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MINI REVIEW

Prospects of Value Chain Development in Agriculture and Allied Sectors in North East India: A Mini-review

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Abstract

The North Eastern Region (NER) of India is one of the most biodiverse zones globally, with diverse flora and fauna adding to its rich natural resource base. The region is inhabited by numerous tribes and communities, making the region socio-culturally rich and diverse. The NER has been predominantly agrarian and practices subsistence farming with a vast majority of its workforce dependent on agriculture and allied activities for livelihoods. Activities like livestock farming, fisheries, forestry and sericulture, and others allied to agriculture have traditionally been an integral part of the culture, habit, and livelihoods of the people in the NER of India. While the region is blessed with abundant natural resources, these have not been explored to the fullest potential to promote sustainable development. Yet, there are many opportunities for sustainably exploring the existing resources, especially by facilitating the value chain development in some promising sectors. This mini-review attempts to reflect on such opportunities based on the recent observations and several of the studies conducted in this domain.

Keywords: *Livelihoods, Value chain development, North Eastern Region (NER)*

1. Introduction

The rich natural resources, changing consumption patterns, the prevalent supply-demand gap, and the potential for export offer a big avenue for agribusiness projects in the NER dealing with production, processing, and agro-allied services considering input market. Production and processing ventures may include projects in the areas of poultry farming and hatchery, pig and piglet, dairy farming, fish, floriculture, medicinal and aromatic plants, fruits, spices, etc. The agro-allied service ventures may include agro-eco tourism or farm tourism, infrastructure services, agricultural trade, and others. Further, agricultural input ventures may include farm tools/ implements manufacturing and supply(1). Nevertheless, several agricultural and allied sectors of NER offers tremendous potential in terms of value chain development, which are briefly summarized below.

2. Horticulture

The horticultural sector in NER plays a pivotal role towards sustainable rural livelihoods in all farming systems in general and in the rain fed and hilly farming systems in particular(2). It has been considered as the sunrise sector of NER. Every state in the region offers limitless opportunities for the growth and development of the sector(3). The central government has encouraged the development of the sector through various schemes including the Mission for Integrated Development of Horticulture, covering fruits, vegetables, root and tuber crops, spices, bamboo, etc.(4). Notably, projections concerning the production of fruits and vegetables show that there will be a surplus of 52.44 percent of fruits and 15.39 percent of vegetables by 2030. Such projections reveal the prospect for developing value chains(s) centered around value-added products and the export potential of the fruits and vegetables in the region. While efforts are being made at different scales to develop the value chain of horticultural commodities, consumer-centric value addition activities are likely to create a greater value and a big market for NER. For example, marketing and branding efforts by smallholders' collectives of perishable horticultural commodities such as fruits, vegetables, etc., are likely to help them move up the value chain and offer bargaining power, as found in the case of

green tea leaves(5). Further, the involvement of smallholders in processing and marketing activities, as observed in the case of tea, would help improve their income(6). Yet another example is the kiwifruit production in the state of Arunachal Pradesh. Production and processing of kiwifruit to produce kiwi wine is leading to the emergence of the kiwifruit-based value chain development in the state, generating greater value for the farmers as well as the entrepreneurs involved in its processing(7). Remarkably, the NER offers a great prospect for value chain development of low volume high-value crops such as ginger and turmeric owed to its favorable geographical conditions. The adoption of technology, post-harvest handling, and storage of spices offers great opportunities in this area(8). However, there exist several challenges that hinder the value chain development of such products. For example, discussing in the context of the large cardamom value chain, a study highlighted the primary concern of losses incurred at farmers' fields and during the marketing of the products(9). Hence, opportunities such as opening market yards and establishing storage with training opportunities to youth would help in livelihood and income generation of not only the producers but also to other unemployed youths. Such findings also necessitate research and development to reduce the losses through the intervention of scientific storage as well as training of the farmers on the packaging of the produce. In yet another study concerning the value chain development of turmeric, it was found that the processed (powder) and semi-processed (slice/flakes) of turmeric earned good returns(10). Although the powder turmeric was made and sold by a few turmeric growers across the states, establishment of slice/flakes maker, dryers, grinder, storage for rhizome, and packing machines are the need of the hour in the region to enhance their due share in the consumers' price of turmeric and its by-products. The above-mentioned examples, though a few,certainly throw light on some of the challenges and the related opportunities in the area of value chain development in the NER.

3. Livestock and Allied Activities

Livestock and its allied activities are yet another area that offers immense potential for value chain development in the NER. However, several bottlenecks need to be removed before harnessing the potential of this subsector. For instance, a study in Nagaland, where per capita consumption of meat and pork is the highest in India, found that the structure of the pig value chain is dominated by smallholder farms, traditional outdated technology, unorganized input services, lack of infrastructure, and absence of marketing channels. To make the pig value chain competitive, there is an urgent need to revamp the pig production technology, strengthen the marketing infrastructure including slaughterhouses, and increase credit flow in the pig sector(11). Remarkably, most of the states in the NER depend on inter-state trade in livestock and poultry to meet the regional demand. The region has a deficit in all the three components of animal proteins, i.e., milk (41.54%), meat (54%), and eggs (87.31%). The annual production of meat, milk, and eggs is recorded as 8,114.45 thousand MT, 1,454.17 thousand MT, and 11,356.90 lakh, respectively. While the ever-increasing demand for livestock products is a big challenge, it is an opportunity to develop the livestock and poultry sector in the region(12). In the context of fish, the consumption of fish (including dry fish) is very high in the NER. However, there is a significant gap in the demand and supply of fish in the region(13). There is a tremendous potential for upgrading and developing the value chain for fish (including dry fish). The organization of capacity development program on fish production (inland and freshwater pisciculture), marketing, and value addition through training the youth and providing the successful trainees with financial support to initiate fish production could facilitate the development of the fish value chain [4]. Discussing in the context of dry fish, a study highlighted the need for financial support for small-scale enterprises involved in the value chain of dry fish such as fermentation, smoking, and other value-addition activities in NER, which may help in enhancing the income and employment opportunities, particularly for women [13]. Yet another study conducted in Manipur found that the processors of smoked fish earned INR 17,276.54/quintal, excluding the imputed value of family labor, and it constituted about 35.31 percent of the total revenue(14). It indicates that such indigenous value addition economic activity undertaken by women and family members is economically viable.

4. Field Crops: Rice

Rice is an important agricultural product and the staple food in all the states in the NER(15). However, the value chain for rice faces a myriad of challenges like the poor network of regulated markets, weak market networks to serve a wider area, poor infrastructure, seasonality of production, unpredictability about the supply, variation in quality, etc. Besides, bulky nature of agricultural produce, high transportation cost, lack of storage and grading facilities, information asymmetry in the value chain, long supply chains, slumping profits, demand-supply mismatch, market failure, and exclusion of small and marginal farmers are some other common problems. Strengthened rice value chain and rice-based Farmer Producer Organizations (FPO) can offer potential solutions to some of these problems. Further, innovative models like Self-Sufficient Sustainable Seed System for Rice, strengthening of rice value chain supported by addressing 3I's (Infrastructure, Information, and Institutional) of agricultural marketing system of the country, and implementation of Gramin Agricultural Markets, Smart Micro Mandies, and strengthening of e-National Agricultural Market are some of the promising initiatives in the domain(16). There also lies opportunities in promoting the value chain development of specialized varieties such as black rice. Black rice, a variety of rice from the species Oryza sativa L. subspecies Indica, is known for its high nutritional and medicinal values and high antioxidant properties. Though it is reported to be cultivated in small quantities by the villagers, some of the agri-entrepreneurs in the NER have realized its agribusiness potential and have been engaged in the business of black rice very successfully. For example, the entrepreneurs have marketed and brand black rice and sold it through different marketing channels, including online platforms to different consumers. Noticeably, the price of black rice sold through online platforms varied from INR 210 to INR 549 per kg(17). Similar opportuni-

ties for processing and marketing exist for the unique rice varieties such as the aromatic Joha rice of Assam(18).

5. Value Chain Development in the Organic Sector

The NER is considered one of the potential regions to be transformed as a hub for organic agriculture. Hence, the specialized central sector scheme of Mission Organic Value Chain Development for the North Eastern Region (MOVCDNER) was launched during the 12th plan period(19). The MOVCDNER aims at the development of certified organic production in a value chain mode to link growers with consumers and to support the development of the entire value chain starting from inputs, seeds, and certification to the creation of facilities for collection, aggregation, processing, marketing, and brand-building initiative. The scheme aims to develop certified organic production in a value chain model to link farmers with consumers with comprehensive support for the entire value chain. So far, the scheme has made considerable progress in achieving its goals. For instance, a total of 2,353 Farmer Interest Groups (FIGs) were formed against the target of 2,500 by the end of 2016-17, and 47,877 farmers were mobilized under organic agriculture as against the target of 50,000. Interestingly, the scheme covered more target beneficiaries than planned(20). However, there is still scope for effective implementation of the scheme through capacity building. Some of the thrust areas are forming FPOs, insurance coverage, requisite infrastructure development, promotion of value addition, and marketing and brand development. Moreover, potential production pockets can be identified to promote organic agriculture through this scheme. There is a huge export market, which can be leveraged for earning foreign exchange.

6. Importance of Technology, Knowledge-base, and Innovation

Information and Communication Technology (ICT) can play a crucial role in promoting sustainable development in the agriculture and allied sector in the NER. For example, a case study dealing with the implementation of ICT initiatives in providing agricultural extension services to rural tribal farming communities of North East India demonstrated the reduced cost of the extension services to provide farm advisory services, less time required for availing the services and to deliver the services to the farmers. However, information through ICTs alone may not create expected development. Along with appropriate agricultural information and knowledge, field demonstrations and forward (farm machinery, manure, seeds) and backward (post-harvest technology and market) linkages need to be facilitated with an appropriate public-private partnership between knowledge and other rural advisory service providers for agricultural development(21).Besides, encouraging the small and microenterprises in the agribusiness sector to use digital or innovative platforms will help better integrate such enterprises into the value chain. Further, research organizations will also be instrumental in developing the sector. For example, it is inevitable to mention the role of the Department of Biotechnology in accomplishing network projects on organic farming, jhum cultivation, and value addition on cash crops and animal products that have benefited the farmers of NER(22). Remarkably, traditional knowledge systems, in which NER is very rich, can offer solutions to the challenges of local communities' food, nutrition, medicines, and livelihoods. The promotion of traditional knowledge-based products can also facilitate the conservation of resources and the subsistence survival of people(23). Besides, strategic incorporation of innovation in the local context is likely to pave the way for promoting sustainability in the sector, which is yet to be explored actively. In other words, the achievements could be more if the missing innovations and linkages and local knowledge-base are strategically incorporated, as observed in the context of the rubber development model of the NER(24). Furthermore, structural transformation throughthe creation of FPOs on a broader and faster scale, which can facilitate the linking of the smallholders to the market through their collective organization and mobilization, is yet another opportunity for the NER that has already proven to be promising in other regions in India(25).

7. Conclusion

The present review highlights several potential areas for value chain development in the agriculture and allied sectors in the NER. For example, the projected surplus production of fruits (52.44%) and vegetables (15.39%) by 2030 offers tremendous opportunities for value-added products and their export potential in the horticultural sector. Yet another example is the potential for the development of the livestock sector to meet the escalating demand for products such as milk, meat, and eggs, which have a deficit of around 41 percent, 54 percent, and 87 percent, respectively. Value addition based on indigenous knowledge could be one of the ways to improve income for the small-scale producers, as observed in the case of the smoked fish producers in Manipur, generating revenue of INR 17,276.54 per quintal. Similarly, the production and value addition of exotic rice varieties such as black rice, which was found to have fetched prices as high as INR 549 per kg, could be promoted to link rice farmers to the rice value chain and help them earn a higher income. Besides, the particular emphasis for the development of the organic sector in the NER, as apparent through the mobilization of farmers (more than 47,000 so far) through FIGs (2,353 so far), reflect the future potential of linking the farmers of the region to the relatively lucrative markets of organic products. The NER has certain distinct advantages. It is strategically located with access to the traditional domestic market of eastern India with proximity to the major states in the east and adjacent countries such as Bhutan, Bangladesh and Myanmar. Given that the region is the entry point for the South-East Asian markets, the resource-rich region with its expanses of fertile farmland and a considerable talent pool could be turned into one of India's most prosperous regions. As numerous avenues for growth and development emerge, it is of paramount importance that the region, as a collective identity, embarks on an exciting journey to realize the dreams of a better future. This vision can be realized only through the combined effort of all stakeholders of NER.

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