.45%), Meghalaya (28.3%) and Tripura (22.2%). The average industrial share for NER and India was 29.5% and 29.2% respectively for the study period and it showed negative compound annual growth. Over the years, industrial share of Assam and Meghalaya to NSDP has come down as can be viewed from negative compounded growth rate despite of having the top rank in average share of industrial NVA to state's NDP.

As seen from table-1, service sector has registered the highest mean share to NSDP as compared to other two sectors. Among the states of NER, Manipur has the highest average share of service to NSDP (56.25%), followed by Manipur (56.25%), Mizoram (54.8%) and Nagaland (54.7%). Sikkim (8.2%) has the lowest service sector share on an average. Compounded growth rate of service sector share as a ratio of NSDP has been positive for all the states of NER except Assam, Mizoram and Sikkim. The CAGR of service sector share for all India has been found to be positive, whereas for NER it is found to be negative.

Figure 1: Average share of NSDP



The average share of North East India's Net Domestic Product to all India's NDP is 2.79 percent. Out of NER's share, maximum share has been occupied by Assam (62%) as seen in figure-1. In fact, share of Assam is higher than sum of the shares of all the states of North Eastern Region.

Contribution of Manufacturing & Construction Sector of NER

North Eastern India is regarded as one of the hub of natural resources. However, despite of being a provider of raw materials its industrial development is not that impressive. In order to analyse the overview of industrial development of NER, share of manufacturing and construction to NSDP has been discussed as a subsector of overall industry sector.

Table-2: Share of Construction and Manufacturing sector and its growth rates (Base Year-2011-12)									
Share of construction and Manufacturing sector (2004-2019)									
	Arunachal			**Assam**			**Manipur**		
	Manu	**Cons**	**InD**	**Manu**	**Cons**	**InD**	**Manu**	**Cons**	**InD**
Average share as a ratio of NSDP	1.77%	10.23%	20.22%	11.74%	8.28%	32.45%	2.62%	10.94%	16.75%
State's average share as a ratio of NER	0.76%	57.24%	3.26%	66.49%	61.26%	67.99%	1.35%	7.39%	3.17%
State's average share as a ratio of All India	0.01%	0.15%	0.09%	1.29%	1.62%	1.92%	0.03%	0.19%	0.09%
CAGR (% of NSDP)	4.11%	0.38%	0.57%	-0.05%	1.43%	-0.31%	-0.43%	-3.60%	-2.42%
CAGR (% of NER)	3.56%	-0.63%	0.59%	-0.97%	0.39%	-0.68%	-1.48%	-4.72%	-2.92%
CAGR (% of All India)	2.18%	0.64%	-0.39%	-2.29%	1.30%	-1.65%	-2.80%	-3.87%	-3.87%

	Meghalaya			**Mizoram**			**Nagaland**		
	Manu	**Cons**	**InD**	**Manu**	**Cons**	**InD**	**Manu**	**Cons**	**InD**
Average share as a ratio of NSDP	20.58%	4.87%	28.3%	0.68%	12.75%	21.2%	1.25%	9.23%	12.9%

State's average share as a ratio of NER	15.12%	4.28%	7.43%	0.21%	5.06%	2.42%	0.54%	5.29%	2.09%
State's average share as a ratio of All India	0.28%	0.11%	0.20%	0.00%	0.13%	0.07%	0.01%	0.14%	0.06%
CAGR (% of NSDP)	-3.14%	2.24%	-4.18%	-1.83%	-0.45%	1.46%	2.50%	-1.14%	0.18%
CAGR (% of NER)	-4.38%	0.83%	-4.89%	1.77%	3.09%	5.76%	2.16%	-1.58%	0.39%
CAGR (% of All India)	-5.65%	1.74%	-5.81%	0.41%	4.02%	4.73%	0.79%	-0.69%	-0.59%

	Tripura			**Sikkim**			**NER**		
	Manu	**Cons**	**InD**	**Manu**	**Cons**	**InD**	**Manu**	**Cons**	**InD**
Average share as a ratio of NSDP	4.18%	7.68%	22.2%	30.57%	7.26%	50.8%	10.87%	7.72%	29.5%
State's average share as a ratio of NER	3.27%	7.77%	6.46%	12.25%	3.08%	7.18%			
State's average share as a ratio of All India	0.06%	0.20%	0.18%	0.24%	0.08%	0.20%	0.21%	2.64%	2.82%
CAGR (% of NSDP)	-4.71%	-0.66%	1.18%	16.46%	-6.78%	4.31%	0.30%	0.41%	-0.24%
CAGR (% of NER)	-2.65%	1.37%	3.92%	21.83%	-2.58%	9.72%			
CAGR (% of All India)	-3.95%	2.28%	2.91%	20.21%	-1.71%	8.65%	-1.34%	0.90%	-0.97%

All India			
	Manufacturing	**Construction**	**Industry**
Average share as a ratio of NSDP	15.69%	8.86%	29.2%
CAGR (% of NSDP)	0.55%	-1.57%	-0.36%

Source: Author's calculation based on data from Handbook of Statistics on Indian States, RBI

From table-2 it is found that average percentage shares of construction and manufacturing sector of overall North Eastern Region to NSDP are lower than national average. The state with highest average percentage share of manufacturing sector to NSDP during the study period was Sikkim (30.57%), followed by Meghalaya (20.58%) and Assam (11.74%). The growth rate of manufacturing sector share of Sikkim to its NSDP over the years has been impressive (16.46%). However, Assam, Manipur, Meghalaya and Tripura have shown negative CAGR of manufacturing share to state's NDP. Assam has registered maximum average share in both manufacturing and construction sector as a ratio of share of NER. The mean percentage share of manufacturing and construction of overall North Eastern Region as a ratio of All India is quite minimal as seen from table-2. The compounded growth rate of share of construction sector of NER to all India is positive but that of manufacturing sector is found to be negative. In case of average of construction sector share to NSDP, Mizoram (12.75%) has secured the top position, followed by Manipur (10.94%) and Arunachal Pradesh (10.23%). Except Arunachal Pradesh, Assam and Meghalaya, the compounded growth rates of all other states of NER have been negative over the years.

Table-3.1: Growth Rate of Productive Capital														
Average (1990-2018)			CAGR of Productive Capital				CAGR (% of NER)				CAGR (% of India)			
	% of NER	% of India	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18
Arunachal*	1.03%	0.01%	-8.56%				-18.10%				-37.96%			
Assam	84.75%	0.95%	22.73%	20.27%	50.39%	13.64%	-0.47%	0.66%	-0.57%	-2.13%	0.14%	1.28%	5.88%	0.12%
Manipur	0.64%	0.01%	19.54%	43.48%	37.05%	23.66%	23.66%	20.09%	-9.39%	6.50%	6.50%	20.83%	-3.51%	8.94%
Meghalaya	7.11%	0.08%	20.76%	5.13%	92.19%	14.57%	-2.06%	-12.01%	27.06%	-1.33%	-1.47%	-11.47%	35.31%	0.94%
Nagaland	1.30%	0.01%	25.09%	57.61%	33.63%	21.66%	1.45%	31.92%	-11.65%	4.78%	2.07%	32.73%	-5.92%	7.19%
Tripura	2.12%	0.02%	16.89%	20.37%	44.46%	-1.15%	-5.20%	0.75%	-4.49%	-14.87%	-4.63%	1.37%	1.71%	-12.91%
Sikkim*	12.11%	0.15%	21.33%				9.49%				11.83%			
NER		1.13%	23.30%	19.48%	51.26%	16.12%					0.61%	0.62%	6.49%	2.30%
All India			22.56%											

Table-3.2: Growth Rate of Gross Fixed Capital Formation														
Average (1990-2018)			CAGR of Productive Capital			CAGR (% of NER)					CAGR (% of India)			
	% of NER	% of India	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18
Arunachal*	0.37%	0.0%	33.92%				27.45%				31.82%			
Assam	79.60%	0.95%	18.9%	29.2%	14.7%	39.%	0.39%	3.67%	-2.11%	1.23%	-0.38%	10.7%	3.31%	5.92%
Manipur	0.39%	0.0%	9.98%	-53.08%	31.55%	80.07%	-7.1%	-62.7%	12.2%	31.5%	-7.86%	-59.81%	18.4%	37.1%
Meghalaya	6.66%	0.07%	13.98%	-176.4%	64.64%	31.68%	-3.7%	161.3%	40.4%	-4.17%	-4.51%	-165.4%	48.2%	0.27%
Nagaland	1.90%	0.01%	22.69%	117.8%	-211.7%	34.28%	3.57%	74.7%	-195.3%	-2.27%	2.79%	86.61%	-200.6%	2.25%
Tripura	2.86%	0.02%	12.88%	-15.1%	28.88%	6.64%	-4.71%	-31.9%	9.94%	-22.3%	-5.43%	-27.34%	16.0%	-18.7%
Sikkim*	24.75%	0.31%	0.32%				-19.19%				-24.46%			
NER		1.16%	18.45%	24.69%	17.22%	37.40%					-0.7%	6.81%	5.53%	4.63%
All India			19.36%	16.74%	11.08%	31.32%								

Table-3.3 : Growth Rate of Number of Factories														
Average (1990-2018)			CAGR of Number of Factories			CAGR (% of NER)					CAGR (% of India)			
	% of NER	% of India	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18
Arunachal*	2.20%	0.05%	-1.87%				-8.00%				-3.10%			
Assam	77.79%	1.39%	33.80%	2.67%	3.01%	8.55%	-0.06%	-0.40%	-0.12%	0.09%	1.40%	-0.33%	1.80%	3.82%
Manipur	3.00%	0.05%	4.34%	3.63%	0.67%	10.59%	-0.02%	0.53%	-2.39%	1.98%	1.44%	0.60%	-0.51%	5.78%
Meghalaya	2.21%	0.04%	5.62%	4.31%	15.30%	4.53%	1.21%	1.19%	11.79%	-3.61%	2.69%	1.27%	13.95%	-0.02%
Nagaland	4.58%	0.08%	4.82%	18.60%	-3.63%	7.47%	0.45%	15.05%	-6.55%	-0.90%	1.91%	15.14%	-4.75%	2.79%
Tripura	11.55%	0.21%	3.42%	0.06%	5.73%	5.52%	-0.89%	-2.93%	2.51%	-2.70%	0.55%	-2.86%	4.49%	0.92%
Sikkim*	1.46%	0.03%	6.92%				-1.76%				2.02%			
NER		1.78%	4.35%	3.08%	3.13%	8.45%					1.46%	0.07%	1.93%	3.73%
All India			2.86%	3.00%	1.18%	4.55%								

Table-3.4 : Growth Rate of Number of Persons Engaged														
Average (1990-2018)			CAGR of Number of Persons Engaged				CAGR (% of NER)				CAGR (% of India)			
	% of NER	% of India	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18
Arunachal*	1.17%	0.02%	-4.20%				-7.98%				-7.94%			
Assam	81.65%	1.39%	2.80%	5.02%	1.98%	4.77%	-0.39%	0.40%	-1.31%	-0.62%	0.34%	2.23%	-0.22%	1.04%
Manipur	1.68%	0.03%	7.67%	21.98%	9.30%	12.68%	4.34%	16.61%	5.77%	6.88%	5.11%	18.73%	6.94%	8.67%
Meghalaya	3.19%	0.06%	2.97%	2.12%	24.16%	8.72%	-0.22%	-2.37%	20.15%	3.13%	0.52%	-0.60%	21.48%	4.85%
Nagaland	2.21%	0.04%	3.06%	9.61%	-2.11%	7.51%	-0.14%	4.79%	-5.27%	1.98%	0.60%	6.70%	-4.23%	3.68%
Tripura	9.38%	0.16%	2.77%	-4.17%	13.71%	-0.41%	-0.42%	-8.39%	10.04%	-5.53%	0.31%	-6.73%	11.25%	-3.95%
Sikkim*	4.91%	0.09%	14.90%				8.97%				10.85%			
NER		1.71%	3.20%	4.61%	3.34%	5.43%					0.74%	1.82%	1.11%	1.67%
All India			2.44%	2.74%	2.21%	3.69%								

Table-3.5 : Growth Rate of Value of Output														
Average (1990-2018)			CAGR of Value of Output				CAGR (% of NER)				CAGR (% of India)			
	% of NER	% of India	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18
Arunachal*	1.32%	0.02%	-5.78%				-13.83%				-12.57%			
Assam	82.36%	0.99%	22.30%	14.64%	16.13%	36.24%	-0.98%	-1.33%	-0.56%	-2.38%	-0.72%	-2.25%	0.91%	-2.50%
Manipur	0.42%	0.00%	24.43%	54.31%	17.14%	52.87%	0.75%	32.81%	0.30%	9.53%	1.01%	31.58%	1.78%	9.41%
Meghalaya	2.87%	0.04%	30.74%	28.26%	49.75%	43.54%	5.85%	10.39%	28.22%	2.85%	6.13%	9.37%	30.12%	2.73%
Nagaland	0.95%	0.01%	21.25%	43.38%	8.47%	46.25%	-1.83%	23.40%	-7.12%	4.79%	-1.57%	22.26%	-5.75%	4.67%
Tripura	1.92%	0.02%	23.69%	31.87%	20.91%	37.44%	0.15%	13.50%	3.53%	-1.52%	0.41%	12.45%	5.06%	-1.63%
Sikkim*	32.61%	0.58%	22.30%				-9.83%				-14.42%			
NER		1.27%	23.51%	16.19%	16.79%	39.57%					0.26%	-0.93%	1.48%	-0.11%
All India			23.18%	17.27%	15.09%	39.73%								

Table-3.6 : Growth Rate Net Value Added														
Average (1990-2018)			CAGR of Net Value Added				CAGR (% of NER)				CAGR (% of India)			
	% of NER	% of India	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18	1990-2018	1990-97	1998-07	2008-18
Arunachal*	1.13%	0.02%	-22.17%				-33.57%				-27.20%			
Assam	72.27%	1.03%	20.68%	8.12%	8.87%	46.95%	-2.18%	-2.82%	-1.90%	-4.17%	-0.88%	-7.70%	-4.69%	6.88%
Manipur	0.46%	0.01%	36.51%	150.56%	19.41%	53.68%	10.66%	125.21%	7.60%	0.22%	12.12%	113.89%	4.54%	11.77%
Meghalaya	3.50%	0.05%	28.38%	35.37%	61.85%	36.81%	4.07%	21.68%	45.84%	-10.78%	5.45%	15.56%	41.69%	-0.49%
Nagaland	0.94%	0.01%	20.09%	-251.00%	19.95%	48.47%	20.09%	-236.57%	8.08%	-3.18%	20.09%	-229.71%	5.01%	7.99%
Tripura	2.50%	0.03%	23.22%	45.28%	19.96%	32.93%	-0.12%	30.58%	8.09%	-13.31%	1.21%	24.02%	5.01%	-3.31%
Sikkim*	58.37%	2.35%	22.90%				-6.51%				-12.61%			
NER		1.95%	23.36%	11.26%	10.98%	53.34%					1.32%	-5.03%	-2.84%	11.53%
All India			21.75%	17.14%	14.23%	37.49%								

Source: Author's calculation based on data from Handbook of Statistics on Indian States, RBI

Note: ASI data for Arunachal and Sikkim are available from 2014-15 and 2009-10 respectively. Data for Mizoram is not available.

In analysing growth of industry sector of NER in terms of productive capital which is the summation of both fixed and working capital, it is found that more than 2/3rd of the average productive capital of NER is occupied by Assam. However, share of Assam in productive capital of NER has been coming down over the years as can be seen from negative compounded growth rate. In fact the growth rates of share of NE states in terms of productive capital of NER have been negative during the period of first-industrial policy (1997-2007) except Meghalaya. Interestingly, the growth rates of these states during pre-industrial policy period were positive. In contrast to the result of share of NE states in productive capital of NER, the compounded growth rate of productive capital in absolute term has been higher for NER and its states during the period of first industrial policy than pre industrial policy period (1990-97) except Manipur and Meghalaya. The growth rates of productive capital during NEIIPP (2007-17) are lower for all NE states than the previous period. The compounded growth rate of productive capital for the entire North Eastern Region from 1990-2018 is 23.30 which is higher than the national average (22.56). In terms of share of productive capital of the states as a ratio of all Indian level, the compounded growth rates are found to be positive during the study period except Meghalaya and Tripura.

The analysis of other variables of industry such as value of output, total person engaged, number of factories, net value added and gross fixed capital formation reveal that share of Assam is highest among all other states of NER. The compound annual growth of Gross Fixed Capital Formation (GFCF) during 1997-2007 was positive for all the states except Nagaland showing positive impact of first industrial policy of NER. During the pre- industrial policy years, the growth rates were negative for Manipur, Meghalaya and

Tripura. The CAGR of Meghalaya in the share of gross fixed capital formation as a ratio of NER was highest during 1990-97. However it dropped to 40.4% during 1997-2007 and afterwards the growth rate was negative during the period 2008-2018. The compounded growth rates of share of GFCF as a ratio of NER are negative for majority of the states except Assam and Nagaland. In terms of all India level, only Nagaland has showed positive growth rate.

The compound annual growth rate of number of factories during the study period is highest in Assam. The growth rate in Assam has increased from 3.01% during first industrial policy period to 8.55% in the period of NEIIPP (2007-17). During the first and second industrial policy of NER, the growth rate of factories was highest in Meghalaya and Manipur respectively. In terms of states' share in NER, the growth rates are negative for most of the states during the study period except Meghalaya and Nagaland. It seems from analysis of data that introduction of first industrial policy (1997) and North Eastern Industrial and Investment Promotion Policy (2007) have not been succeeded in developing industrial base in the region.

It is found that more than 80% of person engaged in industry sector of NER is from Assam. However, over the years it has declined and it can be visible from negative CAGR of Assam's share in the employment of NER. During the study period, only Manipur has shown positive compounded growth rate of number of person engaged as a ratio of employment pool of NER. However, in terms of all India share CAGR of all the states of NER is positive during the study period. The growth rate of net value added and value of output as a share of NER has been positive for Manipur, Meghalaya, Nagaland and Tripura respectively during the study period.

Results and Discussion

The study has analysed the variables related to industry sector under three time periods- from 1990 to 1997 (period of pre-industrial

policy), from 1998-2007 (period of first industrial policy of NER) and from 2008 to 2018 (period of introduction of NEIIPP).

The estimate of sectoral shares in NSDP picturize the development deficiency of secondary sector of North Eastern Region especially manufacturing and construction sector as compared to that of national average situation. Unlike service sector, average share of overall agricultural and industry sector is found to be higher than all India level. However, compounded growth rate of Industry sector of NER and India is negative during the time of NEIIPP as highlighted from table-1. On the other hand, growth rate of manufacturing sector of NER and all India has shown positive growth rate during 2004-2018 and thus showing a positive impact of NEIIPP on manufacturing sector growth of NER. Sikkim has recorded highest CAGR in manufacturing and industry sector and Meghalaya has secured top position in compounded growth rate of construction sector.

As mentioned earlier, Assam accounts for the majority of share among NE states in terms of all the variables under study. From 1990 to 2018, on an average 79% of factories are situated in Assam and more than 80% people are engaged in these industries. However, over the years industrial dominance of Assam has declined and process of industrialization has been defused to the other states of NER. The dominance of Assam's industrial scenario is mainly attributed to large resource base, increased population, due to the gateway of NER and infrastructural advantage as compared to the other parts of the region.

There are variations among NE states in terms of their share in NER regarding different variables. For example- Tripura has secured the second position in the average percentage share of number of factories and total number of person engaged in industries, but it lagged behind Sikkim and Meghalaya in terms of other variables like value of output, net value added, gross fixed capital formation

and productive capital and thus showing labour intensive nature of industry. In contrast to that Meghalaya and Sikkim have shown capital intensive nature of its industry by virtue of their second lead position in average percentage share of value of output, NVA, gross fixed capital formation and productive capital. Arunachal Pradesh, Manipur and Nagaland lagged behind other states of NER in terms of several variables of the study.

Nagaland recorded the highest compounded growth rate in productive capital which is above regional and national average. On the other hand, growth rate of Arunachal Pradesh has been negative for all the variables under study except gross fixed capital formation. However, the data may not reflect the true picture as ASI survey data for Arunachal is available only after 2014-15. Value of output of industry sector has shown the highest CAGR for the region with Meghalaya (30.74%) achieving the highest growth among the states of the region. The compounded growth rate of number of factories and employment in the industry sector has been lowest for the region during the study period although it was above the national average growth rate. Only in terms of gross fixed capital formation the region is lagging behind all India average growth rate. Arunachal Pradesh, Assam and Nagaland have registered higher compounded growth rate in gross fixed capital formation than regional and national average. On the other hand, Tripura, Meghalaya and Manipur have secured higher CAGR in net value added and value of output than regional average. Manipur and Sikkim have achieved high progress in employment generation and performed even better than states like Assam. In general, over a period of 28 years of study the growth in number of factories and employment generation in industries have been quite minimal and much lower than growth of value of output, net value added, gross fixed capital formation and productive capital.

During the period of pre-industrial policy, regional growth of all

the variables was positive. The compounded growth of number of factories, value of output and productive capital of the region was lower during pre-industrial policy. However, regional growth rate of gross fixed capital formation, employment in industry and net value added was impressive in this period. During this period, performance of Manipur was significant in value of output, net value added and productive capital. On the other hand, growth rate of Tripura was sluggish in number of factories, employment generation, gross fixed capital formation and for Meghalaya low growth rate was in gross fixed capital formation, productive capital and total persons engaged.

During the period of first industrial policy of NER (NEIP, 1997), the regional growth rate of productive capital, number of factories and value of output have increased. During this period, the growth rate of Meghalaya has improved for all the variables, whereas growth rate of Manipur and Nagaland has been falling down for all the variables except gross fixed capital formation in Manipur and net value added in Nagaland. During pre- NEIP period, growth rate of Meghalaya in productive capital was highest and to that of Nagaland was lowest. However, in the period of NEIP the growth rates were reversed and accordingly Meghalaya and Manipur secured the bottom and top position respectively. Again, in case of gross fixed capital formation also the growth rates of Meghalaya and Nagaland were reversed in between first sub-period (1990-97) and second sub period (1998-2007). Meghalaya and Tripura have registered significant growth in number of industries and employment generation, whereas Assam, despite of occupying highest employment share, experienced decline in CAGR in employment generation during the first industrial policy period. In case of net value added all the state except Tripura secured growth improvement.

During the period of NEIIPP (2007), regional growth rates of all the variables have spiked except productive capital and gross fixed

capital formation. In contrast to NEIP period in which Meghalaya received positive outcome in the growth of all variables, during the time of NEIIPP the growth rates of all the variables were declining in case of Meghalaya. Assam, Manipur and Nagaland have secured improvement in growth rates in case of all variables except productive capital. As compared to the dismal performance during NEIP, the improvement of Nagaland and Manipur during NEIIPP period was impressive. Except Meghalaya and Tripura growth rate of number of factories and employment generation during this period were improving.

Conclusion

Industrial development of North Eastern Region of the country has not been up to mark if it is compared with other parts of the country. Minimal share of the whole region towards country's industry sector signifies this bitter fact. Geographical isolation, infrastructural backwardness, lack of awareness and motivation, lack of market access, transportation difficulty is some of the reasons accountable for low industrial development of the region. Interstate variation of developmental indicators is quite visible. Among the states, Assam occupies the prominent industry share of the region. However, with the introduction of NEIP (1997) and NEIIPP (2007), increasing share of industry variables among various NE states other than Assam over the years is quite interesting and beneficial for future balanced development of the region. Considering huge unemployment situation of NER, government should focus on enhancing industrial infrastructure and employment generation in the region.

Referrences

1) Bagchi Kumar Amiya (2010), Colonialism and Indian Economy, New Delhi: Oxford University Press

2) Bahadur, T K (2009), Urbanization in North-East India, Mittal Publications, New Delhi

3) Bhattacharjee, P, J & Bhattacharya Rakhee (2018). "Industrial Policy in North East India", Indian Journal of Industrial Relations, Vol. 54, No. 2, pp. 244-257, https://www.jstor.org/stable/10.2307/26536550

4) Bhide S & Shand Ric (2000). "Sources of Economic Growth: Regional Dimensions of Reforms", *Economic and Political Weekly*, Vol. 35, No. 42, pp. 3747-3757

5) Hrahsel Lalruatfeli Anna & Umdor Sumarbin (2019). "A Temporal Analysis of the Growth of Manufacturing Industries in Northeast India during 1981-82 to 2014-15", *Social Change and Development, Vol. XVI No.2*

6) K. Sivasubramaniyan. (2017). "Sectoral Contribution and Their Relevance In India: With Special Reference To Three South Indian States." *International Journal of Research - Granthaalayah*, 5(9), 116-123. https://doi.org/10.5281/zenodo.999325

7) Regon Alok (2021). "Industrialization in the North Eastern Region through Regional Planning, *Journal of Emerging Technologies and Innovative Research (JETIR)*, Vol-8, Issue-9, ISSN-2349-5162

8) Reserve Bank of India (2021-22). Handbook of Statistics on Indian States.

9) Reserve Bank of India (2016-17). Handbook of Statistics on Indian States.

10) Sarma, A &Bezbaruah, M P (2009), Industry in the Development Perspective of North East

India,*Dialogue,* Vol. 10, No. 3, pp. 55-64.

11) Shand Ric & Bhide S. (2000). "Sources of Economic Growth:

Regional Dimensions of Reforms", *Economic and Political Weekly*, Vol. 35, No. 42

12) Sivasubramaniyan K (2017). "Sectoral Contribution and their Relevance in India: With Special Reference to Three South Indian States", *International Journal of Research-Granthaalayah,* A Knowledge Repository, Vol.5, Iss.9, ISSN- 2350-0530(O), ISSN- 2394-3629(P), DOI: 10.5281/zenodo.999325

13) Trivedi Pushpa, Lakshmanan L, Jain Rajeev, Gupta Kumar Yogesh (2011). "Productivity, Efficiency and Competitiveness of the Indian Manufacturing Sector", *Development Research Group*, Study No. 37, Department of Economic and Policy Research, Reserve Bank of India, Mumbai

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CHAPTER 12

Travel and Tourism Industry in Sikkim: Prospects and Challenges

Rompi Deb

Abstract

Sikkim is one of the North-eastern states which have immense potential for travel and tourism industry. The tourism industry in the Sikkim is considered to be in its infancy stage. The present study is a pioneer attempt to examine potentialities and prospects of Tourism in Sikkim state. The rapid growth of the tourism sector as a significant component of the services sector has contributed to the socio-economic development of the region. The increase of tourists' influx to Sikkim yielded economic benefit to the regional economy in the form of income and employment to the local community people. Both the Per capita GSDP and tourists' influx to the state has been increasing over the decade before being hit by the pandemic. Tourism, transportation and hotels have been identified as key drivers among the other items to GSDP. The study attempts to analyse the potentiality of the travel and tourism industry of Sikkim on the basis of secondary data. It also discusses the various policies which has been adopted to promote tourism in the state and can be implemented to revive the industry hit by the COVID-19 pandemic.

Keywords: Regional Economy, Tourism, Sikkim, Per-capita GSDP, Economic Growth.

Introduction

Sikkim state of North east India is quite notable for its biodiversity, comprising of alpine and subtropical climates, as well as being a host to Kanchenjunga, the highest peak in India and third highest on Earth. The Khangchendzonga National Park – a UNESCO World Heritage covers almost 35 per cent of the state. Sikkim is also the first state in India to convert its agriculture to fully organic. It displays a huge potential in case of tourism with its traditional, cultural and modern assimilation. During the last two decades, tourism in Sikkim has progressed considerably due to an increasing number of tourists visiting this hilly region for its natural beauty.

Tourism Industry is sometimes considered as the backbone of Sikkim's economy, contributing to its foreign exchange reserves. The State Government plays an important role in developing the tourism in the state through the guiding principles for the tourism Sector in the Sikkim. Although earlier, the number of tourist inflows to Sikkim was negligible, it has considerably increased in the recent decade of the century. The capital and largest city of Sikkim, Gangtok has several tourist spots. The tourist attractions of Sikkim include Tsomgo Lake, Nathula Pass, Kanchenjunga Base Camp, Lachen, Lachung and Yumthang Valley, Pelling, Zuluk, Teesta River, Gurudongmar Lake, Goechala, which lured spelunkers, adventurers, tourists and visitor to explore and witness the natural glamorous beauty of the land. With the permission of the state government to allow tourists to visit Tsongmo Lake, located at a distance of only 35 km from Gangtok, which experiences snowfall, there was high tourist influx coming from the neighboring state of West Bengal. Another remarkable step was the decision of the government to allow leave travel concession by Air to the Northeast

region (NER) in 2010 for central Government employees and the "Go East Policy" has also contributed in breaking the barriers to the development of tourism in Sikkin.

Tourism Sector in Sikkim is guided by the following main principles:

1. Promoting sustainability for the environment.
2. Promotion, preservation and appreciation of Sikkim's diverse culture.
3. Being inclusive in nature rendering equal opportunities to all sections of people.
4. Providing quality experience and services and greater tourist satisfaction and safety.

However, the state has been facing downturn in tourism since the CAA movement in 2019 along with the complex law and order situation in Meghalaya and the scenario was further worsened by the COVID-19 accompanied lockdown. Thus, the travel and tourism industry in Sikkim has faced a severe downturn incurring huge losses throughout this time. The whole tourism value chain across hotels, restaurants, resorts, travel agencies, tour operators, dhabas and fast food businesses directly or indirectly associated with the tourism sector have been adversely affected. Sikkim is hoping the tourism sector (hit hard by the global pandemic) would switch gears in 2022. The North East India Tourism Confederation (NEITO) president E B Blah also said "The survival time is over and we are now on revival mode."

Literature Review

The tourism activities in Sikkim state have significant impact on the regional economy. The tertiary sector has a large contribution in the per capita Gross State Domestic Product as compared to primary sector and secondary sector of about 48 percent which largely

comprises of the tourism, real estate, hotels, trade, transportation and communication. Thus, the inflows of tourists have wider impact on the regional economy and there is a positive correlation between the tourists' inflows and the per capita State Gross Domestic Product (Rizal, et al., 2013).

There are several indirect impacts of the tourism sector upon the economy of the state such as employment generation and women empowerment which are positive and overcrowding, pollution etc. which are negative. The international tourist arrival in the state is also observed to be very less as compared to domestic tourists with most of the international tourists from Bhutan, Nepal, and Bangladesh (Tamang et al, 2020).

Expansion of tourism in Sikkim still suffers from regional imbalance since majority of the tourists visit East District, particularly the capital, Gangtok. Although, the different government departments such as Department of Tourism; Forest, Environment and Wildlife Management Department; Rural Management and Development Department and NGOs are engaged in tourism development and facilitation but their works are not cooperative. Tourism needs to be addressed in a holistic manner and an integrated approach bringing all the stakeholders together under a common platform (Chakrabarty, 2009).

At present, COVID-19 has become one of the major concerns for the global economy. The COVID-19 pandemic has resulted in the loss of life and livelihoods all across the globe. Industries across the spectrum have been impacted by the pandemic, the travel and tourism industry has felt maximum impact due to grounding of planes, closure of railways, hotels and other establishments (Thornton, 2020). If we go down to the tourism value chain, we may find the local shop keepers who sales local products or handicrafts made by the local people or artisans, or farmers who supplies food to the hotel and restaurants are also dependent on the tourism industry

indirectly (Ghosh, 2020). In another report entitled 'COVID-19 and the world of work: Impact and policy responses' by International Labour Organization, it was explained that the crisis has already transformed into an economic and labour market shock, impacting not only supply (production of goods and services) but also demand (consumption and investment) (Chaudhary et al., 2020). Looking at the major challenges that the entrepreneurs from this sector are facing, it is seen issues like burden of paying the EMI's for bank loan, covering the fixed expenses like salary, rent etc. are most critical ones, as the industry has very limited opportunity for revenue generation in the next six months (Baruah,2020). This paper simply tries to analyze to analyze the impact of the COVID-19 pandemic on the travel and tourism industry in India in general and Sikkim in particular and discuss some steps which can be taken by the government and other authorities to cope up with the situation.

Objectives

The study has the following objectives:

1. To analyse the development of the Travel and Tourism industry in Sikkim state of North-east India.
2. To discuss and suggest remedial policy measures to deal with the difficulties faced by the tourism and travel sector in Sikkim state of North-east India.

Data Sources and Methodology

The study is of descriptive nature and based on secondary data. All the required and relevant secondary data are collected from various research papers, journals and publications, websites and many others. Some books have also been referred for theoretical information on the topic. The entire study is based only on observation and documentary analysis**.** The area of study is limited to Sikkim state in North-east India.

Analysis and Interpretation

Table 1:The recorded forest area in the state in km^2		
Geographic area	Reserved forests	Protected Forests
7096	5452.39	389
Source: Forest Survey of India (FSI), 2019		

Thus the state has much scope for facilitating eco-tourism. Some of the important components of eco-tourism programme in the state are as follows:

- Activities like landscaping, development of parks, fencing, compound wall etc. for improving the destination surroundings.
- Provision for improvement in solid waste management and sewerage management measures.
- Improvement of road connectivity in terms of National Highways/State highways and other entry points to the tourist spots.
- Construction of Budget Accommodation, Restaurant & Wayside Amenities
- Procurement of eco-friendly modes of transport for enjoying the Tourism Zone along with equipments directly related to tourism like Water Sports, Adventure Sports
- Timely refurbishment of the Monuments.
- In order to publicize, sinages and display boards showing Tourist Area Maps and documentation on places of interest at the locations.
- Setting up of Tourist Arrival Centers, Reception Centres, Interpretation Centres.
- Improvement of municipal services directly related to Tourism.
- Improvement of the village surroundings through activities

like landscaping, development or parks, fencing, compound wall etc.

- Without considering the major roads connecting the village, improvements in roads within the Panchayat limits. .
- Provisions for development of Wayside Amenities.
- Other work/activities directly related to tourism.
- Tourist Accommodation
- Trekking route, mountain biking, skiing, Adventure in general

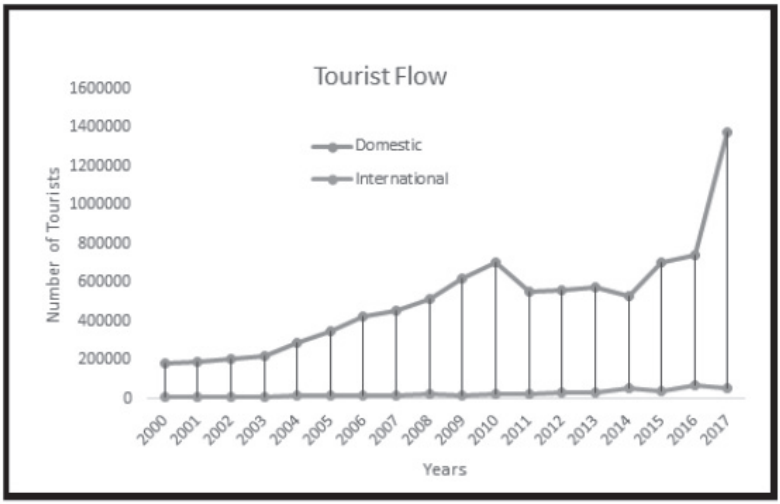
Table 2: Month-wise Foreign Tourist Arrivals in India, Jan 2018-June 2020 (Provisional)

Month	Foreign Tourist Arrivals(FTAs) In India				
	2018	2019	2020 (Provisional)	Percentage (%) Change	Percentage (%) Change
January	10,45,027	11,11,040	11,18,150	6.3	0.6
February	10,49,259	10,90,516	10,15,632	3.9	-6.9
March	10,21,539	9,78,236	3,28,462	-4.2	-66.4
April	7,45,033	7,74,561	0	4	-100.0
May	6,06,513	6,15,136	0	1.4	-100.0
June	6,83,935	7,26,446	0	6.2	-100.0
July	8,06,493	8,18,125		1.4	
August	7,85,993	8,00,837		1.9	
September	7,19,894	7,51,513		4.4	
October	8,90,223	9,45,017		6.2	
November	10,12,569	10,92,440		7.9	
December	11,91,498	12,26,398		2.9	
Total (Jan-June)	51,51,306	52,96,025	24,62,244	2.8@	-53.5@
Total (Jan-Dec)	1,05,57,976	1,09,30,355		3.5	

P: Provisional, @ Growth rate over January-June of previous year.

Source: (i) Bureau of Immigration, Govt. of India, for 2018, 2019 & 2020

Figure 1: Domestic and International Tourist Inflow into Sikkim from 2000-2017

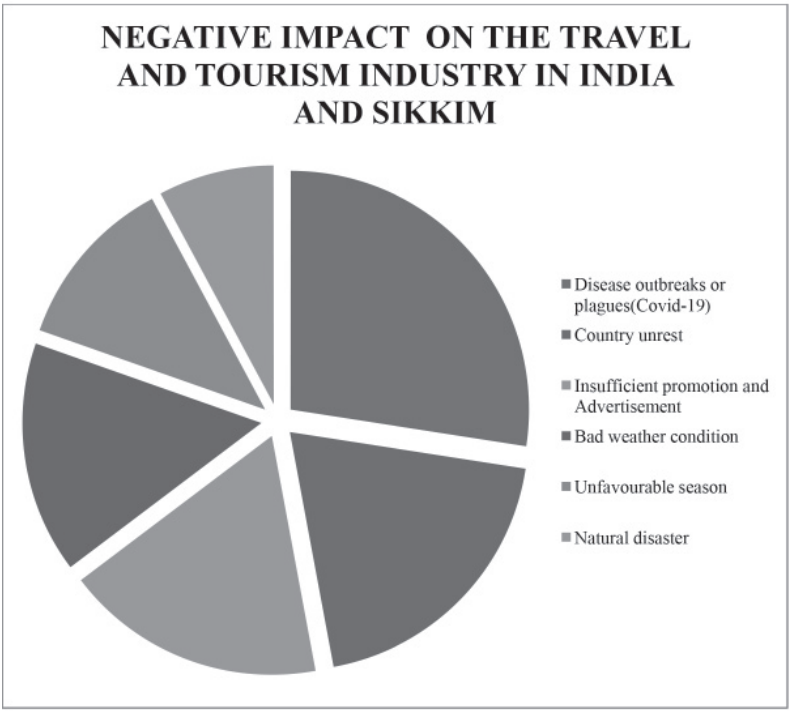


Source: Tourism and Civil Aviation, Govt. of Sikkim, 2017

To assess the impact of the COVID-19 pandemic on the travel and tourism in Sikkim, various negative factors such as unfavourable weather conditions, natural disasters, disease outbreaks or plagues, country unrest, bad season, insufficient promotion and advertisement have been taken into account using Principal Component Analysis (PCA). The individual indicators have been converted into normalized form to compute an index value in a particular dimension. Then PCA has been used to compute the factor loading and weight of the parameters. The factor loadings have been multiplied with their respective Eigen values to calculate the weights. The normalized values have been multiplied by their respective weights in the next step. The resultant values have been divided by the double summation of factor loadings and Eigen values to get the final index value. All the factors which have been

taken into account are inversely related to travel and tourism in Sikkim and are assigned negative values. So, COVID-19 pandemic falling within the range of disease outbreaks or plagues have been assigned negative values.

Figure 1: Percentage of explained variances caused by the principal components in the travel and tourism industry in India and Sikkim



Source: Author's calculation

Table 3: Table - Average Annual Percentage Growth Rate of Per Capita GSPD and Tourists Influx' in Sikkim State

Year	Per Capita Gross State Domestic Product	Total Number of Tourist Arrivals
1999 – 2000		
2000 - 2001	1.97	2.9
2001 - 2002	2	3.06
2002 - 2003	3.36	4.56
2003 - 2004	3.15	14.76
2004 - 2005	3.12	10.65
2005 - 2006	3.7	10.41
2006 - 2007	3.37	4.45
2007 - 2008	3.08	5.22
2008 - 2009	3.24	9.35

Source: Praveen Rizal & Dr. R. Asokan in Measuring The Impact of Tourism Industry On Regional Economy Of Sikkim State, India

Results and Discussion

The travel and tourism industry in the country was making advancement in the country in general and Sikkim in particular with inflow of both inbound and outbound tourists in recent years. In 2013, Sikkim got the highest number of 7 national projects out of 25 national projects under Government of India's initiatives to promote adventure tourism. It has also been observed that with the increase in the percentage of tourist influx, the percentage of Per Capita Gross State Domestic Product has also been increasing. Sikkim was experiencing progress in travel and tourism due to aggressive marketing and promotion of tourism. However, with the start of the anti CAA (Citizenship Amendment Act)/CAB (Citizenship Amendment Bill) movements since the end of 2019 along with the

outbreak of the Coronavirus pandemic from Wuhan in China across the globe, the travel and tourism industry is one of the most worst hit industries and its decline has a significant contribution in the decline of the GDP growth rate of the country. The employment of the six people on an average with each owning four vehicles on an average engaged in about 100 registered tour operators of the state are at stake. In addition, all the drivers, gypsies, numerous unregistered tour operators and the vehicles on loan having EMIs are cases of great concern. The travel industry comprising of railways, buses, waterways and other means of transport are also suffer losses of crores of revenue. The industry has much limited scope for revenue generation in the next six to eight months due to issues like burden of paying the EMIs for bank loan, covering fixed expenses like salary, rents and other charges. Overall, there has been disastrous downfall of the travel and tourism industry calling for urgent action of the government bodies for providing relief measures to prevent further decline of the industry.

The PCA reveals that out of the factors taken into consideration, the highest negative impact on the travel and tourism industry has been caused by the outbreak of diseases or plagues (COVID-19) by about 70% followed by country unrest at 50% and then insufficient advertisement and promotion at 45%. Bad weather condition, unfavourable season and natural disasters account for 40%, 30% and 20% of the variances and decline in the industry. This highlightens the fact that the major blow to the travel and tourism industry has been caused by the outbreak of the COVD-19 pandemic. The transformation of some of the major hotels in the state affected their business to a significant extent. Although, the government has been providing certain concessions to these hotels and other means of travel, but the losses suffered by these enterprises are yet to be overcome. Furthermore, the government has to take steps for the

upliftment of the travel and tourism sector along with maintaining proper guidelines to handle the current situation at both central and state levels.

Some policies which can be adopted by the government are as follows:

1. Adopting region based tourism policy of survive and revive.
2. The local administration such as District Magistrates, Police department etc and local government bodies such as Mayors, Councillors, Head of villages etc should be made co-operative for effective implementation of the policies.
3. The tourism bodies or associations and business houses comprising of taxis, hotels, resorts, restaurants etc. should be made to formulate appropriate COVID-19 abiding protocols.
4. The health department comprising of the doctors, nurses and other medical staff should be directed to remain prepared in times of necessity to attend to the tourists.
5. Formulating proper SOPs for travel in the various transportation services by establishing coordination among the various transportation departments.

Such steps will lead to improved quality of service to the tourists enhancing the confidence in the travel and tourism industry and promoting the investment environment in this industry. Federation of Indian Chambers of Commerce and Industry has also revised several recommendations for the survival and revival of Indian Travel and Hospitality Industry for the various related agencies such as tour operators, hotels, travel agents, online travel agents, amusement parks and others. These steps will provide a certain amount of relief to the people associated with the sector but much more has to be done.

Conclusion

Sikkim was slowly making much progress in the tourism sector with much inflow of domestic tourists. The opening up of various tourist spots which were earlier restricted such as Tsomgo Lake, Nathula Pass, Zuluk etc have resulted in increase in tourist influx over the years. However, COVID-19 has led to a disastrous impact on the entire travel and tourism industry which comprises of hotels, restaurants, resorts, travel agencies, tour operators, destinations, family entertainment venues, air, land and water transportation. In order to deal with the challenges posed by the COVID-19 pandemic, the Ministry of Tourism under the government of India has constituted a National Tourism Taskforce headed by the Minister of State [I/C] including the state tourism ministers, joint secretary level officers of the concerned central ministries and representatives from associations such as FICCI, CII, ASSOCHAM and WTCII along with heads of tourism and hospitality associations. Some of the highly recommended steps from the government of the country and the state include the following:

1. Short term interest free loan for rebuilding business in the travel and tourism sector.
2. The existing overdraft facilities for the industry should be doubled to avoid mass layoffs.
3. Providing interest free moratorium on existing loans for nine months.
4. Deferment of all statutory compliances and State Goods and Services Tax (SGST) for twelve months and removal of fees for any upcoming licenses or permits.

Even after the lockdown has been removed, the recovery will take much time before the effects of the dark period can be removed. The Chief Minister of Sikkim Prem Singh Tamang announced the 'Visit Sikkim 2022' which focused on year-long tourism promotion and

marketing for Sikkim. Earlier the approaches focused on season-based tourism endeavour for the state but due to immense losses suffered by the sector due to the COVID-19 pandemic, this step has been taken. It is hoped that the sector would overcome the challenges and achieve its full potential in the years to come.

References

Baruah, Sriparna. B.(2020). COVID19 Pandemic And Tourism Industry In Assam. Retrieved from:https://www.sriparna.in/covid19-pandemic-and-tourism-industry-in-assam/

Chaudhary, Monika et al. (2020).Effect of COVID-19 on Economy in India: Some Reflectionsfor Policy and Programme. Journal of Health Management, 22(2), 169-180.

Chakrabarty, A (2009). Tourism in Sikkim: Quest for A Self-Reliant Economy, *The NEHU Journal, 7(1), 90-103.*

Deb, R et al. (2022). Impact of COVID-19 on the Travel and Tourism Industry: Special Emphasis On North-east India. *Impact Of COVID-19 On Various Sectors Of Indian Economy, 151-163.*

Dhungel, P (2021). Sikkim: CM announces 'Visit Sikkim 2022' to boost tourism. Retrieved from: https://www.eastmojo.com/sikkim/2021/01/19/sikkim-cm-announces-visit-sikkim-2022-to-boost-tourism/

Dutta, A.K. (2020). A Study Of The Effect Of Covid – 19 Pandemic On The Tourism Industry Of Sikkim. International Journal of Advance Research and Innovative Ideas in Education.

Retrieved from:http://ijariie.com/AdminUploadPdf/A_Study_Of_The_Effect_Of_Covid_%E2%80%93_19_Pandemic_

On_The_Tourism_Industry_Of_Sikkim_ijariie12275_converted.pdf

FICCI's revised recommendations 'For Survival and Revival' of Indian Travel and Hospitality Industry. (2020). Retrieved from: http://www.ficci.in/ficci-in-news-page.asp?nid=22160

Ghosh, Amlan.(2020). Post COVID19 Strategy to survive the Tourism Industry: Indian Perspective.Retrieved from: https://mpra.ub.uni-muenchen.de/102808/

Rizal, P et al. (2013). Measuring the Impact of Tourism Industry on Regional Economy of Sikkim State, India. Journal of International Academic Research For Multidisciplinary. 1(10), 413-419.

Sarkar, D. (2013). Sikkim largest beneficiary of Govt's adventure tourism promotion initiative. Retrieved from https:// economictimes. indiatimes.com/industry/ services/ travel/ sikkim-largest-beneficiary-of-govts-adventure-tourism-promotion-initiative/articleshow/19325577.cms

Tamang, K et al. (2020). Tourist Perception and Satisfaction Level: A study of East Sikkim Tourism Industry. Retrieved from: https://www.researchgate.net/publication/342121904_Tourist_Perception_and_Satisfaction_Level_A_study_of_East_Sikkim_Tourism_Industry

Thornton, Grant. (2020). Travel and Tourism in times of COVID-19. Retrieved from: https://www.grantthornton.in/insights/articles/travel-and-tourism-in-times-of-covid-19/

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CHAPTER 13

Health Care System and Healthcare Industry in Assam: An overview

Jonali Nath

Abstract

Health is one of the most important indicators of human resource development. A country's development basically depends on the health condition of the people of that country. Developed countries have better health condition and health status of the people than developing and under developed counties. In India expenditure on health sector is very poor compared to other develop country. Assam is the most populous state of North East region of the country and it comprises about 70% population of entire North Eastern region. The health care system and facilities are still poor in the state. As per NFHS-IV, Assam show a critical state of affairs as per the public health. The infant mortality rate stands at 48 against the National average of 40. Again the maternal mortality rate in the state is highest in the country at 300 in 2011 -13 as against all India average of 167 per one lakh live birth. But in recent time Govt has launched number of health schemes for the development of health sector. In this paper, we try study the health condition and health facility of the state and also try to study the development health care industry of the state.

Keywords: HealthCare, Health Tourism, Health Industry

Introduction

Health is an important component of human development. In our country the expenditure on health sector is very poor compared to other developed countries. Health care is not something that is supported by economic growth but it is something that support economic growth (Amartya Sen,2014). According to the world health organisation a health care system consists of all organisation, people and actions whose primary intent is to promote, restore or maintain health. This includes efforts to influence determinants of health as well as more direct activity that improve health. Assam is the most populous state of the North Eastern region of India and it comprises about 70% population of entire NE region. The state has 3 crore population as per 2011 census and nearly 86% population residing in rural areas and only 14%population live in the urban area. In the recent time govt has introduced a number of healthcare schemes. Yet the health care system and facilities are still very poor in the state.

Objectives

The major objectives of the paper are as follows:

1 To see the status of health condition and healthcare status in Assam

2 To study the development of health care industry in the state.

Methodologies

The study is mainly base on secondary data which are collected from published or unpublished official data, various books, conference proceeding, economic survey and web based resources.

Health condition and healthcare status in Assam

The key health indicators as per NFHS-IV, Assam show a critical state of affairs as per the public health. The infant mortality rate stands at 48 against the National average of 40. Again the maternal mortality rate in the state is highest in the country at 300 in 2011 -13 as against all India average of 167 per one lakh live birth. According to National Family Health Survey IV, the health profile of Assam shows that about 29.8% children below the age of 5 years are underweight. Besides 35.7% children between the age group of 6-59 months are anemic and about 25.7%women have body mass index below normal.

Following are the current health indicators for Assam

Table -1

Sl	Indicators	Assam
1	IMR	48%
2	U5MR under 5 mortality rate	56%
3	Full vaccination coverage	47%
4	Children nutritional status (Below 5yrs) underweight	29.8%
5	Anemia among children (age6-59 month)	35.7%
6	Underweight omen with BMI below normal	25.7%
7	MMR	300 SRS bulletin 2011-13
8	Life expectancy	63.6(man) 64.8(women)

NFHS-IV

The organisational and management structure in Assam is quite similar to the management structure of other parts of the country because the financial allocation of the resources is determined by the central govt for all states and territories. In Assam, the health

and family welfare department comes under the supervision of the Ministry of Health and family welfare.

The Govt. of India introduced NRHM programme to provide effective primary health care facilities, especially to the poor and rural people all over the country. The National Rural Health Mission was launched on 12 April 2005 by the then prime Minister of India Dr. Man Mohan Singh to improve the status of health care services in our country. Rural areas in our country are suffering from various long standing health care problems. There are shortage of health care centres, shortage of doctors, medicine, hospital bed and many others services. To remove these shortages Govt of India introduced NRHM programme for rural people. Now it has been extended to urban areas since 2012. The aim of the mission is to provide accessible, accountable and affordable quality service to poor and rural people and concentrate on 18 special focus states. These States include the Empowered Action Group States, States of the North-East; Jammu & Kashmir and Himachal Pradesh. The Govt. of India took various steps under NRHM to reduce MMR and promotion of institutional deliveries through the Janani Surkhya Yojana (JSY).

In Assam, for 87 % of the rural population, the primary health care centre and the sub centres are the main source o providing health care facilities to the needy and vulnerable group. At present in the state the total number of sub centres are 4621, number of PHCs are 1014, number of CHCs are151 and number of district hospitals are 25 in 2022. The number of primary health centres has considerably increased from 237 since 1981-85 to 1014 in2022. Similarly community health centres also increased from 12 in 1981-85 to 151 in 2022. But the state does not have enough CHC to meet the demand of the rural people.

Number of Sub centre, PHC and CHC‘s functioning in Assam

Table -2

	1981-85	1985-90	1992-97	1997-2002	Target 2002-2007	2005	Required	2022
CHC	12	60	100	100	81	100	206	151
PHC	237	449	610	610	116	610	826	1014
Sub centre	1711	5109	5109	5109	0	5109	5063	4621

Source: Bulletin on Rural health statistics in India 2006, https;/hfw.assam.gov.in

List of district hospitals

Table-3

Sl	District	Name of the health Institution
1	Bapeta	Barpeta Civil hospital
2	Baska	Dr. Ravi Boro Civil Hospital
3	Cachar	S.M. Dev. Civil Hospital
4	Darrang	Mangaldai Civil Hospital
5	Dhemaji	Dhemaji Civil Hospital
6	Dhubri	Civil Hospital Dhubri
7	Dima Hasao	Halflong Civil Hospital
8	Goalpara	200 Bedded Civil Hospital
9	Golaghat	Kushal konwar Civil Hospital
10	Hailakandi	S.K. Roy Civil Hospital
11	Kamrup Metro	Sonaram Civil Hospital
12	Kamrup rural	Toaram Bafna kamrup district Civil Hospital
13	Karbi Anglong	Diphu Civil Hospital
14	Karimganj	Karimganj C. H.
15	Kokrajhar	RBN CH Kokrajhar

16	Lakhimpur	North Lakhimpur Civil Hospital
17	Morigaon	Morigaon Civil Hospital
18	Nagaon	B.P. Civil Hospital, Nagaon
19	Nalbari	SMK Civil Hospital Nalbari
20	Sivsagar	Sivsagar Civil Hospital
21	Sonitpur	Kanaklata Civil Hospital
22	Tinsukia	L.G. B. Civil Hospital
23	Udaluri	Udalguri Civil Hospital
24	Bongaigaon	Bongaigaon Civil Hospital
25	Chiang	J.S.B. Civil Hospital, Kajalgaon

Source: DLHS-3

Health care industries in Assam

In recent time medical tourism is a fast growing sector and has great potential for development. Medical industry is a rising industry and has high potential to attract investment in the region. It has a great impact on the economy by generating huge number of job opportunities for the youth. The healthcare sector in the state has tremendously grown and creates chances not only for the hospital staff but also other people who benefitted from it. With the growth of this sector, other supplementary services like accommodation, transportation, food have also grown which help to generate income of the people. The development of quality health care centre in the state mainly at Guwahati has started to attract patients not only from India but also from other countries. At present number of super speciality hospital established in the city

The health care facilities in the state mainly in Guwahati city have improved tremendously in last few years. In recent time, number of Govt. and Private Hospitals open branches in Guwahati city. Following are some important hospitals in the city:

Sl. no	Name of the hospital	Sl. no	Name of the hospital
1	Narayana superspeciality Hospital	16	Satribari Christian hospital
2	Apollo Hospital	17	Aruna Memorial Hospital
3	Arya Hospital	18	Lions Eye Hospital
4	Hayat Hospital	19	GMC and hospital
5	Nemcare hospital	20	Institution of Human reproduction
6	Dispur hospital pvt ltd	21	Nightangle Hospital
7	Dispur polyclinic	22	Wintrobe Hospital
8	Rahman hospital	23	City Heart Hospital
9	GNRC Hospital	24	Global surgerical Hospital
10	Sanjivani Hospital	25	Auyrsundra super speciality Hospital
11	Down Town Hospital	26	Pratiksha Hospital
12	Good Health Hospital	27	B. Barooah cancer institute.
13	Greenland Nursing Home	28	Piramal Diagnostics
14	Swagat Hospital Pvt. Ltd	29	Sankardeva Netralaya
15	Marawari Maternity Hospital	30	Excel Multispecialty Clinic

Problems face by health care industry in Assam

1 **Skill shortage:** Shortage of skill is one of the biggest barriers for the promotion of medical tourism in Assam. To improve the medical tourism all districts should give emphasis on medical education and research.

2 **Lack of connectivity:** Easy connectivity is another important factor to enable the health tourism. Though the state has

surrounded by numbers of foreign countries, yet there is a lack of proper connectivity.

3 **Lack of consulate services:** For the growth of health industry, development of consulate service is must.

4 **lack of health research:** Another important drawback of the healthcare sector of the state that there is an absent of emphasis on health research.

5 **lack of integrated approach:** An integrated approach should develop medical tourism and to handle all aspect of foreign availing health facilities needed in the state.

6 **Poor coordination:** Poor coordination of care is an important barrier for the development of health industry. Generally in many medical conditions people need to see specialist physicians, better lab test and modify their behaviour. Many patients left for lack of better coordination.

7 Lack of transiency and unethical practices in most of the health care institution.

8 **Insufficient health personnel:** There is a massive shortage of health personnel in many institutions. Most of the health institutions have not found any doctors, even nurse and other health personnel at night time.

9 **Massive shortages in the supply of services:** There is a shortage of human resource, hospital, diagnostic centres both in public and private sector. Though in recent time there is number of health care institution established yet it is less than the need of the people. So the cost is become high.

10 **Fake doctors:** Another important problem face by the healthcare industry is that, there is a lot of medical practitioners who have no formal qualification for it.

Govt initiatives to promote medical industry: In the recent, time for the growth of health care industry, the Govt has introduce number of policies and schemes.

1 E- medical Visa: The Nation has now introduced a simplified e-medical visa facility which allows 3visits to the country.

2 Award of best medical tourism: Govt. of Assam has take initiative to give Best Medical Award for development of medical industry in the state. In 2020, Pratiksha Hospital received health care excellence award 2020. Pratiksha hospital begged two awards namely Best Women and Child Care hospital and best IVF treatment facility Hospital.

3 Govt. Policy: The state Govt. introduced some policy for promoting health care industry with their respective tourism policy. Accordingly, Govt of Assam, 2017mention that the city Guwahati has started attracting health tourist from its neighbouring countries such as Bhutan, Nepal, Bangladesh and African countries.

Recommendation: Even though there is a steady growth of healthcare industry in the state, there are some gaps in the health care industry which can be closed. Here some recommendation for better health care which will ensure the growth of this industry.

1 Faster implementation of the National Digital Health Mission which would prove to the better infrastructure in health sector.

2 Make the state for high end product like MRI, CT scanner, Ultrasound machines at reasonable price.

3 Tele-radiology, AI based software for reporting which would help bridge the Doctor to Patient Ratio.

4 By providing easier loan and bringing down the cost of medical education, which can provide students to take up the medical education.

5 Govt. should make investment to increase the number of specialist for the development of health care industry.

6 To develop this industry govt. should take initiative to improve the connectivity of the state with other parts of the country and its neighbouring countries.

With many factors working in its favour, the state has the potential to become a healthcare giant.

Conclusions

Health is the wealth. A countries economic development basically depends on the development of health care facility. It is one of the most important components of human development index. Better health care services increased access to health services, improve quality of care, and focus on prevention, early management of health condition. The health care facilities are very poor in the state compared to the other part of the country. But after the introduction of NRHM in 2005, there is a revolutionary change in the health sector of the state. There is an important development in this sector and govt took various initiatives to develop health tourism and health care industry to attract foreign patient which will help to increase our sate income. Hope that in near future govt will take many more initiative and will introduce various schemes to improve this industry which will generate more employment opportunities to our youth and will contribute to our income.

References

*Banik Gour Gopal and Thakur Krishna kamal,2018 " Study of the growth of Guwahati as an emerging hub of medical tourism"

*International Institute for Population Sciences (IIPS), (2016), National Family Health Survey (NFHS-4), India, 2015-16, Mumbai, India and ORC Macro, Maryland, USA.

*Maternal and Child Mortality and Total Fertility Rates (Sample Registration System SRS), Office of Register General, India 2011, 21(4): pp 374-382

*National Rural Health Mission. Meeting people's health need in rural areas, framework for implementation 2005-2012 New Delhi. Ministry of Health and Family Welfare, Govt. of India, 2005,http//www.mohfwnic.in/NRHM/Documents/NRHM Framework latest pdf cited on 28 August 2011.

*Nath Jonali, 2017 "Socio- Economic and Demographic factors affecting utilisation of maternal health care services (A study in some selected districts of Assam)- unpublished PHD Thesis.

*Population Research Centre Report, Gauhati University, 2016

*World Health Organisation: (WHO), 1978, Alma Ata Declaration, Geneva. World health organistion;1978http://www.who.int/publication/almaata_decleration-en.pdf

*World Health Organisation 2005, World Health Report. Make every mother and child count Geneva: WHO/UNICEF/UNFPA/WORLD BANK 2012, trend in maternal mortality 1990-2010. Estimates developed by WHO, UNICEF, UNFPA AND THE WORLD BANK. Geneva, World Health Organisation.

* https;/hfw.assam.gov.in

*www.indiantelevision.com

*http:/www.researcherworld.com/ijms/

*http:/www.physio-pedia.com

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CHAPTER 14

Development of Tourism Industry in Assam

A Study of Bell Metal Industry in Assam and Its Prospects for Promotion of Handicraft Based Cultural Heritage Tourism

Dr. Satyajit Das

Abstract

In recent times, the tourism industry has been given much emphasis by both central and state Government in India. But due to various causes and reasons, the tourism industry in our state, Assam is not yet so developed as in other states of India. Tourists both foreign and domestic have been visiting Assam for different areas of interest. Large amount of revenue is earned by the Government of Assam through various tourist spots and sites of the state. But due to infrastructural underdevelopment as well as less publicity of the sites and spots, it has not been possible to develop the tourism industry. In post liberalization period also like other industries, tourism industry of Assam has not so developed because of infrastructural bottlenecks and lack of adequate fund provided for tourism development. As for example bell metal crafts of Sarthebari is well known folk handicrafts of Assam. The bell-metal craft

have tremendous potentialities as a rural tourism industry as well as growing prospects for promotion of handicraft based cultural heritage tourism but because of financial weakness of the craftsmen, infrastructural underdevelopment, problems of marketing and lack of competitive market, lack of publicity are the main constrains against a proper development and establish of tourism industry. This traditionally most precious and rare rural industry will not survive in future in the face of the challenge of globalization and liberalization if necessary steps are not taken.

Keywords: Tourism, Infrastructure, Folk-handicraft, Cultural Heritage, Industry,

Introduction

Amongst the heavy and small-scale medium industries as well as all the other industries in India, the tourism industry has been given much emphasis by both central and state Government of India. But due to various causes and reasons, the tourism industry in Assam is not yet so developed as in other states of India. But there are many potentialities and prospects for tourism development in Assam. Tourism resources like nature or wildlife, religious institutions, cultural and folklore or ethnic heritage, archaeological and historical heritage are abundantly found in various parts of the state. Tourists both foreign and domestic have been visiting Assam for different areas of interest. Large amount of revenue is earned by the state Government from various tourist spots of Assam.

Like other industries, tourism industry of Assam has not so developed because of infrastructural bottlenecks and lack of fund provided adequate fund for tourism development. As for example, bell metal crafts of Sarthebari is well known folk handicraft of the state of Assam. This craft has tremendous potentialities as a rural tourism industry, but because of financial weakness of the craftsmen, infrastructural underdevelopment, problems of marketing and lack

of competitive market, lack of publicity are the main constraints against proper development and establish of tourism industry.

Objectives of the study

a) To study the general scenario of the development of tourism industry in Assam.

b) To study the problems of bell metal industry in Assam

c) To study and analyze the prospects of bell metal craft industry in promotion of handicraft based cultural heritage tourism in Assam.

Research Methodology

The study is based on both primary and secondary information and data. Primary data were collected from the field and secondary data from various books and magazines and also from internet or e-sources. Observation and Interview methods were applied for collection of relevant data and information and interpretation of the problem were made qualitatively for explanation as well as analysis.

Discussion

Development of Tourism Industry in Assam: A General Scenario:

Assam has tremendous strength of tourism attractions like scenic beauty, cultural variety, ethnic mixture and diverse flora and fauna. Such wealth of tourism resources endows Assam with comparative advantage over many other states. Yet for a variety of reasons this advantage has not brought for Assam the preeminent position that it deserves. It is therefore imperative to give a dynamic thrust to tourism promotion and to chart out bold new directions to tourism

growth. Tourism is a journey of imagination. Imagination nurtured with a vision can open up infinite possibilities for tourism in Assam. (Tourism policy in Assam, 2008).

According to the Tourism Policy of Assam, 2008, the main objectives of its have mainly focussed on a high priority in the economic development of the state, environmentally sustainable, socio-culturally enriching and economically beneficial to the people; effective participation of the people in promoting tourism; to improve the quality of the existing tourism products; to promote adequate and comprehensive development of infrastructure of international standards; to devise pragmatic and long term Human Resource Development programmes to create capacity for the local people to take advantage of the opportunities offered by the tourism development and encouragement to Public Private Partnership (PPP) for creating quality tourism infrastructure and ensuring better management of tourism projects.

According to the Tourism Policy of Assam, 2008, as mentioned in the objectives, it is very appreciating for further promotion and development of tourism industry in the state of Assam. But in post liberalization period also like other industries, tourism industry in Assam has not so developed because of infrastructural underdevelopment such as lack of good transportation and communication, accommodation, lack of maintenance and cleanliness, food and drinking water facilities, as well as less publicity of sites and spots.

The Tourism Policy of Assam, 2008, Government of Assam has given importance on the cultural heritage tourism. According to policy document, proper steps would be taken for promotion and development of cultural and folklore heritage tourism in Assam. As for example, bell metal crafts of Sarthebari Assam. These two crafts have tremendous potentialities to establish as a rural tourism industry as well as tourist craft village. These two traditionally most

precious and rare rural industries will not survive in future in the face of the challenge of globalization and liberalization if necessary steps are not taken.

Problems of Bell Metal Industry in Assam

The bell-metal craft of Sarthebari in Barpeta district in Assam is considered as a folk craft. Sarthebari is well known as the craft village where decorative and useful bell metal products have been traditionally made from generation to generation by the village artisans. The village is located about 95 kms away from Guwahati towards west. Bell metal is genuinely tourism potential craft because from historical period to the present age, this craft has been contributed tremendously to the economic development of the state.

The bell metal is a byproduct of two metals copper and tin. The combination of 78 percentage of copper and 22 percent of Tin makes the bell metal.

A field work was carried out in a field to study the problems and prospects of bell-metal craft for development of tourism at Sarthebari of Barpeta district. Sarthebari may be called a traditional folk village for the practice of the manufacture of bell metal's decorative items and household utensils from generation to generation traditionally.

According to the respondent, Mr. Pankaj Deka, belonging to Sarthebari, the village has been divided into some *Chupa*. He said that the bell metal craft is a traditional business for the villagers. Majority of males are involved and associated with this craft. There are no other occupations for those who are engaged in this craft. According to him, the new-generation of course is engaged in other occupations. But a few of them have been trying to practice with a view to sustain the age-old tradition.

The raw materials of this craft are broken metal of bell metals which are supplied by the '*Kahar Sangha'* (The Assam Co-Operative Bell –Metal Utensils Manufacturing Society Ltd.)

In the contemporary time, the Vaishnavite satra, culture had largely contributed towards the expansion of the bell-metal craft as the Satras have used various items of bell metal like *Bhogjhora, Dugdogi, Pikdani, bankanhi, banbati, Chariya and Jari-Lota* etc. (Tamuli, 2010). Besides India, this bell metal craft is also exported to Nepal, Bhutan, Myanmar, Germany, Italy and Japan from Sarthebari. So, it is proved that this folk craft is internationally famed and popular.

There are so many problems regarding bell-metal crafts of Sarthebari, Assam. According to the registration under, Industry Department in 2005, the data had showed that there are 282 "Garhsals" (the place where the bell metal crafts are manufactured) and about 1200 craftsmen or artisans engaged in this craft. But the economic or financial condition of each artisan is very poor. They are mostly illiterate and health condition of them is pitiable. The state government has not provided facilities like health and education to the artisans who are not aware of the development in contemporary world. Illiteracy is one of the main obstacles for deterioration of this craft.

The bell metal craft of Sarthebari has faced two types of problems-internal and external (Tamuli, 2009). The organizational weakness and non-leadership are the main internal problem. Due to organizational weakness, there is no proper welfare policy for the bell-metal artisans. Due to organizational weakness, decision of the price of coal charcoal and its quantity are also affected.

The prime problem regarding bell-metal is the shortage of raw materials. There is no sufficient raw material for making bell-metal items. The important raw materials for bell-metal are of two types-the broken bell metal and coal-charcoal. But in present times, the shortage of the broken bell-metal and coal charcoal, the bell metal craft becomes problem oriented. Due to the shortage of raw materials, the *Garhsals"* have to close for a long time in a year. The rising higher price is also a big constraint for making bell-

metal utensils and other items. The market of broken bell-metal is completely controlled by the capitalist businessmen. There is no control over price rate of broken bell metal by the Government. Similarly, due to Government law, the coal-charcoal is also unavailable. So the middle brokers have taken the opportunity to increase the price of coal-charcoal as well as to decrease the amount of it in bags. (Talukdar, 2009).

Machinery materials are another significant problem regarding bell-metal craft of Sarthebari. In present times, lower priced machinery made bell metal products of Muradabad have attracted the customers towards it. It has adversely affected the bell-metal craft of Sarthebari. In spite of having better quality traditionally handmade bell metal items of Sarthebari, it becomes difficult to face the challenge of machine made items from outside in a competitive market. So, bell metal craft has faced another problem.

Another problem regarding bell-metal craft is the lack of suitable market. The poor rural artisans have faced the problem of selling their products at reasonable prices. So they have to depend always on either the co-operative societies or the middlemen to sell their products at very low prices.

Duplicate materials are also a major problem for this craft. In the market of the present times, the availability of the duplicate items which are of similar types as those produced at Sarthebari. These items are not actually a bell metal. Here, the main problem is that middlemen or brokers prefer to sell this for their business profit and non-identification of actual bell-metal items over duplicate one. The bell metal craftsmen and artisans do not get any financial assistance from the respective departments of the Government.

Besides these, there are lots of problems faced by the bell metal craft and industry in the recent times. One of the major problem is that its marketing and competition with same product manufactured by other states or industry.

Prospects of Bell Metal Craft Industry in promotion of Handicraft Based Cultural Heritage Tourism in Assam

In spite of so many problems, there is a tremendous prospect for the development of folklore heritage and rural tourism based on the bell-metal craft of Sarthebari as many tourists are interested in observing how such unique handicraft has been practised by the rural folk generation after generation. So for the development of this craft village, the Government through its concerned departments must chalk out plans and programmes for promotion and development handicraft based cultural heritage tourism in Assam. Bell metal craft and its manufactured traditional various items and utensils are recognized as traditional folk handicrafts as well as cultural heritage in Assam. The entire village of Sarthebari should be transformed into traditional handicraft village in order to make it as a cultural heritage tourism destination in Assam and as such both foreign and domestic tourists may visit this destination and see the *Garhsals*-the traditional bell metal crafts manufacturing houses and have a firsthand experience regarding manufacturing process and practices of it by the rural craftsmen or artisans. But all the initiatives and necessary arrangements must be executed by the concerned Tourism Department under the State Government of Assam in collaboration with some local organization including 'Kahar Sangha' of Sarthebari and private-Government agencies or local based NGOs. Further, marketing and displaying the bell metal artifacts, the outlets are to be promoted as well as a special rural museum may be established where all the productions of bell metal artifacts have displayed and preserved at Sarthebari.

Conclusion

The paper is concluded with the following observations and suggestions:

i) Publicity and advertisements are the most important tools

for large scale marketing of bell metal for the folklore as well as cultural heritage tourist attraction.

ii) Publicity of the bell metal crafts through different forms of mass media is of utmost necessity for marketing and capturing the competitive market.

iii) For, expanding the business environment of bell metal crafts, the 'Kahar Sangha' and other respective organizations and departments of the Government like Tourism and Industry should use big hoardings at various tourist sites and spots for attraction of tourists and easy accessibility of bell -metal products.

iv) Basic amenities and facilities of artisans, food and drinking water facilities, available power and electricity supply, water supply, entertainment hall, market areas, medical facilities, rural craftsmuseum, schools and exhibition halls, the practicing hall should be provided and some sort of services must be modernized. The basic infrastructure like transportation and communication, accommodation should be made available for them.

v) The store house of raw materials and craft manufacturing equipments and establishment of a bell metal crafts research institute are most essential steps.

vi) Lastly, for making bell crafts village as a tourism spot and a rural tourism industry as well as promotion of handicraft based cultural heritage tourism in the whole village of Sarthebari should be provided the Geographical Indication Mark (GIM) and Trade mark and getting international recommendation through it.

Therefore, it is seen that the tourism industry in Assam has not been developed at par as it would be at present times. For holistic development of the tourism industry in the state of Assam, it needs

some specific strategies and action plans as well as its implementation with proper utilizations of all the traditional, cultural, folklore and ethnic heritage and historical resources in a systematic and significant way and lastly the awareness of tourism among the masses and implementing and administrative or management authority of Tourism of the State or Central Government must be enhanced that leads to the socio-economic and socio-cultural prosperity and development of the local areas, regions and the state as well as national and international arenas.

References

Tamuli,T (2009), *Sarthebarir Kanh Silpa,* Barkanh, an Annual Magazine of ;Kahar- Sangha" Sarthebari, Barpeta District, Assam; pp 1-4.

Talukdar,N (2009), *Axom gaurav Sarthebarir Kanh Silpar Samachya aruSamadhan; Ek Parjyaluchana*Barkanh, an Annual Magazine of Kahar Sangha, Sarthebari, Barpeta District , Assam; pp- 61.

Tourism Policy of Assam, (2008), Department of Tourism, Government of Assam

Wikipedia, (n.d.), url: http//en,m.wikipedia.org,wiki/Bell-Metal,

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CHAPTER 15

Jagiroad and Cachar Paper Mills of Assam: The Story Behind Their Closure

Dr Monalisa Choudhury

Abstract

Many industries at different times could not survive due to many different reasons. There are examples of closure of giant industries world across. Such a instance is the story of the two paper mills of Assam. The study is to explore the causes of the closure of the two Paper mills of Assam, their glorious past and the effort by the government for the revival.

Introduction

There are many examples in the world of successful business or successful organisations leading to downfall and closure. Such examples can be also seen in Assam when we talk about the Jagiroad Paper mill and the Cachar paper mill of the state which though once were a successful business units giving a huge amount of revenue to the state along with quality product and employment to many unemployed people of the region is now inside the coffin of bankruptcy and closure. This paper is an effort to find out the reasons for the downfall of such glorious institution of the past.

Objectives of the study

The objectives of the study are as follows:

1. To study the history of the two mills and its colourful glorified days of working.
2. To study the reasons which lead to the closure of the paper mill.
3. To study the availability of the raw materials to the mill
4. To study the steps taken by the state and central government for taking out the mill from its bankruptcy and its reopening.

Methodology

The paper is based both on primary and secondary data. Primary data has been collected from field visits and the secondary data are collected from books, journals etc.

History of The Mills

Jagiroad Paper Mill

The Jagiroad paper mill of Assam a unit of Hindustan paper corporation limited was established in the year 1970. is situated on the National Highway 37 at Kagajnagar in Jagiroad which is in the Morigaon district of Assam. The mill is only 4 km from Jagiroad railway station and 60 km from Guwahati unit. It was the first paper mill in the world to produce kraft pulp in kamry continuous Digester with 100 percent bamboo as raw material. The paper mill had the capacity of producing 300 metric tonnes of paper per day. The manpower of the mill was 1301 in the year 2009.The mill was shut down in March,2017 and interestingly till the end of production the mill was earning profit. On the last day of closing the mill there was a production of 269 metric tonnes of paper.

Cachar Paper Mill

The Cachar paper mill of Assam a unit of Hindustan paper corporation limited was established in the year 1988. Panchgram was the glorious township of the Hindustan paper corporation (Cachar paper mill) under Hailakandi district of the state of Assam. It was such a fine township that it was called the Shillong of Barak Valley Area. During the year 2006-07 the mill recorded the highest annual production of 1,03,155 MT registering over 103% capacity utilization, which was 100% during the previous year. (Source www.hindpaper.in)

Raw Materials of The Mills

The main raw materials of the mill was Bamboo which was supplied from the neighbouring hill districts of Karbi Anglong and Dima Hasao. The unused bamboo of the two hilly districts were fully utilized and the green area were taken in leased by the management of the paper mills and huge raw materials that is the bamboos were lifted by the local contractors. Moreover, also the neighbouring states like Nagaland, Mizoram, Meghalaya use to supply bamboo, coal and lime but with the closure of the paper mill the supply of the main raw materials along with the coal, lime and other materials have stopped leading to the closure of the supply of the ancillary items required with the main raw materials.

Reasons for Closure of The Mills

The management of the Hindustan paper corporation limited suspended the production of Nagaon paper mill on March 13,2017. The mill was declared as insolvent on June 30,2018 by National Company Law Tribunal (NCLT) after Hindustan paper corporation limited (HPCL) declared its inability to pay the dues of one of its creditors M/S Alloys and Metals. The mill was closed due to the shortage of working capital while the Cachar paper mill was shut

down in 2015 due to a default on financial and operational payments on the orders of National Company Law Tribunal. The reasons behind the closure of the two mills were as follows:

1. The shortage of raw material ie Bamboo due to the occurrence of bamboo flowering phenomenon in the region which made bamboo unsuitable for industrial use. Moreover, the ban by the Mizoram government on the extraction of bamboo added a impetus to it.
2. The crisis of Raw material affected the machineries, the product cost and quality. The scarcity led to the increase in price of the same which again led to the increase in the fixed and variable cost of the finished products.
3. The mills had to go through the financial crisis due to the non-availability of coal due to the blanket ban imposed by National Green Tribunal on mining and transportation of coal in Meghalaya.
4. Illegal tax collection by the police and unwarranted disturbance by some forest department officials created obstacles in the free movement of bamboo laden trucks which led to the shortage of bamboo.

Revival Efforts Taken by The Government

The Government took many measures to revive the mills. Several meetings were held with the workers of the mills and a revival plan was also submitted to the National Company Law Tribunal NCLT for its approval. This required a huge sum on the part of government to liquidate the firm which is only possible if the assets value is less than the liabilities but the market value of the firm was 10000 crore and the liabilities coming around 2100 crores. So, government went for the auction of the mills but there were no significant takers and the existing employee were also not happy with it. A

corporate Insolvency Resolution process was initiated as per the directions of the National Company law tribunal. The Hindustan Paper Corporation submitted a 1,995-crore revival proposal to the government but the tribunal orderd for the liquidation of the mills on May 3,2019. There was no progress on it from then but after the Present government Came to power several meetings was held to lend into an amicable solution for the economic growth of the state. A relief package of 520 crores will be given within two months of approval of NCLT to the mill workers. The assets of the Hindustan Paper Corporation will remain with the Assam Government. 100 mill workers will get Government jobs and pending legal cases and claims will continue.

Conclusion

The Two mills of Assam if goes for liquidation will have a greater impact on the economy of the state. Hundreds of families directly and indirectly were dependent on the mills. The best part is the Bamboo flowering occurs once in 50 years so the worst is over now at least to 45 years. Therefore, if the mills come in operation thousands of families will survive who are directly and indirectly related to the functioning of the mills. The workers of the mills are looking forward to the New Chief Minister to pave the ways of revival of the mills and also strengthen the economy of the state.

References

1. Killing the Nagaon and Cachar Paper mills published on 17/09/2018 by Sentinel digital desk;
2. Dey Supratim, 'Assam paper mills rue loss of productivity Published in Business Standard on January 30,2013
3. www,google .co.in

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CHAPTER 16

Trade and Industry in Assam under the Ahoms

Karabi Das

Abstract

The objective of the above-mentioned topic was to know specially about the economic condition of Assam under the Ahom. Though Assam was an agricultural country -its economy was not only depend on agriculture, but also on trade and industry. There were so many industries as well as there prevailed internal, frontier and foreign trade also. The existence of a strong and well organised central authority contributed a lot in making the country rich and self-sufficient mainly trade was done to meet the daily requirement of the people and dispose the surplus product. During Ahom rule Assam became prosperous in trade and industry along with agriculture.

Introduction

The great Ahom dynasty in Assam was founded by Chaolung Sukapha in 1253 who came from Mungrimungram in Yunan province of China. Their first capital das at Charaidio in Sibsagar. The Ahom rule lasted long for 600 years which is very rare in the history of the world.

Our topic is trade and industry under the Ahoms.

The economy of medieval Assam i.e. during the Ahom rule was mainly agricultural as it is today and villages were largely self-sufficient. In course of time, however there grew a class of wealthy people who carried on considerable amount of trade. both internal and external, yet there never developed an urban economy brisk with industrial and commercial pursuits at the popular level. In this period those who were engaged in other industries and crafts also agriculturist.

The existence of a strong and well organised central authority contributed a lot in making the country rich and self-sufficient. That there was great economic progress had been attested to buy the Muhammadam and British writers.

Trade in Ahom period

The Ahoms aimed at promoting trade and commerce with there neighbouring tribes and territories. The followed a two-fold policy of self-sufficiency production and a rigid control over foreign and frontier trade. On the other-hand every endeavour was made to meet the requirements of the state as well as of the people locally without having to depend much on the neighbouring countries. As a result of this policy production of almost all the things within the Ahom kingdom are available.

But the Ahoms made the clear distinction between trade and politics, and consider politics to be more important than trade. Trade was not considered as a subject of much importance to be dealt directly with the government. Trade was not a fix subject to be taken up in the court. The traders were often considered with black bees. Like bees (who settle on a number of flowers for sucking honeys) the traders also go from place to place for earning profit. But they didn't enjoy a respectable place under the Ahom government.

As profit being the sole motive of the traders, no reliance was placed on these promises on information supplied by them rather then they were suspected as spy of the enemy under the cover of the trade. The trade, during the Ahom period, was divided into three heads- Internal, External and Foreign trade.

Internal trade

The Ahom rulers encouraged internal trade and set up hats and marts at various places of the state like Dihing, Bakata, Kacharihat, Barhat, Namchang, Abhaypur, Narayanpur etc. Here different kind of commodities including birds and animals and even slaves were brought and sold. Such markets were attended once in a week or forth-night by the people surrounding villages who brought their local products for sale or exchange. Earthen pot vessels, lime, betel-nut, black pepper, mustard seed, ginger, knife, das, sickle, ploughshare were the most common articles of these markets. In this market mainly barter system was the chief mode of transaction couriers were also used. Primarily the people attending the village market was to dispose their surplus product. Village markets (hats) served the people of the village to attain their self-sufficiency rather earning profit. So, the ruler of that period took keen interest in the establishment and management of such market. Besides village market, daily markets were also held in some towns where were comparatively small in size and sold articles of daily needs, Garhgaon was such market. The Assamese people didn't have the practice of buying and selling the food articles in the market place. The In-charge of this hut was known as Hatkhowa Barua. Duties were also imposed on goods carrying from one region to another within the kingdom. For collecting duties (custom houses were established at various points) particularly on the rivers where there were the main routes of transport. Some Ahom officials also set up markets like- market of Raha by Kritichandra Barbarua, others like Nunihat, Barhat, Jorhat, Titabarhat and so many.

Frontier trade

The Ahom kings had been maintaining a sound trade policy with the different frontier hill tribes like- Bhutias, Dafalas, Nagas, Khasis, Garos, Miris, Mishimis etc. Although trade with Bhutias, Garos and khasis were much important. The Ahom rulers gave much importance to frontier trade and adopted careful measures to protect the frontier mart so that the hilly people could come down in regular intervals in order to obtain their measures for livelihood. The policy behind this- was to keep them economically dependent on the plain. Beside the existing markets or fair new marts at convenient spots at or near the frontiers were opened under the charge of Dutiyalia Visaya or Duaria Barua. The traders of the plains with their merchandise and the tribesman with their products met at this trading centres and exchanged their goods. These markets were held periodically in a certain period of the year particularly in winter. Since large scale production was not known to the hill tribes, the volume of trade with them was always limited (small). The most important mart was at Sadiya (central market for all the hill tribes of north-east). To this mart- the Khamtis and Singphos brought their swords, spheres, medicinal plants, ivory, silver, copper which they also procure from China. The Adis and hilly tribes brought spicy vegetables, Manjit was, cotton blanket. The Nagas and the Garos carried salt and cotton. Khasis and Jayantias- Mainly iron implements and honey.

External trade

Assam had a flourishing trade under Ahoms- both external and internal. There was good commercial as well as cultural relation with the neighbouring countries like China, Burura, Tibet, Bhutan, Bengal and also the rest of mainly Mughal India existed from remote past. Especially external trades were carried on with Mughal India through Bengal.

Trade routes

Maintaining an exclusive trade, both external and internal trade in medieval Assam, the Ahoms conducted their trade with the neighbouring countries like Bhutan, China Tibet etc. Trade with Bhutan and Tibet was more profitable. There were five main routes leading from Sadiya to Tibet or China proper. They were:

1. The pass of Dibong
2. The Mishimi route
3. The Phungan pass
4. The route by Manipur to Irrawaddy
5. And the Patkai pass to Bhamo on the Irrawaddy.

Another additional route to Tibet runs across the Himalayan mountains parallel with the course of the Brahmaputra. There was also a trade route to Kabal through Bhutan along the mountains. There was possibly some commercial transaction between Assam and kabul through this route. Specially trade with Bhutan and Tibet was carried out through numerous passes and ways, known as Duars (pass). Eleven existed on the northern frontier of Bengal and Koch-Bihar and seven on northern frontier of Kamrup. Through Kariapur Duar, large trade transaction between hills and plains used to be operated annually.

The commercial transaction between the two countries were carried on in the following names- at a place called Chouna, on the confines of two countries- two months' journey from Lassa there was a mart established, and there was also a similar mart at Geegunshu. Like that the Ahom carried on their trade with Mughal India through Bengal. There were four routes from Bengal to Assam. One by water and other three by land. The first over land route laid through Mureshidabad, Maldah, Dingipur, Rangpur and Goalpara. The second route was via Dacca, Dumari, Pucudoe, Jamalpur, Singimari

and Goalpara. The third route was through sylhet Cherra, Moplumg, Hungklao, Ranigaon, Khanamukh and Guwahati. The last two land route were almost impossible during rain. The river route was from Goalpara down to Brahmaputra. This river route and the first overland route were most popular. Mainly for conducting trade with Bengal – Chaukis or outposts were established as important centres and place under the control of an officer call Duaria Barua or Chakia Barua. The most important Chauki was Hadira or Kandahar usually called Assam Chauki.

Item of trade/items of export and import

During the reign of Rudrasingha- the greatest Ahom ruler- considerable quantities of vessels made of bell-metal and brass were exported to Tibet and China. The trade with Tibet amounted 2,00,000 rupees a year. The export from assam mainly consisted of lac, Manjit, agar, various silk threads-muga, endi, pat, eri, cotton, elephant, tusk, ivory etc were profitable items of great demand. Some other minor articles exported from Assam were rice, paddy, wax, black-pepper, betel-nuts, ou-tenga, thaikal fruit, jackfruit etc.

Import items consisted mainly of salt which covered nearly 80% of the total value of imported goods. Fine muslim cloth was the next item in demand.other item of imports were copper, English wool, ghee, pulses, sugar, slone leads, coral, jewels and pearls, European cuttery and glassware, spices, paints, red lead, Tefetas, benaras Khunkoles, satin cloths, gold, silver, shell etc. Imports from Bhutan mainly consisted of woolen cloths, gold-dust, rocksalt, cowtails, musk, Chinese salt etc.

Despite the difficulties of intercommunication- the mishimis on the north-east formed the intermediary of Assamese, Tibetan and Chinese trade. They brought down to the mart of Sadia- swords, spears, musk, gatheon(perfume), mishimitita- which they exchanged for glass-beads, cloths of various kinds, salt, cattle, etc.

Policy of Isolation

In the 17th century for sometime, the Ahom ruler seems to have adopted a policy of isolation and forbade people to enter and leave their territories mainly for trade purposes- on account of the British interference.

Industry and Crafts under the Ahom

Industry was highly developed in the Ahom period. There are reference to weavers, spinners, goldsmiths, potters, and the workers in ivory, bamboo, wood, hide, cane etc.

Textile Industry

Textile Industry reached a very high point of perfection under the Ahom Government. Assam enjoyed a high reputation for producing silk of fine texture. Assam silk was produce on trees and the stuffs made of them were very brilliant. They manufactured three principal varieties of silk called Pat, Muga, and Endi The first variety is the finest and the costliest quality. Muga is a shouter and mere durable fabric then pat but coarser and less glossy. Endi is the coersest quality and used generally by the poor. Assam silk specially Muga was very much in demand during the Ahom rule in Europe and category it formed this staple trade of the East India Company during 18th century and 19th century . It was an special article of trade in Bengal as well as in the Coromandal Coast and Malabar Coast. Muga silk was produced from a locally made thread called nura-kata suta.

Momai-Tamuli Bar Baruah – A minister of Swargedeo Pratap Singh made it compulsory that every adult, able female to spin a certain quantity of thread every evening and like male to make a bamboo basket every evening silk in the art of spinning and weaving had always been held to be one of the highest attainments of the Assam Womens. Thus a good amount of cotton was even produced in

Assam and the art of making cotton clothes had reached at high.

All classes of people irrespective of caste and creed of Assam practised spinning yarn and weaving clothes. Infact , every Assamese family was a weaver (tanti). In kamrup there were some villages inhabited only by professional weavers. These specialized classes were settled at certain localities such as- Tantikuchi, Hajo, Sualkuchi, which grew as silk manufacturing centers and Govt. did not interfere in it. There were professional weavers like Tantis, Katanis, Jolah etc. Dying and embroidery were also highly skilled jobs.

During the Ahom rule, elaborate arrangement were made for keeping in the royal stores sufficient quality of clothes of different varieties of presentation to foreign courts and dignatories.

Metal Casting

In metal casting Assam reached a high degree of proficiency under the Ahoms. Articles were made up of gold, silver, copper, bell-metal, iron by professional communities like Sonaris, Kanhars, Moriyas, Kamars,etc.

A) Gold smithy thrived chiefly under the royal patronage. The Ahom king imported goldsmiths from Koch-Bihar and later on from Benaras who introduced new designs and techniques. But this profession was confined to a limited number of people.

B) Articles made of copper such as pots, plates, spoons were mainly used for religious purposes. During the Ahom rule, most of the land grants was engraved on copper. This metal was brought from Bengal.

C) Use of Silver was restricted/limited.

D) Blacksmiths could also show their skill in their craft during this period. They were greatly encouraged by the royal

court. According to Maniram Dewan, one Bahikhowa Barphukan of Gauhati presented the biggest cannon to Rajeshwar Singha.

E) Inscriptions also proved existence of bell-metal coorks. The workers were known as Kahars. Two main centres of bell-metal were Sarthebari and Hajo. The utensils of bell-metal were dishes, plates, bowls and articles of common used. The Ahom kings assigned bell -metal workers (kahar) to for the supply of articles.

F) Assam made great progress during Ahom period in the extraction of iron from ores. Even today smelting of iron is carried on in many places in the Khasi and the Naga hills. Iron is mainly used for boat building for clamps. The quality of this Khasi iron is excellent for all purposes. Iron smelting was done extensively from Tipan rocks. Maniram Dewan states that large quantity of iron deposits were found at Bacha and Dayang and each paik of the Losaliya khil (guild of iron-smelting) had to supply 20 tons of iron to the state as per annum.

Bricks Making Industry

It was an ancient industry but this industry received great attention and importance during 18th century when bricks were largely used in the construction of innumerable temples, palaces, tombs, tanks, gates etc. The brick industry was kept under state control and there is not any evidence of brick structure owned by other persons during Ahom period.

Wooden Works

Wooden articles used by the people in general were simple both in type and design, which did not require specialized training of tools and technology. The woodworkers were called Badai(carpenters) or Sutar mostly working in functional guild- produced fine and

artistic articles either for religious purposes or for the state. Under royal patronage- the wood workers attained considerable skill and excellence and produced varieties of articles for the use of nobility, the court and the members of the royal family and also the articles of presents to foreign courts and ambassadors. The Satra institutions were the main centre of wood craft. The palace of Garhagaon ws a fine example of this work.

An abundant supply of timber made it possible for the people to build numerous boats, both in the ancient as well as medical time, Boats were mainly used for transport and communication and also for business purpose. The naosaliya khel was engaged in building of boats of different shapes and sizes.

The Assamese people made very nice and neat trays, chests, throne, chair all carved out of one piece of wood. An officer called Kath-Barua was incharge of the Ahom royal carpentry.

Pottery Making

It was an ancient art. This was carried out by the Kumars and the Hiras the former used the wheels and the later made the pot by hand. Inscriptions refer to the grant of potters. These two professional classes were engaged in the industry and also in the religious institutions. The articles of common use made by potters were- charu, mola, tekeli, kalah, chaki, pipes, drums, etc.

Gold Washing

One of the most important industry of the Ahom period was goldwashing and manufacture of jewellary. Gold was washed mainly from the sand of river Brahmaputra.

Many people were engaged in it. They had to pay to the royal exchanguer – one tola of Gold per head per year. Gold could be produced from most of the river of Assam.

Gold washing was done by a guild known as Sonow Khel (Sonowal),

who paid the government a tax at four anas weight or five rupees i.e. worth of gold per annum. The state derived considerable income from the yearly tax put on gold washing. Maniram Dewan (through his writing) supplies us description of different processes of gold washing.

Ivory Crafting

One of the important craft and industry in the days of the Ahom rajas was ivory carving. In those past times the industry throve, the workers, patronized by the rajas and leading men of the court, received as a return of their work, free grant of land and labour. In consideration for these privileges, a special class of workers formed known as Khanikar. This work was of much valuable. Main important centre of this work was Barpeta specially and it was an important trade item during the Ahom.

From the above discussion we come to know that from the very early times, Assam was famous for her textile and various forest and mineral products. Many of these articles produced were not only exported to neighbouring provinces but to foreign countries also.

The literary works, particularly buranjis, chronicles, vamsavalis, biographies of religious preachers, supply references to prevalence of media of exchange including barter and coinage. Marketing was carried on usually through barter and circulation of money was limited. According to some historians currency in the Ahom kingdom consisted cauries, rupees, gold-coins. Buranjis make references to mohar, taka, sicca, rup, adhali, siki, ad-maha, charatiya or kari (cawrie).

Koeh coins narayani also were accepted in Assam. Both silver and gold conis were in use. But coins did not play a pivotal role in ordinary day to day transactions rather couries and barter system. Only in cases of bigger commercial and diplomatic transactions

and in gifts on ceremonial occasions coins were mostly used in the Ahom kingdom. The standard Ahom coins carried weight a tola or 96 ratis, smaller coins weighting 48/24/12 ratis. The Ahom coins were octagonal in shape.

With the increase of external trade since the reign of Rudra Singha, there was a corresponding in the circulation of money. Certain inscriptions dating from the reign of Siva Singha give us the price of a number of commodities. This leads us to conclude that the barter economy was in the process of being replaced by the money economy- which was the outcome of Assam's developing economy lies both with the feudal India and the neighbouring countries of the north east.

From the above note we can conclude that the economic condition of Assam during the time of the Ahom reign was very stable and trade and industry runs smoothly under the Ahom ruler. Thus under the Ahom rulers- the country was on the whole prosperous which had developed a good system of agriculture, industry and trade.

Reference

1) A History book of Assam- E.A. Gait
2) Indigenous Industries of Assam: Retrospect and prospect – Dr Priyam Goswami
3) A Comprehensive History of Assam- S.L. Baruah
4) The Comprehensive History of Assam- H.K. Barpujari
5) Social and Economic History of Assam- Sanjay Sen
6) Social and Economic History of Assam- Dr. Deben Ch.Kalita and Dr. Assaduz Zaman
7) Internet sources

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