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Agricultural Infrastructure & Regional Disparity: A Case of North Eastern Region of India

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Abstract

Agriculture needs technology infusion to accelerate the production so that food is accessible to the common man. According to 'The State of Food and Agriculture 2013' of the Food and Agriculture Organization (FAO) of the United Nations, 12.5 percent of the world's population (868 million people) are undernourished in terms of energy intake. Of these people, 852 million were reported to be citizens of developing countries. According to the estimates of the Food and Agricultural Organization (FAO), agricultural production would need to grow globally by 70 per cent by 2050 and more specifically by almost 100 per cent in developing countries, to feed the growing population alone. Pace of technology infusion should be fast. The study found that malnutrition accounted for a loss of 5 per cent of the world Gross Domestic Product (GDP) by way of lost productivity and expenditure on treatment.

Agricultural infrastructure development in India has been a focal point for the government, aiming to enhance farm productivity, reduce post-harvest losses, and improve farmers' income. Several initiatives have been launched to address the existing infrastructure gaps and promote sustainable agricultural practices. Agriculture Infrastructure refers to the diverse systems and network of resources that are vital to produce, preserve, process, procure and trade agricultural products. Developed agricultural infrastructure ensures proper availability of agricultural inputs like seeds, water etc. This has increased agricultural production in India over the decades.

The North-East (NE) region of India, comprising eight states (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim), is rich in biodiversity and natural resources. Agriculture is the primary livelihood for a significant portion of the population. Despite its potential, agricultural infrastructure in the region remains underdeveloped due to various geographical, socio-political, and economic challenges.

Key Words : Infrastructure, Agricultural, N.E. Region, Farmers, Income

Introduction

Agriculture needs infrastructure infusion to accelerate the production so that food is accessible to the common man. According to Food and Agriculture Organization (FAO) 12.5 percent of the world's population (868 million people) undernourished in terms of energy intake. Estimates of the Food and Agricultural Organization (FAO), agricultural production would need to grow globally by 70 per cent by 2050 and more specifically by almost 100 per cent in developing countries to feed the growing population alone.

Our country has made progress in agriculture but productivity of our major agricultural and horticultural crops is very low in comparison to other countries. Our agriculture is still technology deficit. Yields per hectare of food grain, fruits and vegetables in our country are far the below global averages. Our rice yield is one-third of China's, and about half of Vietnam's and Indonesia's. Even India's most productive states lag global average.

India's population is expected to reach 1.5 billion by 2025, making food security most important social issue and food production will have to be increased considerably, to meet needs of growing population. Agriculture infrastructure plays a vital role at every single step in agriculture like supply of input, sowing of crops and the post-harvest management. India's export of agricultural and allied products has increased from Rs. 1,78,800 crores in 2011-12 to Rs. 2, 01,000 crore in 2022-23, registering a growth of nearly 11.0 per cent.

According to the FAO, India is still home to some 217 million undernourished people or a quarter of all undernourished people globally. There is an urgent need to embrace new technologies like biotechnology, nanotechnology, high-tech protected cultivation, and modern irrigation methods to accelerate agriculture production.

The objective of this study is

1. To evaluate the infrastructure that supporting agriculture development in Northeast India.
2. To analyze the regional disparity among the North Eastern states and compare it with the national average
3. To study the focus on construction of the Composite Agricultural Development Index (CADI), which takes into account four primary dimensions—Physical infrastructure, Social infrastructure, agriculture, and financial dimension—measures the existing and prospective growth of agriculture in the Northeastern Region.

Methodology

- Secondary data on numerous macroeconomic indicators for the recent years has been collected from different authenticated sources.

Constructing the Composite Agricultural Development Index (CADI)

- The CADI constructs a dimension index d_i is calculated for i^{th} dimension.
- For those dimensions which incorporate more than one indicator, each indicator is normalized using the formula (1) and the dimension index is computed as simple weighted average, giving equal weights to each indicator. . In an 'n' dimensional cartesian space, the economy i will be represented by a point D_i = (d_1, d_2, d_3, ….d_n), higher value of dimension index will indicate higher achievement in that respective dimension. While point O= (0,0,0….0) represent the worst situation, point I= (1,1,1,….,1) will be the highest achievement in all included dimensions. Normalization ensures that $0 \leq di \leq 1$.

For positive indicator: $d_i = \frac{A_i - m_i}{M_i - m_i}$ ----------(1)

For Negative indicator: $d_i = \frac{M_i - A_i}{M_i - m_i}$ ----------(2)

where, Ai = Actual value of dimension i, mi = minimum value of dimension i , Mi = maximum value of dimension i

The Composite Agricultural Development Index (CADI) for i^{th} economy is computed by the following formula, presenting normalized inverse Euclidean distance of point D_i from the ideal point I = (1,1,1….,1), then taking inverse normalized distance**.**

The analysis develops a multidimensional Composite Agricultural Development Index (CADI) based on previous empirical studies, incorporating four dimensions: Physical, Social, Agriculture, Financial infrastructure by considering both input and output indicators existing and prospective growth of agriculture in the Northeastern Region.

1. Dimension of Physical infrastructure:
   - ✓ Per capita availability of power ((kilowatt-hour),
   - ✓ Length of the road per 1000 sq km,
   - ✓ Railway route (kms) per 1000 sq. km.
2. Dimension of Social infrastructure :
   - ✓ Poverty rate (%) in 2011,
   - ✓ Literacy Rate (%) in 2011,
   - ✓ No of schools per 1000 children (2021-22),
   - ✓ Multidimensional poverty index(2023)

3. Dimension of Agriculture:

- ✓ Net sown area to geographical area (%),
- ✓ Argil. land to Geographical area (%),
- ✓ Net sown area to Agricultural land (%),
- ✓ Net irrigated area to net sown area (%),
- ✓ Cropping intensity(%) 2020-21
- ✓ Agricultural GSDP(Rs.) per capita, 2022-23
- ✓ Monthly income of Agricultural household (Rs.) in 2019

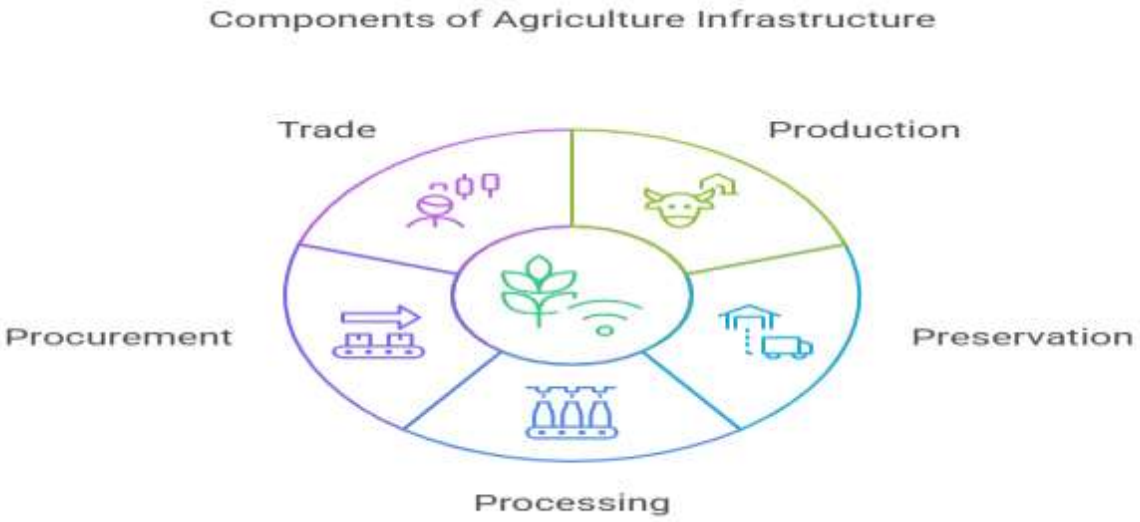
4. Dimension of Financial inclusion:

- ✓ No of Banking accounts per 1000 person,
- ✓ No of RRBs , SCBs, PCAS, ATMs per 10,000 person.
- ✓ No of RRBs, SCBs, PACS, ATMs per 1000 sq km,
- ✓ SCBs & RRBs credit per capita, SCBs & RRBs deposits per capita,

Credit to Deposit ratios of SCBs & RRBs

What is agriculture infrastructure?

Agriculture Infrastructure refers to the diverse systems and network of resources that are vital to produce, preserve, process, procure and trade agricultural products.



Advantages of agricultural infrastructure

1. Increase of the agricultural productivity- Developed agricultural infrastructure ensures proper availability of agricultural inputs like seeds, water etc. This has increased agricultural production in India over the decades. The area and production of major crops during 1950-51 and 2022-23 is presented in Table-1

Table 1. Area and production of major crops during 1950-51 and 2022-23

	Area (million hectares)			Production (million tonnes)		
	1950-51	2022-23*	Times increase	1950-51	2022-23*	Times increase
Foodgrains	97.32	132.2	1.36	50.82	330.53	6.50
Cereals	77.42	103.07	1.33	42.41	303	7.14
Rice	30.81	47.66	1.55	20.58	135.54	6.59
Wheat	9.75	31.82	3.26	6.46	112.74	17.45
Coarse cereals/Millets	37.67	23.58	0.63	15.38	55.95	3.64
Pulses	19.09	29.13	1.53	8.41	27.5	3.27
Oilseeds	10.73	30.09	2.80	5.16	40.99	7.94

Source-Yojana

2. Reduction of post-harvest losses- The construction of basic post-harvest agriculture infrastructures like storage houses, pack houses, proper supply chain etc. reduce the post-harvest losses.

3. Increase in farmers Income- Agricultural marketing infrastructures like APMC, e-NAM help in better price realisation of farmer's produce. Table -2 present the challenges of agriculture infrastructure in India and what have been the various government initiatives have been carried out.

Table -2 :What are the challenges of agriculture infrastructure in India and what have been the various government initiative

Agri Process/Inputs	Infrastructural Challenges	Government Initiatives
Seed	Availability and affordability of quality certified seeds	Establishment of 'Community seed Banks'. Push to create the infrastructure for seed storage and distribution through the Seed Act and PPVFR Act.
Fertilisers	Production, storage, distribution and disproportionate use of fertilisers.	'New Urea Policy 2015'– Aims to increase indigenous urea production. Soil Health Card and Neem coated Urea– To promote the proportionate use of Urea. DBT through PoS Machines- The infrastructure is to stop fertiliser subsidy leakages.
Irrigation	53% area is rain fed and there is acute shortage of irrigation infrastructure.	Pradhan Mantri Krishi Sinchai Yojana (PMKSY) & Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)– Asset creation for irrigation. Interlinking of Rivers– Ex-Ken-Betwa interlinking Rain water Harvesting, Participatory Irrigation Management- Govt has been creating the infrastructure to improve water use efficiency for agriculture.
Agricultural credit	Lack of access to credit due to less banks and credit lending institutions in rural areas.	Lead Bank Scheme and Service area approach– To increase the presence of banking infrastructure in rural areas. Promotion of Micro-finance institutions (MFIs)- Micro-finance institutions have been promoted to provide improved access to credit infrastructure.

Agricultural Storage	Poor farm Storage facilities Concentration of cold storages in few states(CAG- 64% in Punjab, Haryana,UP) Shortage of ripening Chambers, pack houses and cold storages. More than 30% of the produce from farm gate is lost due to inadequate cold chain infrastructure.	Agriculture Infrastructure Fund- It was launched in 2020 to create required pre and post-harvest management infrastructures in the agriculture sector. Mission for Integrated Development of Horticulture (MIDH)- Post-Harvest Management Infrastructure including cold storage, cold room facilities for horticultural produce. Negotiable Warehouse Receipts (NWRs)- Farmers can seek loans from banks against the warehouse receipts issued to them against their storage.
Agricultural Marketing	Issues with the infrastructure of APMC like lack of assaying & grading facilities, increased cost of transportation to get the crops to Mandis, less space in APMC Mandi for sale of crops.	Electronic National Agricultural Market (E-NAM)- Pan India electronic trading platform which aims to create a seamless, unified national market for agricultural produce. Model Agricultural Produce and Livestock Marketing (APLM) Act 2017- Setting up private wholesale market yards. Reduce the area covered by APMC mandi from 462 sq.km to 280 sq.km to reduce the cost of transportation.
E-Tech for Agricultural Extension	Lack of proper infrastructure for adoption of E-tech in agriculture.	m-KISAN portal, Meghdoot App- These E-tech infrastructures have been created to increase the agricultural production.

What Should be the way forward to further improve agriculture Infrastructure in India?

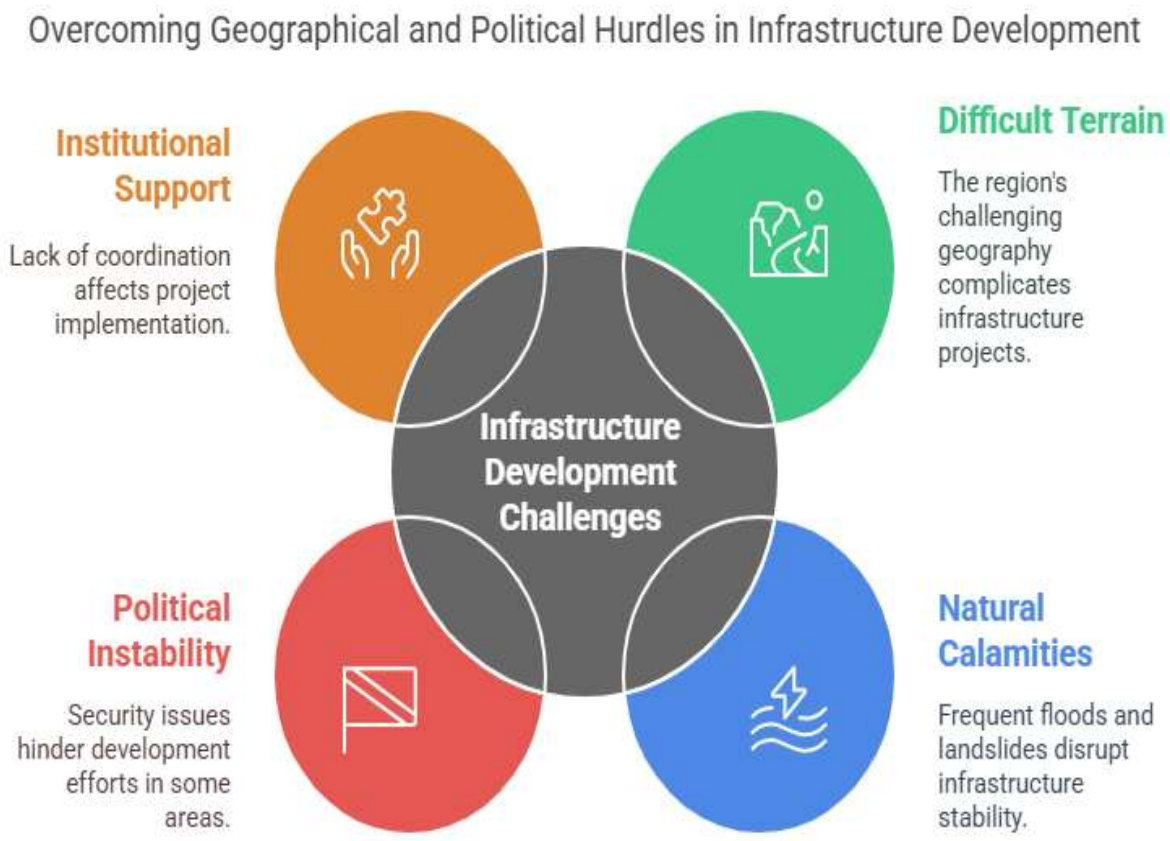
Increase the private sector investment in Agri-Infra- Ashok Dalwai Committee has suggested treating 'agriculture as an enterprise'. Thus efforts must be taken to catalyse private investments through contract farming, agricultural marketing. This will help in development of world class infrastructure.

Improvement of Agri-futures markets- China and US have properly developed Agri-futures markets which has helped in improvement of their agricultural infrastructure. The deepening of Agri-markets in India would yield the same result.

Implementation of Shanta kumar Committee Recommendations- Improving the private sector involvement in Building Silos, development of Dedicated freight corridors and multi-modal logistics park are some of the recommendations of Shantakumar committee to improve

the transport and marketing infrastructure of agri-produce. . Figure -1 indicate the overcoming geographical and political hurdles in infrastructure development. It is observed that lack of coordination among the implementation agencies is the major hurdle in the implementation on the agriculture infrastructure development projects. Natural calamity, political instability and difficult terrain are the major hurdles in the agriculture infrastructure development.

Fig-1



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Early completion of Bharat Net Project and impartation of digital literacy to farmers- The future of agriculture depends upon the robust digital infrastructure. E-Tech projects like Kisan Suvidha App, Meghdoot App can spur development, growth, equity and sustainability of agriculture sector.

Government initiative in Agriculture Infrastructure Development

A. Fertiliser subsidies by the Government of India have incentivised farmers to apply larger amounts of fertilisers. The recommended ratio of fertiliser application (N:P:K) is 3:2:1. However, farmers apply more nitrogenous fertilisers than the ratio warrants. One of the reasons may be that nitrogenous fertilisers are highly subsidised. To incentivise farmers to go for application of fertilisers more in keeping with recommended proportions, a nutrientbased subsidy scheme was introduced in 2010 and further revised in May 2023. Neem-coated urea was introduced to reduce wastage and diversion of the subsidised product to non-agricultural sectors. Further, the Soil Health Card will help farmers apply the required quantity of fertilisers. The Government is also encouraging farmers to use nano urea for a more sustainable and judicious application of fertilisers.

B. **Irrigation** Potential has been created since Independence. Programmes such as the Command Area Development Programme (started in 1974-75) and the Accelerated Irrigation Benefit Programme (1997) have played a great role in providing water to the parched fields of India. As a result, the net irrigated area reached 53% in 2019-20 from 17.55% in 1950-51. As per the 2010 census, groundwater irrigation has a share of 63% in total irrigation in terms of area. However, groundwater provided water security for agricultural growth where canal irrigation was not possible; overexploitation has an adverse impact on sustainability, particularly in the case of water-intensive crops like paddy and sugarcane in Punjab, Haryana, Karnataka, Maharashtra, and Tamil Nadu. To promote more sustainable and judicious use of water for irrigation, the Government of India is implementing a drip and sprinkler irrigation programme called 'More Crop Per Drop' under the Pradhan Mantri Krishi Sinchayee Yojana from 2015-16. Further, crop diversification is also being promoted.

C. Price policy and Market: The Government of India fixes Minimum Support Prices (MSP) for 23 commodities in accordance with the recommendations of the Commission for Agricultural Costs and Prices (which came into existence in January 1965) each year, before the sowing season. Assurance of a remunerative and stable price environment is considered very important for increasing agricultural production and productivity since prices often fluctuate in the market. The food grain procurement MSP, Fertiliser consumption (Million tonnes) 0.698 29.796 42.68 per ha fertiliser in kg 0.53 140.97 265.98 54 October 2023 rice and wheat has provided protection to farmers against price volatility. Pulses and Oilseeds are also being procured at MSP under the Price Support Scheme. To provide more flexibility, Price-Deficient Payment method is also being implemented. Under the Agricultural Produce Market Committee Act, in most of the States, the agricultural markets have long been regulated, and traders are allowed to buy from the farmers at the market yard. With the availability of IT technology, the National Agricultural Market (e-NAM) was launched on 14 April 2016. e-NAM is a digital platform integrating 1260 APMC mandis across 22 States and 3 UTs to facilitate online trading of 203 agricultural and

horticultural commodities to enable farmers to realise more remunerative prices for their produce. e-NAM is catalysing the digital transformation of mandi operations and the e- trading of agricultural commodities.

C. **Digital Public Infrastructure** (, Agristack and Digital Public Infrastructure (i.e., Agristack and Krishi Decision Support System) is being built by using space technology and other modern technologies, such as Artificial Intelligence and Machine Learning, to provide inclusive and farmer-centric solutions. This will help farmers and other stakeholders in the areas of crop planning and health, improved access to farm inputs, credit and insurance, crop estimation, market intelligence, and support for the growth of Agri-Tech industry and startups. As agriculture is highly dependent on weather, there are challenges to sustain food production and make agriculture more resilient to climate change, particularly in rainfed areas. Anticipating the challenges, the Government has been implementing schemes such as the National Mission for Sustainable Agriculture (NMSA) and National Innovations in Climate Resilient Agriculture (NICRA) to cope with biotic and abiotic stress. Decades of backbreaking work by farmers have transformed Indian agriculture since Independence from a traditional low-production food-deficit sector to a modern surplus food-producing sector. However, domestic production of certain commodities such as pulses and oilseeds cannot meet the growing demand and, as a result, there have been significant imports to meet the shortfall. The success of Indian agriculture has also invited new challenges. Over-reliance on groundwater irrigation for water intensive crops has depleted groundwater resources in certain regions. As Indian agriculture is still highly dependent on monsoon, climate change may pose many challenges for sustaining future agricultural production.

Therefore, India needs to adopt technological solutions, including digital technology, to sustain farm production and overcome the challenges it faces. India needs to brace itself for the challenges ahead, particularly sustaining the level of production in the traditional areas and adapting to climate change. With the application of technology that is more advanced and favourable government policy, the agricultural sector bids fair to surge ahead, vastly strengthened, modern, and more resilient to the vagaries of nature.

Northeast India has the potential to become a powerhouse of agricultural productivity. However, despite its natural advantages, the region's agricultural development has been constrained by various challenges, one of the most significant being the lack of adequate infrastructure. The role of infrastructure—comprising transportation networks, irrigation systems, market linkages, and technological access—cannot be overstated in driving agricultural growth. In fact, infrastructure is a key determinant in enhancing agricultural productivity, improving farmers' livelihoods, and ensuring food security in the region.

The Table-1.02 will present Dimension of Physical Infrastructure of N.E. states

Table 1.022: Dimension of Physical Infrastructure as on the year 2024

Particulars	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India	NER
Per capita availability of power ((kilowatt-hour)	644.3	366.4	375.2	752.7	622.8	448.2	**936.4**	421.5	**1221**	571
Length of the road per 1000 sq km	660	**5088**	1451	1795	771	2284	1717	4303	1652	2435
Railway route (kms)	12 (0.41)	2571 (88.75)	13 (0.45)	9 (0.31)	2 (0.07)	25 (0.86)	-	265 (9.15)	68043	2897 (4.26)
Railway route (kms) per 1000 sq km	0.005	1.131	0.020	0.014	0.003	0.052	0.000	0.872	0.881	0.381
Physical Dimension -D1	0.164	**0.667**	0.071	0.315	0.159	0.185	**0.413**	**0.563**	**0.834**	**0.366**

Source : Statistical Hand Book of different States

Table 1,03 indicated Dimension of Social Infrastructure in N.E. States

Table 1.03 : Dimension of Social Infrastructure in N.E. States

State/Union Territory	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	ALL INDIA	NER
Poverty rate (%) in 2011	34.70	32.00	36.90	11.90	20.40	18.90	8.20	14.10	21.90	22.14
Literacy Rate Per cent in 2011	65.39	72.19	79.20	74.43	**91.33**	79.60	81.42	87.22	72.99	77.65
No of schools per 1000 children	9.30	7.47	6.24	30.69	11.83	8.66	11.65	5.68	4.45	8.49
Multidimensional poverty index(2023)	13.76	19.35	8.10	27.79	5.30	15.43	2.60	13.11	14.96	13.18
Social Dimension-2	0.205	0.221	0.346	0.555	0.687	0.457	**0.723**	0.566	0.331	**0.430**

Note: Poverty rate (%) & MDPI considered as negative indicators. MDPI(11) - Nutrition, Child & Adolescent Mortality, Maternal Health, Years of Schooling, School Attendance, cooking fuel, sanitation, drinking water, Housing Electricity, Assets, Banking accounts

The agriculture situation in N.E. Region is presented in Table 1.04

Table 1.04: The agriculture situation in N.E. Region

Particulars	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India	NER

Percent of net sown area to geographical area (%)	2.89	34.73	18.36	11.28	6.88	23.28	10.85	24.32	43.06	17.13
Agril land to Geographical area (%)	5.06	42.1	20.29	45.16	17.46	41.86	13.67	25.84	55.08	25.26
Net sown area to Agril. land (%)	57.08	82.5	90.51	24.98	39.4	55.62	79.38	94.1	78.17	67.83
Percent of net irrigated area to net sown area (%)	25.62	15.82	16.83	**41.9**	11.03	31.61	18.18	**35.29**	54.92	20.26
Cropping intensity(%) 2020-21	135.7	142.8	100	122.2	142.5	137.7	181.9	**190.8**	152.7	144.2
Agricultural GSDP per capita Rs.2022-23	11101	12137	19111	11961	7115	10845	7134	17953	19684	12442
Monthly income of Agricultural household (Rs.) in 2019	19225	10675	11227	29348	17964	9877	12447	9918	10218	15085.13

Some important Argil. Parameters are presented in Table 1.05

Table 1.05: Some important Argil. Parameters

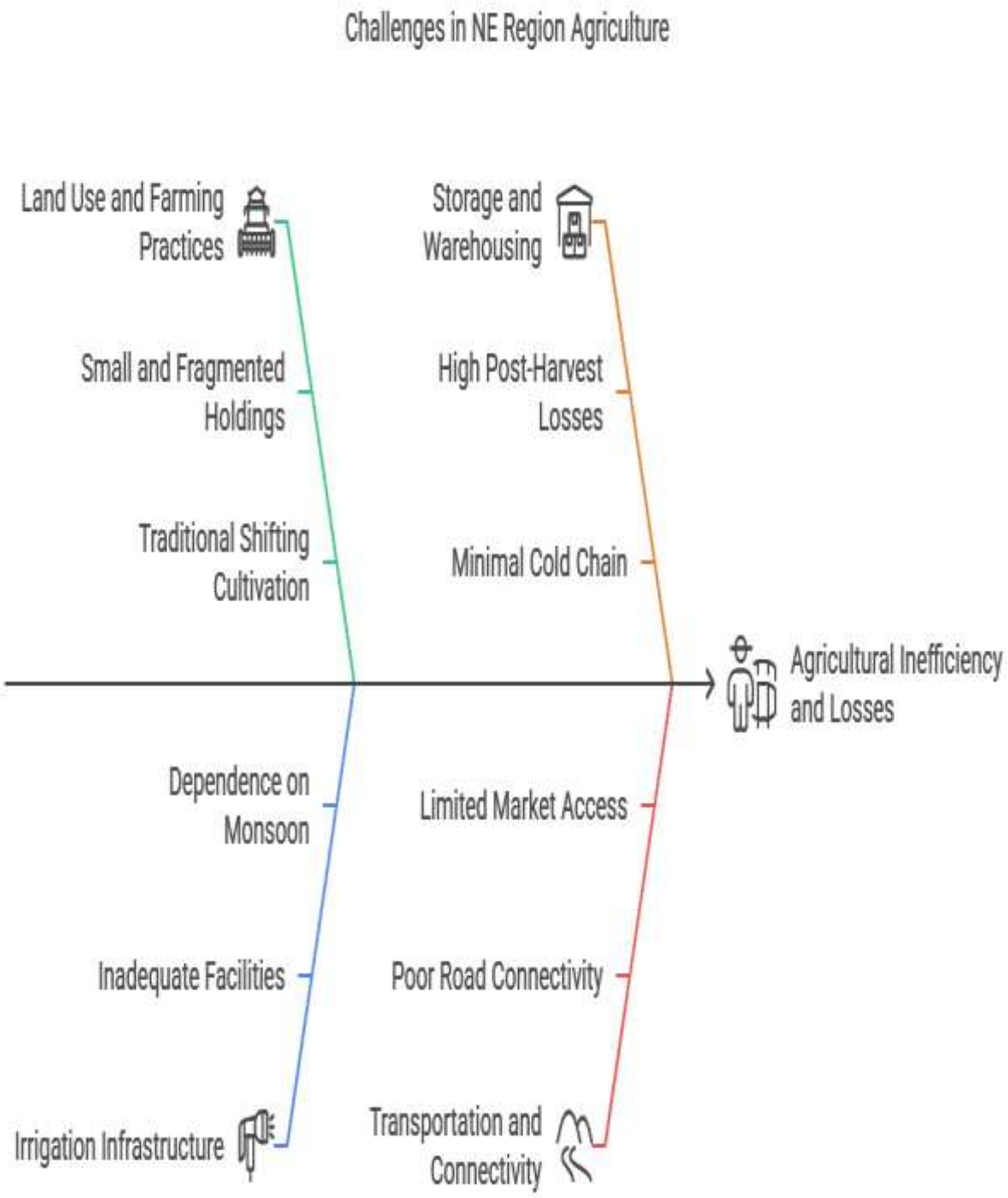
State/Union Territory	Regulated Markets (APMCs)	APMCs registered in e-NAM	Soil health card issued to farmers	Nos. of Farmers insured their crops	No of operative KCC c
Arunachal Pradesh	13	-	10039	0	11,485
Assam	**226**	3(1.33)	**380708**	**6,26,114**	**7,06,48**5
Manipur	-	-	35581	4,143	18,966
Meghalaya	2	-	**62550**	743	74,356
Mizoram	-	-	4366	0	43,012
Nagaland	19	19(100)	32014	0	31,062
Sikkim	-	-	16419	971	8,761
Tripura	**21**	7(33.33)	42504	**1,39,357**	**1,73,122**
ALL INDIA	**7085**	**1389(19.60)**	**3,32,66,056**	**69,234,743**	**7,45,00,000**
NER	**281**	**29(10.32)**	**5,84,182**	**7,71,329**	**10,67,248**
NER to All India (%)	3.97	2.09	1.76	1.11	1.43

Table 1.06: Dimension of Financial Inclusion

Particulars	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India	NER
No of Banking accounts per 1000 person	748	850	634	678	828	538	1146	1204	1186	841
RRBs per 10,000 person	0.09	0.10	0.07	0.22	0.37	0.04	_	0.21	0.16	0.11
SCB per 10,000 person	0.53	0.63	0.66	0.88	0.82	0.60	0.39	0.84	1.13	0.65
PCAS per 10000 population	3.66	2.27	31.31	7.32	4.58	25.13	8.89	4.34	5.86	5.53

ATMs per 10,000 person	0.90	1.00	1.05	1.11	0.65	1.10	0.57	0.90	1.82	0.97
RRBs per 1000 sq km	0.39	6.09	1.21	4.19	4.93	0.72	_	14.50	6.79	3.43
SCB per 1000 sq km	2.23	39.33	10.75	16.67	10.77	11.58	23.68	58.46	48.26	19.40
PACS per 1000 sq km	15.34	142.46	513.10	139.42	60.39	483.74	535.79	300.97	250.29	165.13
ATMs per 1000 sq km	3.77	63.18	17.29	21.18	8.63	21.23	34.53	62.56	77.86	28.87
SCBs credit per capita	21382	22786	30915	27810	24993	24457	13764	19961	101060	22769
RRBs credit per capita	1045	1206	915	2536	10380	166	-	4458	2987	1777
Deposits per capita in RRBs	3573	2512	1148	8392	17863	423	0	11028	4250	3930
SCBs deposits per capita	75892	42037	40583	73249	52768	48818	31701	46898	133406	45735
CD ratios of SCBs	28.2	54.2	76.2	38	47.4	50.1	43.4	42.6	75.8	50.7
CD ratios of RRBS	29.2	48	79.6	30.2	58.1	38.8	-	40.4	70.3	49.3

Fig-2 discuss issues relating to infrastructure development in N.E. region which include small and fragmented land holding, Poor land use pattern, post harvest loss, poor post harvest management facilities, dependence on monsoon and poor road connectivity.



Policy measures

The coherence between the anticipated change and existing policies, regulations, and guidelines of PPP in agriculture determines the path of its progression. Ease of doing (research/ business) should be the core philosophy

in the implementation of projects. Over the years, several issues have been raised by different players in objectively furthering the partnerships. This calls for the attention for change in existing policies, guidelines, and regulations. Some of the critical changes required are given below:

1. **Product Takeoff**: Customised multiple product launching (fertilisers, seed, nutrition) is a challenge due to the lengthy process for approval. Hence the approval process has to be eased with strict compliance from manufacturers – imposing heavy penalties in case of violation. ICAR has to facilitate importing of strains through its referral labs from SAARC and other countries to reduce the time gap in the product launch. Also, ICAR has to collaborate with private industries in product development and the popularisation of the same.

2**. Granting Exclusivity**: Regulatory streamlining by providing exclusivity to industries, case to case, for effectively nurturing PPPs. Private sectors have better containment facilities, and they can compete with international markets, provided policy changes for importing strains are modified.

3. Time Delays: Import policies and regulations are time-consuming and thus delay the manufacturing schedules, needing changes in the rules in tune with changes adopted regarding COVID.

4. More autonomy to Agri Incubation Centres of ICAR: ABIs are project-based activities and lack flexibility in attracting private funds to support start-ups, unlike other similar programmers of DBT/DST etc. So there is a need to change the existing guidelines.

Conclusion

- The Northeastern Region (NER) in India faces significant disparities in agricultural growth and infrastructure development compared to the national average.
- The NER has a power infrastructure deficit (64% less) than the national average, which poses a significant challenge to agriculture.
- The NER has better road density than the national average, but the railway infrastructure is still underdeveloped.
- Higher literacy rates contribute to better agricultural knowledge and implementation, while lower literacy rates in states like Arunachal Pradesh may inhibit agricultural advancements.
- Regional disparities exist, with some states like Tripura performing better in terms of agricultural growth, while others like Assam and Nagaland show moderate to high development but still have room for improvement.
- Agriculture's contribution to GDP is crucial for the region's economic growth.

- NER lags significantly in financial inclusion and services. However, states like Tripura, Meghalaya, and Mizoram show progress in banking services and credit availability. Nagaland, Arunachal Pradesh and Sikkim financially excluded.

- The study emphasizes the need for targeted policies to improve infrastructure, education, and financial services in the NER to boost agricultural growth. Tailored strategies are also needed to address the specific needs and challenges of each state

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