

Challenges and Opportunities of Agri-Marketing and Agri-Business towards an Inclusive Sustainable Development Strategy: Scope from the North Eastern Region (NER) of India

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Abstract: Strategic transformation, from agricultural production to agribusiness, from supply push to demand pull, is the need of the day for India and specifically for the north-eastern region of India. The next level of growth trajectory in the agricultural sector needs to be supported by secondary agriculture through value addition and product diversification. At the all-India level, the average size of land holdings is barely 1.08 ha, which in Bihar is a paltry 0.39 ha; in W.B., it is 0.49 ha; and in the north-eastern hilly region, it is around 0.52 ha. The small and marginal land holdings that are operating less than a hectare (0.77 ha) are unable to produce any substantial surplus from agriculture for reinvestment. The facts show that small and marginal farmers are producing agricultural crops with reasonable production efficiency but are severely constrained by poor marketing efficiency, which is the major impediment to increasing the farmers' income. Moreover, in the present situation, it is further aggravated due to weather, pandemics, war, and export controls. Business as usual is no longer an option as there are major supply-side shock drivers towards global food inflation from around October 2020. No one knows with precision how to set and guarantee universal access to safe, sufficient, and nutritious food over time. Mere pushing up of the agricultural sector may not suffice to achieve the targeted income enhancement from agriculture. A complementary relationship between agriculture and agrobusiness is well known; therefore, to increase income, it needs support from other sectors, such as industry and services. Our paper from the northeastern states may be the guiding force or example to explore the possible avenues towards accelerating the income of farmers and helping to achieve the SDGs in various sectors, including agriculture. Our findings try to provide pathways to enhance household levels of income, employment, and welfare of the local people through certain policy measures, such as developing value chains, agricultural diversifications, developing agrobusinesses and tourism, introducing community-based management, etc. The measure could lead the north-eastern economy towards a sustainable, inclusive development goal, as proposed in the Sustainable Development Goals (SDGs) of the United Nations.

Keywords: *agriculture, agrobusiness, COVID-19, food policy, North East Region (NER), Sustainable Development Goals (SDGs).*

JEL classification codes: J230, Q180, Q560, R110, R580,

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1 INTRODUCTION

The Global Food Policy Reports 2021 and 2022 have presented multiple impacts of the pandemic and

climate change on the food security system and the consequent government policy responses. Food security needs an urgent focus on adaptation, innovation, and transformation in the food production system. The

Sustainable Development Goals (SDGs) 2030, which were preceded by the Millennium Development Goals (MDGs), provide a very valuable benchmark to address issues like hunger, poverty, nutrition, sustainability, climate change, and inclusive development. Most of these goals are directly or indirectly related to agriculture. If food and agricultural systems remain on their current paths, then uncertainties revolve around different factors, including population growth, dietary and technological choices, income distribution, climate change, and the state of natural resources, which will definitely push towards persistent food insecurity and unsustainable economic growth.

The North East Region (NER) of India is primarily based on agriculture and agricultural activities. The NER comprises seven (including Sikkim, which is eight) states, viz., Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. Now Sikkim should also be included in the NER. This is also the home of many types of tribal people. The tribal stretch extends through Assam, Manipur, Nagaland, and Tripura. The *Bodos*, the *Miris*, *Mikris*, *Meities*, *Kukis*, *Kukis* etc., are forming a large section of the tribal population of the hilly regions (Lahiri, 2022).

In the North East Region (NER) of India, traditional agricultural approaches often appear insufficient for mass food production, even though the existing practices cover a substantial amount of the needs of the local people for food, fruits, and vegetables. The agriculture production system needs to be supported by appropriate allied agricultural strategies through value addition and product diversification by growing more oilseeds, pulses, fruits, vegetables, and other high-value crops.

The region is predominantly based on agriculture and is characterised by a high incidence of poverty and social and economic inequities. The enormous potentialities of the region in the agricultural and allied sectors (including horticulture, animal husbandry, and fisheries) are eclipsed by a low level of productivity. Ironically, the region enjoys ample resource potential with unexplored opportunities. The region could become not only a self-reliant region but also a surplus region if we explore appropriate strategies towards optimum utilisation of local resources in the region. In the region, the agricultural sector is growing at around 4%, with growth in GDP at around 7% per annum; the NER's share of agriculture in the GDP was 23.6%. (*Economic Survey, 2021-22*).

The overall food production in this region has outpaced population growth, and the average food consumption has been increasing on one side; on the other hand, the production growth has been decelerating and stagnating, which has adverse impacts on food and nutritional security (*Economic Survey, 2021-22*). Technological breakthroughs like the Gene Campaign have successfully demonstrated the longevity and sustainability of indigenous varieties of paddy and other

food through grain varieties in Manipur and parts of north-eastern states. This has not only shown higher community acceptability but has also proved to be a viable source of local food security grain banks.

But agriculture has remained a mere subsistence activity, and the scope for further employment opportunities appears very low throughout the region, even though the region enjoys a high literacy level. More than 80% of the population depends on agricultural work. Keeping in view of the complex situation, our objectives for the present study are to explore avenues for further inclusive and sustainable growth and food systems in the NER, where agriculture and allied sectors play a significant role. We also need to analyse the roles of the north-eastern hilly region in the macroeconomic scenario, particularly in the context of its contributions to the GDP, influencing inflation, and determining the level of rural demand in the COVID-19 situation during 2020–22. We have tried to explore some strategies to convert the agricultural sector of the region into an enterprise by transforming agribusiness to agrobusiness in the form of monetization of farmers' produce and to extend demand-led sustainable economic growth.

We have divided our study into several sections. First, we have presented an overall economic scenario for the NER in terms of agriculture and allied activities. We have analysed the existing problems and challenges of the region in the context of agricultural productivity, industry, employment, and sustainable development goals. We have identified certain measures that could be adopted to make the NER economy sustainable and shining.

2. The Agro-Scenario in the North-Eastern Region: The Ways and Means

The nature of agricultural practice and the livelihood process in the region are based upon their topography and agro-ecology, where land belongs to the 'people'. In the north-eastern hilly region, the land belongs to autonomous councils, which protect the interests of the tribal people and act as impediments to the alteration of land ownership. The Socio-Economic Caste Census (SECC), 2011, shows that 24% of households in Meghalaya and 60% of households in Sikkim possess land, whereas the rest of the households are landless. Our understanding of their importance could help us formulate strategies to meet the new challenges after protecting tribal life and culture and, at the same time, introduce modern science and technology for the benefit of the peoples of the regions.

Another feature of the region is that it is mainly dominated by the small and marginal farmers' category. For example, over 80 percent of the farm family owns less than 50 percent of the total cultivated area (see Table 1) in the north-eastern hilly region. The land holdings are still fragmented over the years. During 2019 the average land holding in the NER was around 0.52 ha (*Economic Survey 2021-22*).

Table1. Average farm size and land holdings of the North East States of India, 2015.

State	Marginal	Small	Medium	Large	All Holding
Arunachal Pradesh	0.55(2.77)	1.34(7.73)	17.56(20.2)	14.9(19.58)	3.51(8.00)
Manipur	0.52(9.89)	1.28(19.53)	2.74(8.14)	11(0.12)	1.14(11.02)
Meghalaya	0.56(14.1)	1.58(24.4)	3.22(12.65)	17.24(0.77)	1.37(15.34)
Mizoram	0.61(6.47)	1.27(11.89)	2.82(3.79)	15.09(0.79)	1.14(6.72)
Nagaland	0.51(0.98)	1.14(8.15)	4.79(40.66)	17.54(75.96)	5.99(13.04)
Sikkim	0.37(5.22)	1.2(6.80)	3.54(5.45)	15.77(2.35)	1.42(5.48)
Tripura	0.27(61.57)	1.39(21.5)	2.9(9.11)	14.29(0.25)	0.52(40.39)
NER Total	0.49(100)	1.37(100)	0.28(100)	14.9(100)	3.51(100)

Source: *Basic Statistics of North Eastern Region 2015, Gol, North Eastern Council Secretary, Shillong 793003.* In parenthesis, category wise percentage of households.

Marginal holdings of operational lands often become a constraint to the adoption of new technologies and mechanization. Very often, the technologies are not as divisible as the land fragments are. Under these circumstances, larger investments become uneconomic. Under the COVID-19 pandemic situation, it was difficult to think that the private players would come in and invest in agricultural activities, including processing, storage, and warehousing.

Due to the small scale of production in the region, the farmers usually produce crops with high to moderate production efficiency, but the farmers suffer from poor marketing efficiency due to the small quantity of marketable surplus. In reality, the relationship between farm size and farm income is not correlated, as it reflects a low correlation. The coefficient is estimated to be 0.19 (Datta 2017). We need a sustainable agri-business value chain where all actors in the chain are interdependent on each other for profit, loss, or satisfaction.

Again, agricultural price variability appears very high across time and region. Even though the NERs are champions in the production of many high-value crops (other than paddy), such as potatoes, fruits, vegetables, flowers, fish, etc., they are often unable to explore the advantages because of low levels of production at individual levels. Again, the income from agriculture in this region is one of the lowest in the country. We shouldn't solely blame agriculture for the low level of income. The marginal farmers are producing commodities, but their levels of earnings are very low, and most of the farmers are surviving by maintaining a low cost of living standard. Overall, consumers's income in all the north-eastern states needs to be enhanced significantly. A complementary relationship between agriculture and industry is well known; therefore, to increase the agricultural income of the states, it needs support from other sectors, including industry and service.

The [COVID-19](#) lockdown was a severe shock to the economy. But we have noted several interesting outcomes from that. It was a dramatic lockdown without much warning, and the supply chains unravelled, but there were also some course corrections very quickly, so things got back on track surprisingly quickly. It pushed the farmers strongly towards producer organisations to attempt some activities they had never done before; they used to reach consumers directly (thanks to the internet services) through digital devices. Whether it is feasible to return to business as usual with more money thrown at technological improvements alone becomes a big question. However, the stimulus packages unrolled by the governments across the regions have saved lives and the economy to a great extent.

3. The contributing factors to growth in the north-eastern hilly region are:

If we consider the net state domestic product, we will find (Table 2) that in most of the hilly states, the growth rates were mainly due to the manufacturing sector, followed by the transport and service sectors. Comparing the contributions of different sectors, it appears that the agricultural sector was in the lowest position. But we should remember that the majority of the population in the region primarily depends on agricultural activities. But its capacity to absorb or expand state domestic product is very limited, and it needs to relook into the present scenario by shifting from productivity growth in the agricultural sector towards income growth logic by moving the workforces into a more productive, reasonable value-added sector, which might help to strengthen income security. Establishing strong forward and backward linkages between the farm and non-farm sectors of the economy is the best way to achieve growth and development.

Table 2: Sector-wise average annual growth rate of Net State Domestic Product (NSDP) in 2004-2015 for the NEH states at 2004-05 base (in percentage)

States	Agri and allied	Manufacturing	Industry	Transport	Services	State domestic product
Arunachal Pradesh	4.08	6.18	7.25	9.41	9.42	7.25
Manipur	2.02	7.25	1.00	7.25	9.42	5.13
Meghalaya	3.04	15.03	10.52	10.52	9.42	8.33
Mizoram	7.25	9.42	8.33	8.33	10.52	9.41
Nagaland	4.08	5.13	6.18	8.33	9.42	7.25
Sikkim	7.25	73.32	32.31	11.63	8.33	18.53
Tripura	8.33	16.18	5.12	23.37	10.52	9.42
NER	1.00	18.53	6.18	9.41	5.13	4.08

Source: The authors estimate based on *Basic Statistics of North Eastern Region 2015*, Gol, North Eastern Council Secretary, Shillong 793003.

One interesting incidence was that there was no significant labour migration (immigration or outmigration) reported from the North Eastern states (*Economic Survey, 2021-22*). Actually, there was very little scope to absorb more people into agriculture as the region is overcrowded. We have found that engaging rural households in building new agri-value chains has some potential to create productive employment and protect livelihoods.

A high growth of net state domestic product was observed in Sikkim, which was around 18.53 percent, followed by Tripura, Mizoram, Meghalaya, Nagaland, and Arunachal Pradesh, and the net SDP was lowest in Manipur (see Table 2). Interestingly, in Arunachal Pradesh, there was no registered manufacturing sector; all were unregistered. The unregistered manufacturing sector has played a key role in the region.

The total growth rate of the manufacturing sector in the north-eastern hilly states was 18.53%, followed by the transport sector (9.42%), where there is more scope to link with ecotourism and the hotel industry. The scope of the industrial sector, which consists of construction, electricity, gas, and electricity supply, can also play a significant role in the unexplored areas of the region. The annual growth rate was around 6.18%. The service sector, which mainly deals with public administration, banking, and business, contributed about 5.13%, and agriculture and allied sectors contributed the least, at 3.65%. But when we consider the state-wise contributions of different sectors, we observe that the manufacturing sector contributed the most in Sikkim, followed by Tripura and Meghalaya.

The scope of agriculture to enhance NSDP is highest in Tripura (23.10%), followed by Sikkim and Mizoram (both in terms of 20.11%), Arunachal Pradesh and Nagaland (both in terms of 11.32%), Meghalaya

(8.45%), and Manipur (5.60%). Since the region is primarily dependent on agriculture and allied activities, which comprise over 80 percent of the region's gross domestic product, it is imperative to promote improved methods of cultivation to raise the productivity levels of the region. A successful example was the adoption of the System of Rice Intensification (SRI) in Tripura, which has yielded a dramatic rise in productivity.

To enhance NSDP, *transportation, storage, and communication* were most prevalent in Tripura (29.64%), followed by Sikkim (14.74%), Meghalaya (13.34%), Arunachal Pradesh (11.95%), Mizoram, and Nagaland (10.56%), and least prevalent in Manipur (9.20%). It is necessary to explore the scope of *trade, hotels, and restaurants* under the subsector of services. This kind of attention might be crucial for the futuristic outlook for the hilly states of the region. We could guess the impacts based on a correlation matrix between different economic sectors (in Table 3).

Table 3: Correlation matrix between different sectors in the NER states

Items	SGDP	Agriculture and allied	Manufacture	Industry	Transport, storage and communication	Services
SGDP	1					
Agriculture and allied	0.626961	1				
manufacturing	0.962114	0.446703	1			
Industry	0.964355	0.415413	0.958973	1		
Transport, storage and communication	0.220923	0.647953	0.158523	0.017761	1	
Services	-0.50156	0.319132	-0.65801	-0.68137	0.385831	1

Source: The authors estimate based on *Basic Statistics of North Eastern Region 2015*, Gol, North Eastern Council Secretary, Shillong 793003.

There is one more important issue regarding the restructuring of the composition of the labour force in the NER region. It is evident that there has been a shift in the labour force from agriculture to the informal sector of the non-agricultural sector. They are basically unregistered non-farm units. Now there is a large share of self-enterprising workers within the non-agricultural sector, with low levels of productivity and income. Again, we have not observed any significant levels of performance of the so-called 'modern' units, which are active within the unorganised sector. There is a doubt about how far the 'modern' sector could absorb the substantial surplus labour that exists in agriculture in the north-eastern states. The strength of the labour force in the north-eastern states depends on quantity and quality. Sustainably high wages and salaries can come from the efficient productivity of the formalised non-farm jobs done by workers with appropriate human capital. Building up new agri-value chains, the economy of the north-eastern states might help to open up new avenues for productive employment and protect livelihoods. The "cash transfers" under the central schemes like PM-KISAN were "a big relief" for all the "adversely affected masses. Intervention by the government through PM Kisan to provide income support, strengthening of institutional finance and insurance through the PMFBY, and the push given to Kisan Credit Cards as well as access to machines and tools that improve productivity have been significant.

Different project documents have highlighted that the financial and social viability of different government-funded schemes in the northeastern states was very low. The cost of delivery of services in the north-eastern hilly region appears relatively high due to different causes, such as the difficult terrain, low financial viability of the projects, and inadequate project implementation capability. It has been reported that during the 12th Five-Year Plan (2012–17), a larger plan investment for the north-eastern hilly region on infrastructure development

has resulted in average growth of gross domestic product in the north-eastern hilly states by about 9.8%, which was higher than the national average of 8% during the 11th Five-Year Plan (2007–2012) period (NEC, Vision 2020). The incidence of poverty and inequality is very high in the NER (Economic Survey 2021–22). In this situation, the sudden wild spread of the COVID-19 virus created havoc on the economy.

4. Navigating Risk and Uncertainty:

Weather, pandemics, wars, and export controls are the four major drivers of supply-side shocks in global food inflation from around October 2020. The weather-related shocks included droughts in Ukraine (2020–21) and South America (2021–22), which especially impacted sunflower and soyabean supplies, and the March–April 2022 heat wave that devastated India's wheat crop. The Russia-Ukraine War led to supply disruptions from the two countries that, in 2019-20 (a non-war, non-drought year), accounted for 28.5% of the world's wheat, 18.8% of corn, 34.4% of barley, and 78.1% of sunflower oil exports. Export controls were first imposed by Russia in December 2020, prompted by domestic food inflation fears arising from record-high temperatures. Shortage concerns at home triggered similar actions in palm oil by Indonesia (the world's No. 1 producer-exporter) and in wheat by India during March–May 2022. This is mainly due to the global economy battling persistent inflationary pressures. On the one hand, there is the cost of living crisis with retail inflation in double digits. On the other hand, there is the problem of stalled economic growth, which, in turn, leads to lower revenues and higher debts. The trouble is that as the government curbs spending in a bid to contain inflation, it will further drag down economic growth. And any efforts to boost growth by keeping interest rates low and expanding positions while nurturing India's domestic

demand will require a fine balancing act, especially as government spending will likely worsen inflation and further reduce people's purchasing power.

On the domestic front, the concern is that even as the economy has recovered to its pre-Covid level, large parts continue to be mired in stress. For instance, micro, small, and medium enterprises continue to struggle. An indication of this is that 16.4 percent of those who availed credit under the Emergency Credit Line Guarantee Scheme of the government defaulted and have not been able to repay their obligations owing to financial difficulties. Considering that MSMEs employ a sizeable section of the labour force, their continuing struggles are bound to affect labour market prospects. In fact, as per the latest periodic labour force survey, the labour force participation rate in urban areas is lower than pre-Covid levels, while in rural areas, wage growth continues to be subdued, indicating labour market slack. On the one hand, there is the cost of living crisis, with retail inflation in double digits.

India adopted multi-pronged approaches to cope with the unprecedented situation. Now the question is: what should the economy of the region be like after COVID-19? Should it depend on consumerism or foster human well-being by extending income generation sources and an appropriate health programme? Will it produce homes, healthy food, health care, education, and livelihoods for the needy, or will it continue to depend on corporate-controlled aspirational and hyper-consumption—fast food, fast fashion, fast (air) travel, and exotic vacations—for wealth creation? Should the governments in the region monitor the role of markets and public transport, or should we introduce more private cars? Should governments decentralise production-consumption as in the provisioning of basic services and explore ideas like Universal Basic Services into law? To explore the answers for the north-eastern region, we need to focus on certain guiding forces, especially the hilly states of the region that might help to resolve the crisis that emerged from the COVID-19 pandemic situations and help to achieve inclusive, sustainable goals.

5. Challenges and Opportunities:

In spite of India being the world's second-largest producer of fruits and vegetables, consumers are not getting proper quality at the right time and at the right cost due to losses and wastage in the supply chain of the fruits and vegetables sector. Some effective steps are necessary to improve market access and to settle the necessary terms and conditions. Many scholars have argued for the need for a number of improvements in terms of markets and flexibility, which would allow farmers to choose who they sell to and at what terms. Indian agriculture has many falsifications and disarticulations other than supply-demand equilibrium.

These are not due to market intermediaries but also to a very poor supply chain in association with poor market infrastructure, a lack of storage, and efficient transport. It is also important to know that the food basket and agriculture are not identical.

Expenditure on food baskets is associated with value addition, which includes different marketing functions like processing, preparation, services in restaurants, etc. The practice of taking food to restaurants is still low in India. For example, the share of the end product like a chocolate bar or coffee cup, going to the farmer is often infinitesimal. Even by adding processing to industrial growth and preventing wastage, it is to be considered how much (or little) can be conveyed to the farmers. But the trend is changing due to changes in food habits and the income of the Indian population. Importantly, farming revenues will not rise much even as India's income rises. In fact, the ratio of total agriculture income to total population is relatively flat across countries regardless of per capita income (Sarkar, D., 2023).

The key impediment to increasing the farmers' income is attributed to the small and marginal land holdings, which are operating less than a hectare. Small and marginal farmers are producing agricultural crops with reasonable production efficiency but are severely constrained by poor marketing efficiency. The system is operated by unorganised retailers in a vicious cycle, with a large number of small producers producing low-marketable surpluses, resulting in low bargaining power and low profit.

According to the Situation Assessment Survey of NSSO 59th round AY (2002-03) and 77th round AY (2018-19), the net receipt from crop production has declined (46 to 38%), whereas the net receipt from farming animals has increased (4 to 16%). The share of income from wages and salaries is also optimistic, especially among the socially deprived categories. The farming community has been shifting their production towards high-value crops, especially fruits and vegetables, and livestock-based enterprises. It is now argued that farmers' incomes can be enhanced in this context, where small and marginal farmers, especially in the eastern region, are mainly confined to growing staple foods for their own consumption.

The hilly region of the north-eastern region is self-sufficient to a great extent to produce their own requirements, so hopefully, there could be a meagre impact on the prices of the local commodities of the region. However, fuel price inflation should definitely affect the region's tourism industry. The fallout from the war in Ukraine, which has brought a spike in prices of energy, food, fertiliser, and industrial chemicals, and also the supply chains more critically, might have a deep and long-lasting impact on the economy of the region.

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6. Our findings and the way ahead:

Building the digital infrastructure for farmers will help agriculture move towards higher efficiency and inclusiveness. Also, setting up the Agriculture Accelerator Fund, focusing on horticulture value chains, giving a big thrust to the millets mission, setting up storage facilities for farmers at the cooperative level, and targeting an overall credit disbursement of Rs 20 lakh crore definitely moves agriculture in the new direction. Investment in the sector must be encouraged through an affordable, timely, and inclusive approach to credit delivery. The digital infrastructure created over the years in rural areas ensured transparent and timely payments to the beneficiaries directly into their accounts.

During 2021–22, agricultural exports reached an all-time high of \$50.2 billion. In 2020–21, exports of agriculture and allied products from India grew by 18 percent over the previous year through crop diversification and improved productivity in agriculture through support provided for mechanisation and the creation of the Agriculture Infrastructure Fund. However, the survey highlighted that Indian agriculture needs reorientation.

There are compelling reasons, both global and domestic, for food inflation in India to trend down, even if not drop rapidly. Edible oils are already demonstrating this trend. Increased *soyabean* and *cotton* production should improve the availability of oil cakes. These, along with *maize*, are key ingredients in animal and poultry feed. A good monsoon would also mean more fodder and water for animals, further reducing livestock input costs and inflationary pressures on milk, eggs, and meat.

Agricultural development needs to be focused on improving agricultural productivity and the creation of non-farm vocations and employment through creating a viable sector where there is comparative advantage, like agro-processing industries, modernization, and development of agro-tourism, and focusing on developing various services such as information technology (IT) and tourism that might help to accelerate development and create productive employment opportunities. Registering the manufacturing units is very necessary. It is equally necessary to place emphasis on capacity development, which could address the issue of imparting skills among the people to enhance their productivity, generating a class of entrepreneurs within the region who are willing to take risks in trade, hotels, and restaurants. Transportation, storage, and communication could act as additional value-added means to develop a link between skill development and the start-up self-help business proposition. A meaningful guiding force may be derived from the correlation matrix as presented in Table 3.

It is necessary to replicate Agribazaar, which was founded in 2016. *Agribazaar* has built an integrated network of professionals, businesses, and farmer

producers' organisations (FPOs). The North Eastern Region Linkage Programme was implemented from

2012 until September 2019. It was implemented in 1,645 villages under 58 development blocks across 11 districts of the 4 states of Mizoram (Aizawl and Lunglei districts), Nagaland (Peren and Tuensang districts), Sikkim (South Sikkim and West Sikkim districts), and Tripura (West Tripura, North Tripura, Sepahijala, Khowai, and Unakoti districts). The project, funded by the World Bank, provided skill-based training to SHG members and unemployed youth in order to find employment. This project helped introduce SHGs in parts of the northeast that did not have the presence of these groups. The Ministry of Rural Development has since engaged Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM) to provide doorstep financial services to Women Self Help Groups (SHG) members. These subsequent interventions have left a lasting legacy in that, currently, the region has 4460 women SHG members who have been working as business correspondents for doorstep banking. Led by India's Ministry for the Development of the North East Region (MDoNER) and the North East Council (NEC), plans are afoot to digitise transactions between farmers and their producer groups and producer organisations, creating a digital transaction trail that will increase transparency in the flow of funds through agricultural value chains in the region (Council for Social and Digital Development, 2023).

COVID actually helped *Agribazaar* scale up, assisted by more farmers becoming digital citizens. It is well known that small farm owners face challenges that are disproportionate to their size and resources. *Agribazaar* has created a pan-India *e-mandi* that brings together small farmers and buyers, a platform where farmers can sell their produce fairly and transparently without the need for middlemen. It also addresses the inefficiencies in the post-harvest supply chain. The venture facilitated the transport of agricultural produce on over 5000 tracks, even from far-off places like *Lakshadweep*, and was also able to facilitate trade for grape farmers in *Baramati*, apple growers in *Kashmir*, and cultivators in many states, including *Madhya Pradesh*, *Rajasthan*, *Gujarat*, *Maharashtra*, *Punjab*, and *Haryana*. Till February 2023, *Agribazaar* has enabled transactions worth more than Rs 9000 crore, making the venture one of the leading market places.

However, to retain rural youth in agriculture, mere technology pushes, however sound they might be, would not help much. Rather, agri-entrepreneurship needs to be invoked. As we have noted, rural youth aspire to be engaged as a salaried *class*, not as *wage earners*. Therefore, there is a need to increase the number of professional service providers and technology managers in the rural youth sector. It is also necessary to develop the role of the digital economy, which has played a very crucial role in the North Eastern economy during the first

and second waves of the pandemic phase during 2020–21.

The Integrated Technology-Enabled Agri Management System (1917iTEAMS) has played a significant role, especially during the COVID-19 pandemic phase. A lot of activities have taken place online. Startups that aim to alleviate frictions in labor and agriculture markets require substantial investments. The 1917iTEAMS have helped to create jobs and sustain livelihoods in remote areas in the hilly region of the north-eastern states. The demonstrative effect of COVID-19 is showing that manufacturing factories need not be situated only in big cities. Labour is cheap in smaller towns. Factories can be set up in remote locations or aspirational districts and could be monitored digitally. Private-sector startups should also make a big difference here. Additionally, it seems feasible to manufacture beverage products from agricultural products and establish connections with relevant markets. Regular monitoring of service usage patterns is required to identify barriers and make necessary adjustments to improve the accessibility and relevance of services. State and community-wise, given the largely distinct ethnic and tribal nature of the communities.

Studies have shown in the north-eastern hilly region that the proportion of food-insecure households was high (64.28%) compared to the other regions. Studies also reflected that in the NER states, about 56.39% of the food-insecure households did not produce food self-sufficiently. It could be inferred that the questions of food security in the regions are associated with the production and distribution of food crops and various agro-ecological factors and resource constraints (Singh and Datta, 2013). The analysis provides evidence that at the farm household level, food availability did not ensure food accessibility, whereas accessibility was directly linked with the available resources (land) and income.

In order to bridge or narrow down the gaps between availability and accessibility, the diffusion of appropriate technology and know-how in agriculture at the grassroots level is essential, and it has been demonstrated by the ICAR-NEH and different agricultural colleges under the Central Agricultural University, Imphal, from time to time by disseminating and demonstrating new technologies. But in reality, even after two to three decades, the situation has not improved much. When livelihood sustenance is dependent on sustained and sustainable development initiatives at the village and local levels, it is necessary to ensure farm-oriented and people-centric development (Datta, 2017) in order to combat the pandemic and face the challenges of a war-like situation. The survey highlighted that the MNREGS has been rapidly creating more assets in respect of “work on an individual's land” than in any other category. The share of this category rose to about 60 percent in FY22, indicating that MGNREGA, besides generating daily wage employment, has also been creating assets for individual households

to diversify their sources of income and lift their supplementary incomes.

7. Diversifications in agriculture and risk management:

Eastern and north-eastern states are predominated by the production of cereal crops, and nearly 70 percent of the agricultural land is covered by food grains only. It is assumed that diversification into other high-value crops is likely to improve farm income. At present, the north-eastern regions maintain little crop diversification. Almost 80 percent of the cultivated land is under paddy cultivation only. Low crop diversification was observed in the states of Tripura and Manipur. The extent of crop diversification was found to be relatively better in Arunachal Pradesh and Meghalaya, but the agricultural performance in those states was found to be poor. Only moderate crop diversification was observed in a few states, such as Nagaland, Mizoram, and Assam (Datta and Mandal, 2011).

At the aggregate level, the extent of crop diversification is quite low in the north-eastern states, but at the micro-level, the studies of farming systems indicate a very high level of crop diversification, particularly in highland situations. This is a typical dichotomy prevailing in north-eastern agriculture. It needs to explore diffusion methods. Obviously, the prime concern should not be the scale of operation or magnitude of agricultural prices that could keep farmers in their farming business. We need a sustainable agro-business value chain where all actors in the chain are interdependent on each other. As we understand, a sustainable way to enhance income needs incentives, investments, institutions, and innovation.

However, as commodity markets become more competitive and oversaturated because of oversupply in the domestic market, prices could often depress, and hard competition among producers and sellers becomes inevitable. This has led to an increasing demand for branding agricultural products, like organic products from the NER. Successful branding is possible when the brand consistently delivers a clearly defined, appealing offering that sets it apart among its competitors. This is possible because, for most agricultural products, there is no remarkable perceived difference in the eyes of the consumers. One of the options for gaining a competitive price for the product is by adding value to it. This needed the development of an integrated value chain for organic products in the region. There is an avenue that needs special attention.

8. A community-based approach:

Generally, in a natural resource-based economy, communities and user groups manage for individual and

collective benefit. Characteristically, this involves a variety of informal norms and values (social practices) employed for a governance mechanism. The governance mechanisms are often based on sharing and the promotion of open access. By focusing on good governance mechanisms, we can identify the commons not only with the resources themselves, but also with the societal arrangements (communities) that surround them. Furthermore, we can conceptualize commons through the lens of social production. As social products, these are the results of human-human and human-nature interaction with shared aims (cooperation) over a period of time; examples of such include language, knowledge, plant genetic resources, and biodiversity. Once more, we can regard the societal arrangements that produce these products as commons. The variety produced may be considered a type of common. The community that produced it, the research community, may also be considered a social common. The Nagaland experience of community feelings needs to be focused on. Building trust between the government and the citizens and businesses unleashes efficiency gains through improved investor sentiment, better ease of doing business, and more effective governance.

There can be meaningful complementary relations between the community, the market, or the state. Community organisations can productively use market processes, like partnerships between businesses and nongovernmental organisations like in Bangladesh that have improved access to telecommunications in rural areas; and, of course, many agricultural and dairy cooperatives in Denmark or India run by local communities have been major business successes.

Policy suggestions may involve the devolution of power to local community associations or to village councils. It may favour better utilisation of local information, ingenuity, and initiative, particularly in the targeting and implementation of public projects that distant technocrats cannot easily mobilise or sustain. Secondly, the procedures of trust, coordination, and social sanctions of defaulters that undergird local social contracts—all of which become weaker as the domain expands beyond small local communities so that exit becomes easier and social norms get diluted—and a desire to keep under control the inequalities that large-scale agglomeration and network externalities inevitably generate (when talented and skilled people gravitate towards one another in a small area or entity, others elsewhere fall behind and suffer the consequences of the brain drain).

Such group obligations can actually serve even better than market or government contracts, since the latter rely on costly third-party (legal-judicial) verification and arbitration for contract enforcement. In the case of face-to-face communities, breaches of agreements are more easily observable and negotiable, while social sanctions act as a powerful deterrent to breaking them in the first place. There are many stories of how Chinese

lineage-based business families negotiate billions of dollars' worth of real estate deals in Hong Kong without any formal contracts for raising money from inside those groups and police any potential breaches mainly internally. Caste-based Gujarati migrant families have captured the motel business in large parts of the United States in a similar fashion.

Of course, as the scale of economic activity expands in the "relation-based" systems of business, governance may have low fixed costs (given the social community relationships among parties and the avoidance of elaborate legal-judicial and verification costs of more "rule-based" systems), but they may have high and rising marginal costs (particularly of monitoring and finance raising) as business expansion involves successively weaker relational links.

On the social side of the ledger, the benefits of community bonds come with a palpable cost for individuals. The price of social help and insurance is the group's authority over members' freedoms. Traditional extended families or kinship groups can be quite authoritarian in their treatment, particularly of younger and female members.

Among social democrats who allow the mode of production to be mainly capitalist, there are significant differences between those who want the state to be the main funder, but not necessarily the actual provider, of essential public services like education, health, water supply, and public transportation (in recent decades even Nordic social democracies have expanded the range of choices in providers of public services) and those who think that some essential quality in those public services is lost if they are left to profit-making private agencies to provide. On the other hand, particularly in developing countries, state officials may be inept, truant, or corrupt, and the political accountability mechanisms are often much too weak to discipline them under the circumstances. Some public-private competition may be bracing.

9. Agro Tourism:

The NER is attractive for tourism. Eco-friendly eco-tourism could develop in the NER as well. Agro-tourism is another option by providing good services where households can link and support their agricultural services either by attracting their products, foods, or drinks. In some of the NER states, households' engagement with various allied activities other than agriculture is quite high, which indicates that there is scope for developing their skills and entrepreneurs either in tourism or in allied activities. The scope to explore the opportunities is high throughout the NER states. It can boost household income by linking agro-based organic products, which are in the new domain of agrotourism. It is interesting to refer to the fact that extending digital financial inclusion, including the under-

banked and unbanked population, into the fold of the formal financial economy, especially in the NEH region, enriches agrotourism to a greater extent. Most of the NER states enjoy an advantage in attracting tourists as the zone enjoys a clean natural environment, possesses a rich cultural heritage, and produces organic foods throughout the year. Other related agricultural activities can also create a *win-win* environment for both the workers and the cultivators.

There is a need for brand building and marketing to promote products such as *Joha* rice from Assam, black rice from Manipur, and king chillis from Nagaland and Manipur. Used to prepare ethnic fermented foods in Sikkim and Meghalaya has revealed that they have rich microbial diversities. Fermented beverages produced by using starch and sugar-digesting starters are generally mild-alcoholic (4–5 percent), have a sweet taste, and have several health benefits. They are a high source of calories and contain some vitamins and minerals. There is a need for more laboratories, certification bodies, and regional councils in the region.

Arunachal Pradesh has taken up the cultivation of horticulture produce, especially sub-tropical fruits, on a large scale with assistance from the government. In Mizoram, which accounts for 12% of the total fruits produced in the north-east, a special purpose vehicle (SPV) has been formed with private sector companies to set up a plant for the processing of turmeric, ginger, chilly, fruits, and other horticulture products.

In Manipur, organic farming is the most sought-after practice in the hilly areas. The state government has given special impetus to farming for pineapple, passion fruit, mushrooms, etc. on a massive scale. With proper processing, many of the agri-horticultural crops of the state look promising for export.

Nagaland Food Private Limited (NFPL), established in the Dimapur Industrial Estate, specialises in bamboo shoot processing, pineapple, passion fruit, and orange juice processing. The food and meat processing sector also has immense potential for state investment. The Nagaland Industrial Development Corporation has received approval for developing an agro- and food-processing SEZ in Dimapur. The pan-India applicability may be availed of irrespective of the location of the investment, like the recently announced Production-Linked Incentives (PLI) schemes.

Similarly, through a value-added process, agricultural products like *mommo* are highly praised and attracted as they are climate-friendly, easy to eat, and easy to serve. *Baby corn*, which is the hot spot in the NER states, can be produced throughout the year. *Pineapple and Khashi Manderin* are other agricultural products that tourists can consume and enjoy, and farmers can enhance their income by selling those products. With the items that they are used to produce in different tourist centres, the farmers can generate new sources of income. The unique nature of the products is often organised by the farming community for selling

those on the roadside. The resorts can be used to attract and serve tourists on a product basis, like *Pine Apple Resort and Mandarin Base Resorts* in the villages where they grow, and resorts or cottage types of resorts can attract tourists, which will be a *win-win* situation for both the farmers and the tourists.

10. Employment generation from agri-business and agro-marketing.

There are enormous options for the NER to convert the demographic as well as diversified climatic dividend by creating more employment opportunity as well as creating hub of agribusiness doing business by converting paddy field into a *mushroom cultivation*, as it's a high value and protein rich and it's a demand driven value added products, low lying paddy area can be used for fish farms, managing fruit maturity technology, changing backyard poultry to a value added different chicken products, branded value for the organic egg product, organic chicken product, organic tea garden like Ulong Tea of Meghalaya. The field visit assured us that through the Integrated Village Co-operative Society (IVCS) of *Mawlyngot*, tea growers have been growing tea in that area for generations, but now, through this co-operative, the growers' scale of operation is expanding. A favourable climate to grow tea as a community base is a lesson to create a hub of agri-business environment where society's members can produce and sell their tea in a better way. Skill development in bamboo craft is another option to engage rural youth through agro-enterprise-oriented activities, which is another way to enhance households' farm income.

11. Exploring government schemes towards sustainable, inclusive growth

The *Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)* has been directly providing jobs in rural areas and indirectly creating opportunities for rural households to diversify their sources of income generation. Schemes like *PM-Kisan* and *PM Garib Kalyan Yojana* have helped ensure food security in the country. The UNDP Report of July 2022 stated that the recent inflationary episode in India would have a low poverty impact due to well-targeted support. The results of the *National Family Health Survey (NFHS)* also show improvement in rural welfare indicators from FY16 to FY20, covering aspects like gender, fertility rate, and household Support for economic growth will come from the expansion of public digital platforms and path-breaking measures such as *PM Gati Shakti*, the *National Logistics Policy*, and the *Production-Linked Incentive schemes* to boost manufacturing output, amenities, and women empowerment. Economic opportunities created

by digital technology-based economic reforms strengthen the potential growth story in the medium term.

The normalisation of economic activity means there is no need for special safety nets; it means increased work days under MGNREGA or additional free grain supply through the *Pradhan Mantri Garib Kalyan Anna Yojana*, which helped protect the most vulnerable households from significant income losses during and after the pandemic. In the budget, it has been pointed out that the labour required for establishing tap connections or building homes would come from the same people seeking work through MGNREGA. To the extent that this will happen over and above the work demand generated by the resumption of labour-intensive manufacturing activity and contact-based services, Assets created under the Awas Yojana and Jal Jeevan will largely benefit the rural poor themselves.

12. The Sustainable Development Goals (SDGs) and the NER.

We have noted that special attention has been paid to achieving the SDGs at the NER (*Economic Survey 2021-22*). The NITI Aayog has prepared a district index with 84 indicators to achieve the 15 sustainable development goals as designed by the UN. In about 103 districts in the eight states of the NER, the score, as stated by the NITI Aayog, ranged from 75.8 in East Sikkim to 53 in Nagaland. It has been noted that 64 districts among the 103 districts of the NER were in the front-runner category, the rest 39 districts were in the performing category, and all the districts of Tripura and Sikkim belonged in the front-runner category. A strict follow-up measure to achieve the SDGs and maintain an inclusive growth process might help the NER place the region as an attractive place to live with a high happiness index.

Summarising and concluding remarks:

The North Eastern Region (NER), comprising eight states of India, is a geographical area with enormous potential for growth and sustainable development. In the context of economic activity, the zone is basically for various types of agricultural activities. But productivity and agricultural output in the region appear insufficient to achieve food security and sustainable development. It becomes necessary to introduce innovations in agri-marketing and agribusiness through value addition in agricultural activities. Product diversifications, infrastructural development, community management, information technology, better resource management, employment generation through MGNREGA schemes, and agro-tourism and agrospecialisation might help to extend agri-business and

agro-marketing, achieve a sustainable food system, and improve farmers' income.

It is essential to build on the existing science infrastructure—physical, virtual, and intellectual—while not falling into the trap of incremental change and science-business as usual approaches.

It is essential to build on the existing science infrastructure—physical, virtual, and intellectual—while not falling into the trap of incremental change and science-business as usual approaches. It posits that governments and private sector institutions can directly link productivity improvements to faster innovation and increased investments in human capital. It will be the result of internal forces rather than external ones.

In a knowledge-base economy, the spillover effects of investment in technology and people keep generating positive returns. Government policy should encourage [entrepreneurship](#) as a means of creating new businesses, and ultimately as an important source of new jobs, investment, and further innovation. The focus on long-term goals of human development and “*sabkasath, sabkavikas*” have assumed salience. Universal and equitable access to broadband services across the country, especially in rural areas, is an important part of the government's vision for national digital connectivity. Towards realising the vision, the *Gati Shakti* Sanchar portal will help the governance and services on demand, and in particular, the digital empowerment of the citizens of our country. It needs support in improving competitiveness, achieving scale, digital infrastructure, technology upgrades, and branding to be part of a larger supply chain. The North East can only reap the demographic dividend and be a source of labour supply for the country if we make the labour force more productive and efficient through skilling, re-skilling, and up-skilling.

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