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Estimation of livelihood assets diversity in North Eastern states of India

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ABSTRACT

Livelihood is a multidimensional formation of different resources that provide a fundamental base for the household's living. Adoption of livelihood strategies varies across the people, depending upon the availability and accessibility of the livelihood assets; hence, there is a variation in the possession of it. Though several attempts have been made to study livelihood issues, we still need more literature on a comparative analysis of the northeastern region of India. The present paper attempts to discover the diversity of livelihood assets in northeastern India. Thus, it is observed that except for human capital resources, the state of Assam is better endowed with natural, physical, social, and financial capital assets than the other seven states. Further, the aggregate livelihood capital index also shows that Assam is the first in ranking based on the richness of the strength of the livelihood capitals, while Arunachal Pradesh is at the bottom, 8th position in terms of assets strength. Though Sikkim is the smallest state, it holds the third position in overall livelihood capital assets possession, after Meghalaya, which is in second position. Thus, the present study suggested variations in livelihood assets across the northeastern states.

1. Introduction

North Eastern Region (NER) is geographically located in the eastern part of India, comprising eight states, including Arunachal Pradesh (83743sq km), Assam (78438sq km), Manipur (22327sq km), Meghalaya (22429sq km), Mizoram (21081sq km), Nagaland (16579sq km), Sikkim (7096sq km) and Tripura (10492sq km) (Census, 2011). The region is prosperous in natural resources; if these resources are efficiently used, they can be utilised for viable economic purposes to boost limited financial assets; it was due to the lack of growth motivation that the primary sector was unable to generate surplus resources to stimulate the process of enhancing in the secondary and tertiary sectors (Barah &Neog, 2005). The region is characterised chiefly by hilly areas, and plain land can be seen mainly in Assam and Manipur and partly in Tripura. There have been several attempts by the Government of India to develop the region through its development policy, from Look East Policy to Act East Policy. Meanwhile, 70 per cent of the people engaged in agriculture and allied activities to earn a livelihood while contributing 2.8 per cent of the nation's GDP (Sarkar, 2023). Most workers fall in the category of marginal and small farmers owing to its topography barriers, where agricultural activities cannot be carried on a vast tract of land; despite heavy reliance on the primary sector, the cultivation pattern still gambles around the monsoon rainfall. Weather conditions are suitable for agricultural cultivation; however, farmers' intervention in undertaking investment is insignificant as it could be observed that states are importing agri-products worth crores of rupees annually from other states because of the low agriculture production in their states, unable to meet the demand for food items (Sachdeva, 2005). Industrial development is hardly occurring in most states except for Assam, which could impact the regional economy. The region has vast potential in undertaking new ventures to establish industrial estate, but investors need to be more interested; this is where the public sector should boost confidence among private investors. The underdeveloped nature of the region pushes people to find jobs in the government sector, as there are fewer alternative

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vocations, and every state experiences a high rate of unemployment and underemployment.

Land cultivation is critical in determining farmers' livelihood since it promotes various economic activities for rural people. The change in land use patterns could easily affect farmers' sources of livelihood and their strategies (Pensuk& Shrestha, 2007). The finding of Das (2014) suggested that agriculture practice in rural areas was becoming non-viable, leading menfolk to migrate from villages to urban areas in search of higher income opportunities, abandoning agri-cultivable land. As a result, stability in livelihood strategy would induce the alleviation of poverty and the achievement of the aim of using sustainable resources. Thus, the importance of livelihood capital is evident in improving rural areas and increasing agriculture production, which was their mainstay besides helping them boost their self-reliance capacity (Su & Shang, 2012). Constructing indices for livelihood capital is essential for monitoring social progression. It helps identify drawback areas to encourage policy planning and necessitated interventions to change the course of social transformation (Rai, Sharma, Sahoo & Malhotra, 2008). Though agriculture plays a crucial role in determining rural livelihood, the challenges of climate change pose a high risk in alternating rural livelihood strategies because climate change in terms of temperature, rainfall and heat waves does affect agricultural productivity. As a result, the availability of food grains and nutritional issues could become troublesome for most households. Most of the agriculturists were marginal and small, less educated, and had low adaptive capabilities in northeast India (Tripathi & Mishra, 2017). These socio-economic, political and cultural diversities should be the basis of regional planning. However, agriculture is often regarded as the backbone of the regional economy, and with a lack of technical innovation, its share of income generation is trivial (Barah &Neog, 2005). The development process in the hilly areas and plains differs because of the diversity in economic opportunities. However, specific developmental changes took place in the region; the development process needed to meet people's expectations regarding communication, transportation, and other vital infrastructures that could accelerate the development of agriculture and industry (Sachdeva, 2005).

In rural areas, livelihood diversification is a unique characteristic, a commonly used instrument to cope with economic and environmental shocks and a strategy for rural poverty reduction (Gautam & Andersen, 2016). Household livelihood diversification is considered an additive process with various multiplier effects. This diversification is determined by the survival needs of households residing in hilly areas. Multiple livelihood sources allow rural households to avoid risk and uncertainties by distributing resources across different sectors to manage households' shortfall in production and earnings to smoothen consumption (Mishra, 2012). Integrated farming in northeast India was viable and productive, which could promote a sustainable farming system, thus sustaining the livelihood sources of the agriculturists and providing an opportunity to increase their household income (Debnath, Yadav, Sahoo, Devi & Singh, 2019). However, despite multi-front agriculture revolutions taking place in the region, the livelihood conditions of the people were still highly susceptible to the failure of effective institutional coordination. The reason is that hill communities are far from the mainstream development process (Viswanathan, 2012). Even selling horticulture products was complicated owing to the difficulty in transportation from the interior area to the highway, mainly during monsoon season; at the same time, the entire trade system depended on private traders, and there needed to be a marketing agency (Krishna, 2012). So as the uncertainties arising from dependence on natural resources got affected by emerging climate change, occasional natural calamities, with low productivity of agriculture and near stagnant prices, poor rural infrastructures and imperfect markets mechanism has made the lives of the rural households more difficult (Datta & Sharma, 2010). There is a need to accelerate economic opportunities in a rapidly developing society. The marketing system has already been globalised; in this condition, the production and export of northeastern natural resources must promote value addition and generation of gainful employment. In a nutshell, the northeast region is often regarded as the Land's End, whereas, in reality, it is a Gateway to Southeast and East Asia, as it was even before 2000 years ago (Verghese, 2003).

The way people earn their living is commonly called a livelihood. They were accessing the resources required to adapt various strategies across the regions, state to state and people to people. The degree of possession of assets depends on the longevity and sustainability of the livelihood capital the households enjoy; besides, augmenting the livelihood base needs dynamism and diversification. Livelihood diversification is the way by which people combine different components of activities and assets to promote their economic and social welfare (Kuki & Bhowmik, 2022); a combination of crops and livestock production turns out to be a core financial asset (Pensuk& Shrestha, 2007). The modes of livelihood varied with the use of forest lands in remote areas; as a result, judicious management of valuable assets can induce opportunities to enhance people's earnings, but it needs market assurance, tenure right over the resource base, available labour and capital to invest, capacity to wait for the investment to get mature and time to develop entrepreneurial skills (Sunderlin, Angelsen, Belcher, Burgers, Nasi, Santoso, & Wunder,

2005). The estimation of regional sustainable livelihood can be represented by three components, namely ecological sustainability, which includes different components such as forest cover, soil, water availability, air quality, and groundwater level. Economic efficiency comprises the productivity of land and labour, marketable surplus, and input and output efficiency. Similarly, social equity is characterised by land, asset possession, income distribution, people above the poverty line and female literacy rate (Kumar, 1993). In rural areas, the share of income from the agriculture sector became a significant portion of households' income to sub-marginal and marginal agriculturists. However, middle and lower-middle groups were more dependent on income obtained from skilled and semi-skilled employment activities (Dey, Bezbaruah & Roy, 2013).

The economic return is a decisive factor in changing the rural economy's land use system. The significant impact of land conversion was observable in cash crop farming, such as rubber plantations, transitioning from a traditional farming system of paddy cultivation in plain land. Besides, land area under forests and wetlands decreased visibly (Pensuk& Shrestha, 2007). According to Kuki (2023), geographical factors are essential in determining rural households' livelihood. In hilly areas, households were pursuing traditional jhum cultivation owing to the scarcity of plain land to meet the necessities of foodgrains; however, low economic return pushed people to shift from traditional to permanent types of farming like plantation crops and horticultural crops, which had higher monetary values. Again, legal-based land ownership and market incentives for forest products and livestock farming could also significantly impact the lives and livelihood of rural households (Bandi, 2015). The finding of Narain, Sharma, Rai and Bhatia (2004) highlights that among the hilly states, Himachal Pradesh, Tripura and Arunachal Pradesh were better developed in agriculture, indicating the importance of the primary sector in the lives and livelihood support of the people; besides, the states of Mizoram and Manipur were found to be advanced in infrastructure and socio-economic developments as compared to other hilly states. Since development is a multidimensional approach, its impact must improve the population's living conditions. Here, the level of education plays a vital role in enlarging people's choices and accelerating the development process. However, there was no relation between agricultural development and socio-economic development in hilly states. The regional disparity could be addressed through a suitable planning policy for inclusive and balanced development (Rai, Sharma, Sahoo & Malhotra, 2008).

Many people have a significant influence on the sustainability of the regional economy. More pressure decreases the carrying capacity of natural resources on which households' livelihood depends (Barah & Neog, 2005). The choice of a household's livelihood strategy depends on how easily people can access resources and endowment of livelihood assets in their neighbourhood (Su & Shang, 2012). It could be obtained from different sources comprising farm sector and non-farm sector activities, giving a variety of procurement plans for food and cash. Meanwhile, each household could have different potential livelihood options composed of livelihood. The chance of livelihood failure determines the degree of vulnerability of a household to income generation, food production, healthy life and nutritional insecurity. Thus, livelihoods are secure when households own firm ownership of or access to resources and income-generating activities, which include reserves and assets, to manage risk and uncertainties, minimise shocks and counter unforeseen contingencies (Chambers, 1989). Thus, to manage the risk of livelihood failure, households have opted to change their livelihood practices, including adopting new technologies and crop cultivation along with new beliefs and value chain systems. Hence, traditional consensus on gender spaces in livelihood practices also experienced transformation (Goodrich, 2012). Household income is more secure by integrating multiple occupations like rubber cultivation, livestock farming and fishery (Viswanathan, 2012), and their productivity could be increased with adequate awareness and better technologies (Purushotham & Paani, 2016).

Now, livelihood strategies seem to be applying to everything, including livestock, fisheries, forestry, agriculture, health, and urban development and the process is becoming more centrally linked with development programming, monitoring and evaluation; at the same time, poverty reduction mechanisms (Scoones, 2009). Diversification of rural livelihood sources positively impacts seasonality, risks, employment creation, credit and asset accumulation. Thus, asset formation and livelihood diversification were purely social processes (Mishra, 2012). According to Ellis (1998), the strategy of livelihood diversification is the process through which households build a different collection of activities, and social support means for survival and improving their standard of living. He defines livelihood as encompassing income both in cash and kind, as well as social institutions, gender relations and property rights which can support and sustain a household living. The relationship between a household's economic diversification and sustainable livelihood strategies, as defined by Chambers and Conway (1992), is that a livelihood consists of the capabilities, assets (comprising both material and social resources) and activities needed for a means of survival. It becomes sustainable when it can deal with and rejuvenate from stress and shocks and sustain or enlarge its capabilities and assets while not deteriorating the natural

resource base for rural communities. Thus, rural livelihoods can be understood in terms of people's access to five types of capital assets such as natural capital, human capital, physical capital, financial capital and human capital (Su & Shang, 2012; Kuki & Bhowmik, 2022).

Against this backdrop, the current study examines and compares the livelihood assets endowment to all the North Eastern States, fundamentally based on the five livelihood capital assets.

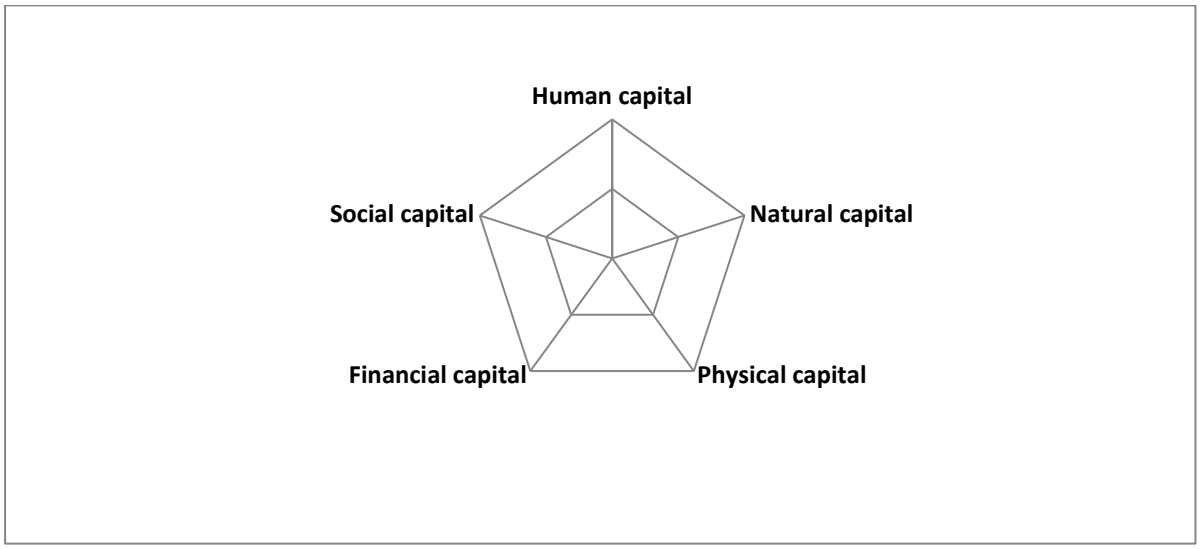
The rationale behind the present study is that the northeastern states are identical in geographical locations. Agriculture and allied sectors are crucial in ensuring people's livelihoods in this region. Since rural areas is a home to many. Hence, the primary sector provides considerable employment and acts as the most important source of income for households. Meanwhile, industrial development is taking place slowly, keeping many youths at bay from getting jobs in this sector. As a result, the unemployment rate in the region is always high. It should be remembered that the region could be used as a corridor to some of the South Asian Countries. The region borders with foreign nations such as Bangladesh, Myanmar, Bhutan, China and Nepal. Foreign trade looks promising to the region, but its impact on the regional economy has yet to be observed. Therefore, it becomes essential to examine and understand the livelihood assets base of all the northeastern states to have a common logic and identify the strength of livelihood assets in each state. The findings can become helpful in later stages of implementing and executing development policy in the region.

2. Materials and Methods

The present study is based on secondary data. The data were accessed and extracted from various sources such as the Periodic Labour Force Survey, National Statistical Office, Handbook Statistics on Indian States, Central Ground Water Board, Agricultural Statistics at a Glance, Economic Survey, AISHE, National Health Profile, Telecom Regulatory Authority of India, Labour and Employment Statistics, Reserve Bank of India and NABARD. The collected data were tabulated, processed and estimated to fulfil the study's objective.

For assessing the livelihood assets status in the northeastern region, the conceptual framework developed by Fazal, Vashishtha, and Sultana (2022) for examining livelihood sustainability has been employed, and minor and fundamental changes have been incorporated. The choice of five livelihood capitals was made in accordance with the procedures they followed, which included human capital, natural capital, physical capital, financial capital, and social capital. To normalise the scores, the formula of the United Nations Development Programme (2015) of Maximum-Minimum approach = (Actual-Minimum)/(Maximum-Minimum) is followed for all the states, separately. After calculation, the estimated value of indices ranges from 0 to 1, with higher values showing the greater strength of the livelihood capital assets. Thus, once indices values were calculated, the composite livelihood capital index (LCI) could be estimated with a simple average (Kumar, 1993), that is, LCI= (HCI+NCI+PCI+FCI+SCI)/5 (Kuki, Chouhan & Bhowmik, 2018; Kuki & Bhowmik, 2022). Also, the five livelihood capitals were ranked based on the index score.

Livelihood capitals framework



Thus, livelihood capitals are classified into the following approaches:

Figure 1. The relationship between various livelihood capitals

Human capital: Human assets represent a person's ability to follow different activities. It encompasses the level of skill, technical know-how, individual knowledge, and ability to undertake work and keep good health, which supports the households to continue different livelihood strategies to obtain their goals. In addition, it differs in the availability of mature physical labour in a family (including both male and female), attainment of education, leadership status, health condition and entrepreneurial skills (Kuki & Bhowmik, 2022).

Natural capital: Natural assets refer to households' access to land, mainly for cultivating food crops and cash crops from which essential resources flow that are utilised for earning livelihoods. Besides, it also relates to the availability of water, trees, and forest products, which can provide supplementary income to the household (Viswanathan, 2012).

Physical capital: Physical assets consist of critical infrastructures essential for making production capable of supporting livelihoods, such as roads, irrigation facilities, power, communication and other producer tools and equipment used directly to function more efficiently (Su & Shang, 2012).

Financial capital: Financial assets refer to goods with monetary value essential for enhancing livelihood approaches. It indicates household economic condition and is often used to finance the possession of household wealth. Besides, it also includes household earnings from on-farm or off-farm sources of income and access to loans from institutional and non-institutional sources (Kuki & Bhowmik, 2022).

Social capital: Social asset is the institutional support provided by the government departments in various forms such as training, tools and machinery, skill upgradation and extension services, social relations, NGOs, gender parity and access to information that are essential for pursuing their livelihoods (Viswanathan, 2012).

The livelihood index is constructed based on Table 1. The data on 54 indicators for the years 2022 and 2023 were considered in this estimation. Indicators common to all the northeastern states have been included in the present analysis of livelihood capital assets.

Table 1. Detailed of the livelihood assets and its component

Livelihood	Indicators	Sources
Human Capital	1. Labour force participation rate, 15 year& above 2. Worker force participation rate, 15 year& above	Periodic Labour Force Survey, 2022
	3. Total literacy in per cent 4. Female literacy in per cent 5. Sex ratio	National Statistical Office, 2022
	6. Natural Population Growth Rate 7. Total number of active workers	Handbook Statistics of Indian States, 2023
Natural Capital	8. Percentage of forest area 9. Net irrigated area 10. Net sown area 11. Cropping intensity 12. Yield of total foodgrains Kg/Ha 13. Tree cover in Sq Km 14. Area of total foodgrains in '000 15. Area of total fruits in '000 16. Area of total vegetables in '000	Handbook Statistics of Indian States, 2023
	17. Fallow land '000 Ha 18. Cultivable land in Ha	Land Use Statistics-At a Glance, 2021-2022
	19. Ground water resource (ham)	Central Ground Water Board, North Eastern Region, 2021
	20. Target for soil samples collection, Testing & Distribution of Soil Health Cards,	Agricultural Statistics at a Glance, 2022.
	21. Gross enrolment ratio (GER) up to XII (in per cent)	Economic Survey, 2022-2023

Physical Capital	22. Gross enrolment ratio (GER) in higher studies (18-23 yr) 23. Gender parity Index in higher education (18-23 yr)	AISHE Report 2021-22
	24. No. of health centres(PHCs+ SC+ CHC). 25. Institutional delivery	National Health Profile, 2022
	26. Length of Road in Km	Handbook of Statistics on Indian States, 2023
	27. Telecommunication density per cent	Telecom Regulatory Authority of India, 2022.
	28. Storage facility of food grains in MT 29. Cold storage capacity in MT	Agricultural Statistics at a Glance, 2022.
	30. Per capita availability of power Kilowatt-hour 31. Installed capacity of power in megawatt	Handbook of Statistics on Indian States, 2023.
	32. Children vaccination in per cent	National Health Profile, 2022
Financial Capital	33. Total number of job card workers	https://nreganarep.nic.in/netnrega/all_lvl
	34. Employment generated under Prime Minister's Employment Guarantee Programme (PMEGP) in person 35. Employment generated under MGNREGA in lakh	Labour and Employment Statistics, 2022
	36. Credit Deposit Ratio by commercial banks in per cent 37. Credit to agriculture by commercial banks in Crore 38. Industry financed by commercial banks in Crore 39. Credit by commercial banks in Crore 40. Personal loan by commercial banks in Crore	Handbook of Statistics on Indian States, 2023
	41. Value of output of crop in lakhs at constant price 42. Livestocks in lakhs 43. Non-timber forest products in lakhs 44. Forestry and Logging in lakhs 45. Fishing and Aquaculture in lakhs	National Statistical Office, 2023
Social Capital	46. Active Kissan Credit Card	Agricultural Statistics at a Glance, 2022
	47. Number of VOs/NGOs	NITI Aayog, 2024 https://ngodarpan.gov.in/
	48. Active NREGS job card holders in lakh	https://nreganarep.nic.in/netnrega/all_lvl
	49. Commercial Banks 50. Relief on Natural calamities in Lakhs	Handbook of Statistics on Indian States, 2023
	51. Subsidy in Crore	Reserve Bank of India, 2023
	52. PMJAY (health insurance card)	https://data.gov.in/resource/stateuts-wise-details-eligible-beneficiary-families-and-ayushman-cards-issued-under
	53. Job placed after training under Pt. Deen Dayal Upadhyaya-Grameen Kaushlya Yojana (DDU-GKY)	Labour and Employment Statistics, 2022
	54. Number of Farmer Producer's Organisation (FPOs)	National Bank for Agriculture and Rural Development, 2021.

3. Results and Discussion

Overview of the North East (NE) State's Economy

Development refers to obtaining persistent growth rates of incomes per capita to support a country in stepping up production at a higher rate than population growth. The aim is that economic benefits would either "trickle down" to the people in the form of jobs and other economic opportunities or improve essential conditions for the equal distribution of the economic and social benefits of growth (Kapila, 2022-23). The Gross State Domestic Product (GSDP) and per capita Net State Domestic Product (NSDP) were taken as indicators to give an idea of the overall NE state's economic performance, which was estimated with the Compound Annual Growth Rate (CAGR).

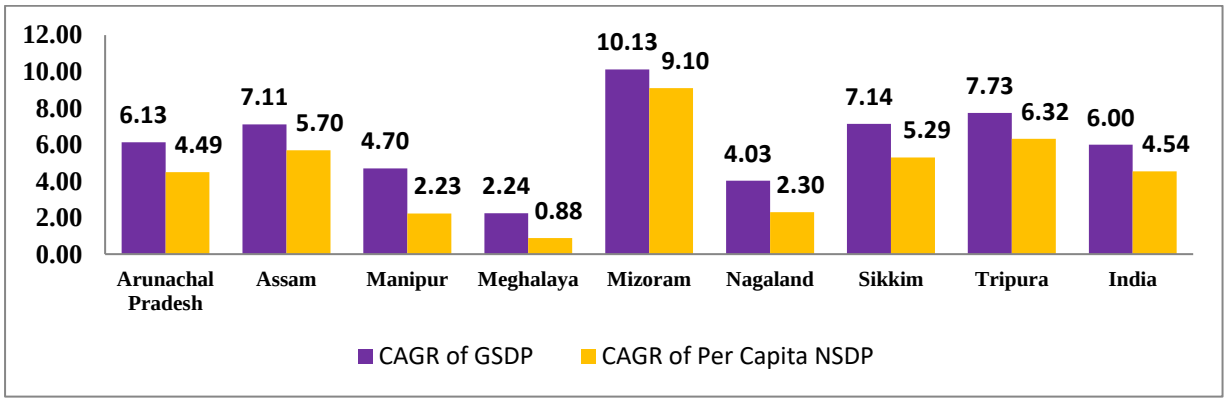
Fig.2 highlights that among the eight states, Mizoram's performance in GSDP (10.13) and per capita NSDP (9.10) were significantly at higher rates than other northeastern states, measuring at a constant price with the base year of 2011-2012, which is followed by Tripura. In contrast, the lowest performers were Meghalaya (GSDP is 2.24 and per capita NSDP is 0.88) and Nagaland (GSDP is 4.03 and per capita NSDP is 2.30). It is noteworthy that Sikkim state is performing even better than Arunachal Pradesh and Assam despite the region's smallest and most hilly state. Smaller states, in terms of geographical area, were experiencing higher growth rates in GSDP and per capita NSDP as compared to bigger states in the region. The states of Mizoram (10.13), Tripura (7.73), Sikkim (7.14), Assam (7.11) and Arunachal Pradesh (6.13) were performing higher than the national average of 6.00 in GSDP while Manipur (4.70), Nagaland (4.03) and Meghalaya (2.24) are achieving below the national average level. In terms of per capita NSDP, Mizoram (9.10), Tripura (6.32), Assam (5.70) and Sikkim (5.29) were above the national average (4.54) level, whereas Arunachal Pradesh (4.49), Nagaland (2.30), Manipur (2.23) and Meghalaya (0.88) achieved below the national average level.

Livelihood analysis

Table 2 shows the five-livelihood capital in the forms of index. In the case of Human Capital Index (HCI), the highest score was Meghalaya (0.682), followed by Sikkim (0.633) and Assam (0.592). It may be due to improvements in literacy rate, GSDP, health infrastructure, decreased unemployment rate, etc., in this state compared to the rest of NE states. However, among the eight NE states, the lowest HCI score was found in Arunachal Pradesh (0.326). On the other hand, the highest average score of Natural Capital Index (NCI) was seen in Assam (0.821), while it was lowest in Manipur (0.109). It is observed that the average score of NCI was found to be less than 0.3 in all the NE states except Assam. It may be due to higher forest cover areas, higher cropping intensity, expansion of irrigation area, increase in cultivable land, etc., in Assam compared to the rest of NE states.

Moreover, Assam (0.585) had the highest average score in Physical Capital Index (PCI), followed by Sikkim (0.580). It may be due to massive expenditure in these two states, which leads to growth in health, education, rail and road, telecommunication, etc. The lowest average score for PCI is seen in Nagaland (0.120). It may be due to poor health facilities, Gross Enrolment Ratio (GER) in higher education, road connectivity, etc. As per the Statistical Handbook of India 2023, the road under PMGSY in Assam was around 86 per cent higher than in Nagaland. In the case of several health centres (CHC, PHC and SC), around 60 per cent were in Assam out of the total health centres in the region. The region still needs to improve in terms of road, railway, and air connectivity, except in Assam. According to the report of

Figure 2. Compound Annual Growth Rate of GSDP and Per Capita NSDP (2011-12 to 2021-22)



Source: Computed from data extracted from state-wise SDP, Reserve Bank of India, 2023

Note: Figures in the bar chart are in percentages

basic road statistics of India, among the NE states, the lowest share of surface road to total road in Assam was 23.1 per cent in 2019, and the highest was in Sikkim (76.48 per cent) and Arunachal Pradesh (63.29 per cent). Regarding road density in NE region, Assam has the highest followed by Tripura and Nagaland. However, rural road connectivity in NE states is relatively better than in other parts of India.

In the case of Financial Capital Index (FCI), the highest average score is found in Assam (0.965). The financial capital index in Assam is far better than the rest of the NE states. This may be due to the improvement of Assam's financial infrastructure. For example, the credit deposit ratio of commercial banks in Assam increased from 37 per cent in 2010 to 53.88 per cent in 2023. On the other hand, credit facilities in the Agriculture and Industry sectors also experienced an increase in Assam. The rise in credit facilities by commercial banks induces an increase in investment in the state and generates employment opportunities and consumption. Meanwhile, the lowest average score of FCI is found in Sikkim (0.012). Regarding Social Capital Index (SCI), Assam (0.943) recorded the highest average score, while Sikkim (0.012) was at the bottom of the average score.

In this study, the ranking is done based on the richness of the composite livelihood capital index (LCI). The ranking shows that Assam was in the first rank with 0.781 composite LCI, followed by Meghalaya (0.312), Sikkim (0.275), Mizoram (0.265), Tripura (0.252), Manipur (0.231), Nagaland (0.230) and Arunachal Pradesh (0.226). Of the five livelihood assets, Assam enjoys a better position in terms of natural capital, physical capital, social capital and financial capital. These represent resilient livelihood strategies that would affect production and income, encourage more improvement in the people's standard of living, and develop a better quality of life. The availability of financial capital assets can be monetised to promote private investment and enhance livelihood diversification further, thereby reducing the chances of livelihood failure. However, the other seven states experienced lower scores for overall livelihood assets. Though Meghalaya became the second position in terms of livelihood capital score, the deficiency is apparent, which means slowing down economic growth and development in general and, particularly, affecting people's choices of livelihood approaches. Sikkim occupied the third position in the livelihood capital score. However, the social and financial capital scores were very low, suggesting that government and community involvement would have facilitated a better livelihood strategy. For Mizoram, the expansion and diversification of new social institutions and banking infrastructures would have a better impact on people's livelihood choices; besides, promoting scientific ways of utilising land use methods would have boosted the state economy. Tripura can use abundant natural resources to augment people's livelihood, and its financial resources must be utilised to promote economic activities to accelerate the state's gross domestic product. The state of Manipur should stress the utilisation and distribution of natural assets more while ensuring a government role in financial assistance to promote a sustainable livelihood base. Nagaland needs to focus on building social institutions that can facilitate various forms of assistance, training, skill improvement, and sharing information about earning a livelihood. Besides, government interventions in developing infrastructures would significantly impact people's lives and livelihoods. In the case of Arunachal Pradesh, the government needs to focus on human resource development and explore its vast natural resources to provide sustainable means of livelihood while reforming social institutions by providing more assistance to the people. Thus, most states are least endowed in terms of financial, social, natural, and physical capital, suggesting the need for state government's active role.

Table 2. Scores of the Livelihood Assets

State	HCI	NCI	PCI	SCI	FCI	Composite LCI	Rank
Assam	0.592	0.821	0.585	0.943	0.965	0.781	1
Arunachal Pradesh	0.326	0.258	0.278	0.097	0.171	0.226	8
Manipur	0.366	0.109	0.307	0.200	0.172	0.231	6
Meghalaya	0.682	0.261	0.271	0.194	0.149	0.312	2
Mizoram	0.520	0.232	0.353	0.098	0.120	0.265	4
Nagaland	0.534	0.275	0.120	0.078	0.146	0.230	7
Tripura	0.440	0.157	0.252	0.212	0.197	0.252	5
Sikkim	0.633	0.124	0.580	0.012	0.028	0.275	3

Source: Author’s own calculation from secondary data

Table 3 highlights the descriptive statistics of the livelihood capital index (LCI) in the selected states. It is seen that the standard deviation is highest in Sikkim (0.305), followed by Meghalaya (0.212). The minimum value of LCI is 0.012 for Sikkim, while the maximum value of LCI is 0.965 for Assam. At the same time, the highest sample variance is found in Sikkim (0.093), followed by Meghalaya (0.045), and the least was in Arunachal Pradesh (0.008). On the other hand, the highest range of LCI is seen in Sikkim (0.62), followed by Meghalaya (0.532), while a minimum range of LCI is recorded in Arunachal Pradesh (0.228).

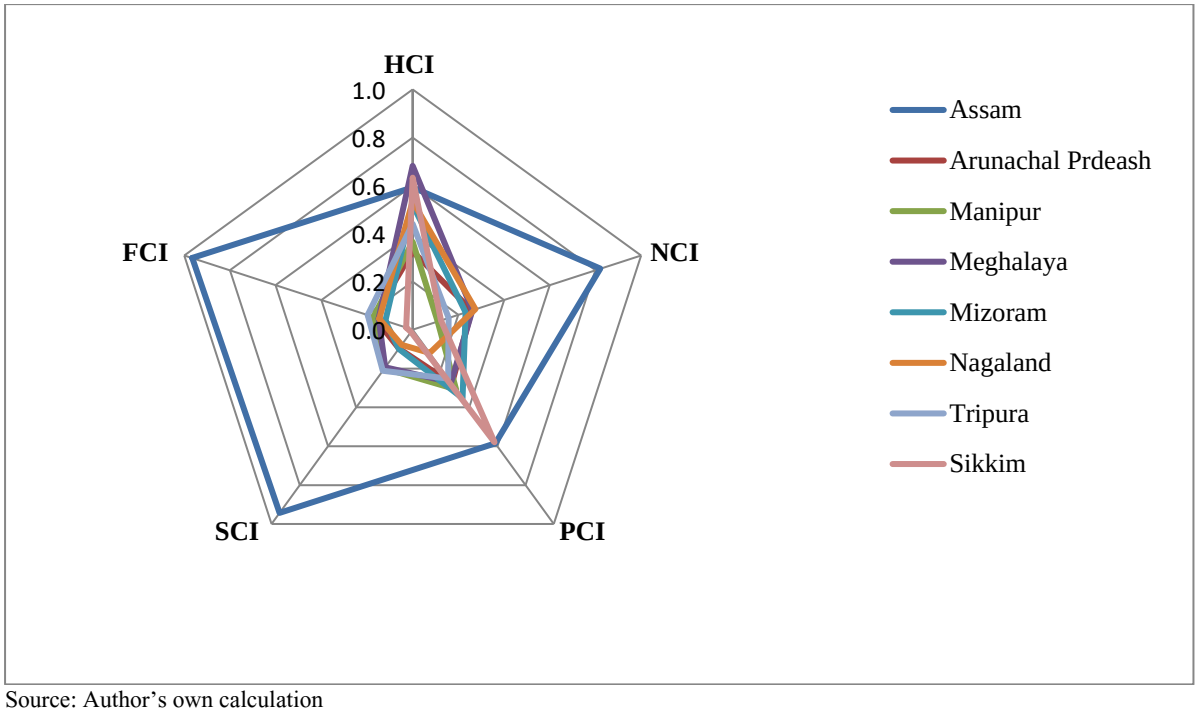
Table 3. Descriptive Statistics of the Livelihood Capital Index (LCI)

State	Standard Deviation	Sample Variance	Range	Min	Max
Assam	0.184	0.033	0.379	0.585	0.965
Arunachal Pradesh	0.091	0.008	0.228	0.097	0.326
Manipur	0.103	0.01	0.256	0.109	0.365
Meghalaya	0.212	0.045	0.532	0.148	0.681
Mizoram	0.175	0.03	0.422	0.098	0.52
Nagaland	0.184	0.034	0.455	0.077	0.533
Tripura	0.11	0.012	0.283	0.157	0.44
Sikkim	0.305	0.093	0.62	0.012	0.632

Source: Computed from various indices value

Figure 3 depicts the mean of the component of LCI in the eight northeastern states. It is seen that the spread out in Assam is more significant in terms of FCI, SCI and NCI than in the other states. However, in the case of PCI, the dispersion in Assam and Sikkim were same and much higher than other states. In terms of HCI, all eight states are nearly spreading out in same manner; however, the Meghalaya state is relatively higher. The dispersion of Arunachal Pradesh is very low in all the chosen indexes compared to the other states.

Figure 3. Mean of the components of the LCI



Source: Author's own calculation

4. Conclusion

A rural economy and agriculture predominate the eastern region of India, which is the lifeline of the people. Since its independence, this region has remained underdeveloped due to various causes, such as political instability, geographical conditions, natural problems, social issues, etc. The study clearly shows that the region is far from mainstream development compared to other parts of India. However, in the last decades, various changes have been observed across the region, improving different sectors in northeast India, particularly in health and sanitation, elementary and higher education, transport and communication, drinking water facilities, and public distribution systems, etc. The state economy performance shows Mizoram was the best performer, followed by Tripura in terms of GARG of GSDP and per capita NSDP. However, it needs to be reflected in the livelihood strategies. There was a large scale of inequalities among the northeastern states. This study categorises livelihood into five capitals: human, physical, financial, natural, and social. Regarding human capital, Meghalaya was better endowed with human resources, followed by Sikkim, while Arunachal Pradesh was the least endowed. Assam is better endowed with natural capital, physical capital, social capital and financial capital, and such observations were very much in the expected lines as the state owing to better communication and linkages than other states, facilitating better opportunities to enjoy more livelihood assets. Nonetheless, Manipur is the least endowed with natural capital, and the physical capital is Nagaland. Besides, Sikkim is the least performer in terms of social and financial capital. Of the eight northeastern states, Assam was better equipped in the livelihood capital index than other states, followed by Meghalaya and Sikkim. In contrast, based on ranking, Arunachal Pradesh and Nagaland were the least endowed with livelihood capital. This indicates that the livelihood opportunities in Assam are more integrated and developed. The low scores among other states may be due to government policies, poor infrastructures, and social characteristics that might have played crucial roles which have impeded the growth and development of livelihood capital assets.

The higher human capital components among the livelihood capitals should be utilised to make them more skilful in pursuing their livelihood strategies so that their yields and output increase, leading to a rise in income and social welfare. Therefore, future plans should focus on diversified approaches based on the strength of the livelihood capitals. Moreover, there is a need to integrate various state government departments that implement different government schemes and programmes to ensure the maximum possible output of the investment. The identified strength of the livelihood capital assets would help policymakers and planners design, rejuvenate, and develop the region through economic assistance, which may contribute significantly to the nation's growth and promote livelihood sustainability and the well-being of the people.

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