

## Chapter 3

### Agriculture and Rural Development

Future prospects for economic development of Meghalaya lie in strengthening and developing the rural sector of its economy. This is primarily because nearly two-thirds of the total work force depends on agriculture and allied activities for its livelihood, while the contribution of agriculture to the state's GDP is a little over 20 per cent. The role of the modern industrial sector in the economy is insignificant, and given the state's geographical constraints and size, the scope for large scale industrialisation is limited. Hence, the strategy for development should be to gradually transform the self-subsistence structure of the rural sector to a commercial commodity-producing one by creating opportunities for generating marketable surplus which can be exported. This will, in turn, raise the levels of rural income and enable farmers to extend their activities to non-farm production based on processing agricultural surpluses. As a result, dependence on agricultural farm production will decline and there will be a rise in people's engagement in non-farm economic activity. The long-run impact will be to raise agricultural productivity and create an agro-based industrial structure.

At some stage during this development process, Meghalaya can start exporting to outside markets those products in which it has a comparative advantage. The rise in trade will give rise to demand for tertiary activities, as a result of which the service sector will begin to expand. With an increase in connectivity and modes of communication, and with the generation of new skills, it is possible to imagine a phase when Meghalaya can think of specialising in the processing of high-value items based on imported inputs for export to the outside world.

#### **3.1 NATURAL RESOURCES AND THEIR USE**

The *Meghalaya State Development Report 2008–09* points out: "Pattern of land holdings and the myriad of land tenure systems, extensive practice of 'Jhum' cultivation (shifting cultivation), other traditional agricultural practices including aspects of production for consumption rather than creating marketable surpluses for profitable returns, high cost of inputs and production are some of the realistic dimensions of agriculture in Meghalaya." (*Chapter IX*, pp. 212)

As a result, despite the large percentage of population engaged in agriculture, the state is still dependent on imports from other states for most food items, such as meat, eggs, and food grains.

A comparative picture of resource endowments and land occupational patterns between Meghalaya and the other north-eastern states with India (Table 3.A1 in the Appendix) shows that Meghalaya has 42 per cent forest land, slightly less than the forest coverage for the north-east region (52 per cent) as a whole, but certainly above the Indian average of only 23 per cent. The net sown area is only 9 per cent in Meghalaya, which is not only significantly lower than the country average which is 46 per cent, but also much lower than the north-east region as a whole (17 per cent). Similarly, area sown more than once is much lower than some of the other hill states such as Manipur and Arunachal Pradesh, although it is far higher than in Nagaland. However, 83 per cent of Meghalaya's net area sown is devoted to crop production, which is much higher than even Assam. On the other hand, the area sown more than once (17 per cent) is relatively low in Meghalaya, suggesting the severity of the impact of *Jhum* cultivation in Meghalaya.

Meghalaya has a very high percentage of cultivable wasteland compared to the total net sown area, indicating the scope for expansion of crop cultivation in the state. It is next to Mizoram in terms of the availability of forests to net area sown area, which means that forestry income should play a much bigger role in the GDP of Meghalaya. Interestingly, it has a very high percentage of land under trees and groves not included in the net sown area.

A district-wise analysis of resource endowments reveals wide variations across regions within Meghalaya (Table 3.1). For instance, South Garo has the highest proportion of forest land (54 per cent) and Ri-Bhoi the lowest forest coverage (35 per cent). Area under non-agricultural uses in all districts is very small, ranging between 2 to 6 per cent. A striking feature of land use in Meghalaya is that area under cultivable wasteland is quite high (20 per cent), with the highest figure of 31 per cent in the Jaintia hills. Apart from West Garo (9.4 per cent) and South Garo (12 per cent), the rest of the districts have on average more than 20 per cent cultivable wasteland. Total fallow land ranges between 4 per cent (East Khasi Hills) and 15 per cent (West Garo Hills). Meghalaya as a whole has 10.3 per cent fallow land.

District-wise, the major producer of both livestock and poultry is the West Garo Hills (28 and 25 per cent, respectively) (Table 3.2). It accounts for 28 per cent of the cattle, 45 per cent of buffaloes, 34 per cent of sheep, 36 per cent of goats, 24 per cent of fowls, and a staggering 64 per cent of ducks, all being the highest in terms of district-wise production levels. The West Khasi Hills and East Khasi Hills are at the top in the

population of horses and ponies (57 per cent) and pigs (25 per cent), respectively. On the other hand, the South Garo Hills is at the bottom of the list for all the livestock categories considered.

Meghalaya is relatively better off in terms of per capita availability of livestock products compared not only to the NER but also to India, except for the production of milk, and the population of buffaloes and sheep (Table 3.3)

Meghalaya seems to have a comparative advantage in livestock products in comparison with both the north-east and India. This means it can specialise in production for export to other regions and can also develop meat processing industries to increase value addition in its GDP.

**Table 3.1:** District-wise Resource Endowments and Land Use in Meghalaya

Districts	Forest Area	Area Under Non-agri Uses	Barren and Uncultivable Land/Area	Permanent Pastures and other Grazing Land/Area	Land Under Miscellaneous Uses, Tree Crops and Groves/Area	Cultivable Wasteland/Area	Fallow Land Other Than Current Fallow/Area	Current Fallow Land/area	Net Sown Area	Area Sown More Than Once	Total Cropped Area	Net Sown Area/Total Cropped Area	Area Sown More Than Once/Total Cropped Area	Area Sown More Than Once/Net Sown Area
Ri-Bhoi	35.4	5.6	8.4	-	11.8	23.9	4.0	2.6	7.9	1.0	8.9	88.6	11.4	12.9
East Khasi Hills	38.0	5.0	13.4	-	6.2	20.9	2.4	1.7	11.4	2.8	14.2	80.2	19.8	24.7
West Khasi Hills	39.6	4.1	9.3	-	8.1	20.9	9.1	3.5	3.9	1.1	5.0	78.2	21.8	27.9
Jaintia Hills	40.4	4.5	3.6	-	4.5	31.4	4.6	2.9	7.9	0.1	8.0	98.8	1.2	1.2
East Garo Hills	47.1	2.1	1.8	-	7.8	18.4	8.5	1.9	11.9	2.0	14.0	85.4	14.6	17.2
West Garo Hills	44.6	3.9	2.0	-	6.6	9.4	11.7	3.3	10.7	5.5	24.4	44.0	22.6	51.4
South Garo Hills	54.0	2.2	2.8	-	3.5	12.2	10.7	3.1	9.0	2.5	11.5	78.2	21.8	27.8
<b>Total</b>	<b>42.0</b>	<b>4.0</b>	<b>6.1</b>	<b>-</b>	<b>7.0</b>	<b>20.1</b>	<b>7.5</b>	<b>2.8</b>	<b>8.4</b>	<b>2.1</b>	<b>11.8</b>	<b>71.1</b>	<b>17.6</b>	<b>24.7</b>

**Source:** District-level Statistics, Directorate of Economics and Statistics, Government of Meghalaya, 2004 –

**Table 3.2:** District-wise Distribution of Livestock and Poultry in Meghalaya, 2001–05

(% share of total)

District	Livestock							Poultry		
	Cattle	Buffaloes	Sheep	Goats	Horses and Ponies	Pigs	Total Livestock	Fowl	Ducks	Total Poultry
East Khasi Hills	7.1	1.3	31.7	16.2	11.8	25.3	14.1	16.0	6.6	15.8
Ri-Bhoi	7.5	20.0	0.9	4.1	5.2	9.0	7.2	12.7	5.3	12.5
West Khasi Hills	13.7	16.0	28.2	16.7	57.3	15.0	14.9	13.4	2.4	13.2
Jaintia Hills	17.4	11.4	4.0	7.5	22.6	12.9	13.9	11.9	10.1	11.8
East Garo Hills	20.4	5.4	0.2	11.8	1.1	13.8	16.4	15.8	1.8	15.5
West Garo Hills	28.8	45.7	34.2	36.8	1.0	19.4	28.1	24.2	64.5	25.1
South Garo Hills	5.2	0.2	0.7	6.9	0.9	4.7	5.3	5.9	9.2	6.0

*Source:* Statistical Abstract of Meghalaya, 2004–05**Table 3.3:** District-wise Ratio of Livestock to Population in Meghalaya, 2003–04

States	Total Live stock	Poultry	Total Milk	Eggs	Cattle	Buffaloes	Sheep	Goats	Meat (5+6+7+8+9)
	1	2	3	4	5	6	7	8	10
Meghalaya	0.669	1.217	0.030	40.538	0.331	0.008	0.008	0.141	1.704
North-East	0.539	0.935	0.029	23.317	0.295	0.022	0.006	0.112	1.369
<b>India</b>	<b>0.471</b>	<b>0.475</b>	<b>0.086</b>	<b>39.274</b>	<b>0.180</b>	<b>0.095</b>	<b>0.060</b>	<b>0.121</b>	<b>0.931</b>

*Source:* Statistical Abstracts of India, 2003–04*Note:* Figures are calculated.

### 3.2 PRODUCTIVITY

Agricultural productivity in the state is fairly low, as indicated in Table 3.A2 in the annexure to this chapter. Specialisation is limited by the extent of the markets, which has forced every village into self-sufficiency, producing everything they need to survive irrespective of their comparative advantages in production. This means that no village has the incentive to produce a marketable surplus because of the limited scope of markets, a direct consequence of the lack of mobility of goods because of the lack of connectivity. Thus, a third possible way to increase land and labour productivity is from specialisation in

crop cultivation, which can be achieved only by intensifying trade, first within Meghalaya and subsequently with other states.

There is considerable scope for increasing agricultural productivity from specialisation in production. There will be several impacts of such an increase in productivity. First, Meghalaya will have to depend less on the outside world for food, and hence there will be a lower rate of leakage of income from the state. The direct consequence of this will be the increased multiplier effect on income generation. Second, it will raise the income of farmers, enabling them to invest more on land development and skill formation. Third, it may help develop some agro-based industry in Meghalaya. The last aspect is important for the future development of the state, which currently has very little scope for mineral-based industrialisation.

### **3.3 THE STATE'S COMPARATIVE ADVANTAGE**

#### **3.3.1 The Regional Specialisation Index and the National Specialisation Index**

In the discussion on the agricultural sector in the north-eastern region, the NER Vision Document 2020 has observed that there is wide variation across the north-eastern states in agricultural productivity. Further, there is very little trade among the states of the north-east, and hence a lack of specialisation in production.<sup>6</sup> What are the products in which Meghalaya seems to have a comparative advantage? An attempt is made to discover the state's comparative advantages based on the Regional Specialisation Index (RSI), both in terms of net area sown and quantity produced,<sup>7</sup> the National Specialisation Index (NSI) in various agricultural crops,<sup>8</sup> consumption (demand), intensities for different crops, comparative productivity advantages in various crops for each district and the state, and dependency indices both in terms of value and quantity.

***According to the RSI, Meghalaya has a production advantage in maize, small millet, sesamum, coffee, natural rubber, bananas, potatoes, chillies, ginger, turmeric, and***

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<sup>6</sup> NER Vision 2020 (2008): Annexures, pp. 38–43.

<sup>7</sup> The appendix to this chapter provides details of the methodology for constructing the index. First, in the context of Meghalaya in relation to the other north-eastern states, RSI is defined as the ratio of the net sown area devoted to a particular product as a percentage of the total net sown area in Meghalaya to the ratio of the total net sown area for the product in the entire north-east as a percentage of the total net sown area for the north-east as a whole. In other words, Meghalaya is considered in relation to the other north-eastern states. Subsequently, the different districts of Meghalaya are also analysed in a similar fashion. *Table 3.A4* in the Appendix shows the Regional Specialisation Index (RSI) for 20 crops in Meghalaya in terms of net area sown. An RSI value of more than 1 indicates that the particular state has a revealed comparative advantage in that crop compared to NER.

<sup>8</sup> The NSI is defined as the ratio of the net sown area of the product 'i' in state 'j' (where j = Meghalaya) as a percentage of the net sown area of the product for the NER to the net sown area of product 'i' in India as a percentage of the net sown area in India. The appendix to this chapter gives the formula and the calculation for the National Specialisation Index (NSI) for 20 crops (the same crops as for the RSI). *Table 3.A5* in the appendix gives these values.

***pineapple. However, ginger has shown the greatest revealed production advantage for Meghalaya, as indicated by an RSI value of 5.27.***

The next question is: Where does Meghalaya stand in comparison to the rest of the country? This is given by the NSI, which shows that ***Meghalaya has a comparative advantage in rice, maize, small millet, wheat, coffee, natural rubber, bananas, potatoes, chillies, ginger, turmeric, and pineapple. However, pineapples show the greatest revealed comparative advantage for Meghalaya, as indicated by an NSI value of 68.17.***

### **District-Level Comparative Advantages: The District RSI**

Within Meghalaya the districts could be ranked in terms of their comparative advantages. District-level data are available for very few products. The agricultural products considered for the RSI at the district level (DRSI) are rice, maize, wheat, rabi and other pulses, rapeseed and mustard, sugdakuarcane, ginger, cotton and jute, and the horticultural products are pineapple, citrus fruits, banana, and papaya. The DRSI was constructed in two different ways: one, in terms of net sown area (NSA), and the other in terms of production in quantity (PQ).<sup>9</sup>

In terms of net sown area, the DRSI calculations (*Table 3.A6* in the Appendix) show that East Khasi Hills does not have a comparative advantage in any product, while Ri-Bhoi has an advantage in rice, maize, and ginger, with the highest advantage in ginger (1.19). West Khasi Hills can specialise only in maize (2.66) and so can Jaintia Hills (1.24), though rice could also be produced efficiently. Similarly, the East Garo Hills district can specialise in rice, sugarcane, cotton, and ginger, but its greatest comparative advantage lies in ginger (3.55). On the other hand, West Garo Hills can specialise in all the products except for ginger and maize, but its greatest comparative advantage lies in wheat (2.91). South Garo Hills can specialise in rabi and other spices, and jute, with its greatest comparative advantage in rabi and other spices (1.22).

When looked at in terms of production quantity (*Table 3.A7*), the DRSI shows that the East Khasi Hills district has a comparative advantage only in ginger (2.44). Ri-Bhoi can specialise in rice and maize, although its greatest comparative advantage is in maize (1.91). West Khasi Hills can specialise in maize and ginger, but its greatest comparative advantage lies in ginger (1.98). Jaintia Hills can specialise in maize (1.88), though rice can also be produced efficiently. The East Garo Hills can specialise in rice, sugarcane, and cotton; however, its greatest comparative advantage lies in cotton (4.41). The West Garo Hills district can specialise in all the products apart from ginger and maize, but its greatest comparative advantage lies in wheat (3.31). The South Garo Hills can specialise in rice, rabi

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<sup>9</sup> See the appendix to this chapter for the formula.

and other spices, sugar cane, maize, and jute, but its greatest comparative advantage lies in rabi and other spices (2.59).

Interestingly, both DRSI measures reveal approximately similar kinds of comparative advantages except for East Khasi Hills and for some crops in the other districts. However, irrespective of the measures, the greatest comparative advantages remain almost the same in all the districts. For the horticulture crops in terms of net sown area, East Khasi Hills has a comparative advantage in citrus fruits and papaya (*Table 3.A8* in the appendix), but it can specialise in the production of citrus fruits (3.99). Ri-Bhoi can specialise in pineapple, banana, and papaya, but has the greatest advantage in pineapple (4.08). The West Khasi Hills can specialise in citrus fruits and bananas, but its greatest comparative advantage lies in bananas (1.24). The Jaintia Hills and West Garo Hills districts do not have a comparative advantage in any of the horticulture crops considered here. The East Garo Hills can specialise in bananas and papayas, with its greatest comparative advantage in papayas (1.80). The South Garo Hills can specialise only in pineapple (1.38).

In terms of production in quantity, the East Khasi Hills, West Khasi Hills, and Jaintia Hills have a comparative advantage only in citrus fruits (3.18, 1.84, and 3.97, respectively). Ri-Bhoi can specialise only in pineapple (1.51) (*Table 3.A9*). The East, West, and South Garo Hills have comparative advantages in all the horticulture crops except citrus fruits; however, these districts have greatest comparative advantages in the production of papaya (1.67), bananas (1.32), and pineapples (1.31), respectively.

### **3.4 THE WAY AHEAD: RECOMMENDATIONS FOR THE RURAL SECTOR**

Despite the limited scope for agricultural growth due to the limitations of available cultivable land, agriculture has a lot of potential for increasing rural incomes, provided farsighted and judicious agricultural policies are adopted by the state. Transforming subsistence to commercial agriculture and improving the value chain requires the state government to adopt a focussed approach and strategy, and enable substantial investments in the sector. The focus missions on agriculture, livestock, forestry, and horticulture will have to come up with appropriate strategies to increase productivity, processing, distribution, and marketing. The state government should persuade the Central government to set up a Central University for Agriculture Research during the Twelfth Five Year Plan. It is also necessary to amend the APMC Act to enable the direct participation of farmers in marketing their products, and to facilitate private partnership in horticultural produce.

#### **Appropriate Crop Cultivation**

An issue of significant importance is appropriate crop choice to maximise productivity in agriculture. The demand for different crops and the state's and districts' dependencies on 'imports' from outside the region are given in Appendix *Table 3.2* to this

chapter.<sup>10</sup> Meghalaya's demand for meat, fish, and eggs is far higher than the national demand, and so is its demand for beverages. Its demand for rice is marginally higher than that of the country (*Table 3.A10*). Dependency indices for the state indicate a high dependency on 'imports' in all the districts for several products such as cereals, pulses, oilseeds, total foodgrain, and fish (*Tables 3.A11 to 3.A14*). Consumption demands could be used as indicators for increased cultivation for local consumption. With the development of markets, instead of cultivating traditional crops, Meghalaya can exploit its climatic advantage to cultivate certain high value horticulture and floriculture products for export to neighbouring markets.

### **Modernisation of Agriculture**

Almost any effort to increase productivity will require phasing out of jhumming and replacing it with settled cultivation. The indirect benefits from the replacement of jhumming will be that the percentage of the fallow land to overall cultivable land will be progressively reduced. Production of horticulture and floriculture products will also require modernisation of farm techniques and expansion of irrigation facilities.

### **Water Management**

Because of the state's high altitude and mountainous terrain, water run-off is very high, which makes multiple-cropping almost impossible. Thus, water harvesting and water retention, along with major irrigation based on river and stream water, may be the *sine qua non* of agricultural development in Meghalaya. Such steps also will increase both land and labour productivity in agriculture.

### **Developing Forest Resources**

The abundance of forest resources could contribute significantly to income growth in the state. However, the share of the income from logging and forestry in GDP is abysmally low, indicating that the state still has unexploited potential in realising income from forestry.

### **Agro-Based Industry**

There is a link between productivity, trade and urbanisation. The rate of urbanisation crucially depends upon the rate of industrialisation. Thus, in order to increase labour productivity in the relatively backward districts, one should focus on creating agro-based industrial clusters in backward districts having strong forward and backward linkages. The success of such agro-based industrialisation will depend upon (i) the creation of markets, and (ii) efficient and reliable transport connectivity. The important initiatives in this regard

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<sup>10</sup> These are given by the demand intensity measure (DIM) which shows the intensity of consumption in the state *vis-à-vis* the rest of the country; and by the dependency index (DI) which has been calculated for the state and the region; and then for Meghalaya's districts using as bases the state, the region and then the country.

will have to include a thrust on improving the value chains. The private sector will have to play a crucial role in making investment not only in agro-based industries but also in building the infrastructure for improving the value chain through public-private partnerships.

### **Creating a Marketing Framework**

The highly perishable nature of agricultural goods becomes an issue when there are several small farmers and little inter-state coordination. Farmers need some support in marketing their products if they are to be induced to make the shift to cash crop production. Further, unless states coordinate their production and storage plans, excessive production can lead to a market crash, as recently observed in the case of ginger production in some of the north-eastern states. The large demand for food items created by the 'captive markets' of the region, such as the army and security forces, could be tapped into to expand the regional market.

### **Cluster-based Development**

The short-run development approach will be cluster-based to realise greater economies of scale and specialisation. For this, the cultivated area of the state can be divided into crop-wise clusters based on comparative advantages, with each cluster defined as a Crop Development and Marketing Unit (CDMU) which emphasises the marketing aspects of the cluster. Collection centres will need to be set up near the clusters, which will have linkages with clusters in other regions to promote economic linkages with wholesale markets. Marketing intervention, especially for horticultural produce, with a full complement of post-harvest infrastructure and market network is fundamental. These CMDUs would be given appropriate managerial and financial flexibility for assisting producers realise reasonable profits from their efforts.

### **Cold Chains**

Establishment of a cold-chain along major arterial highways is critical if the region is to exploit its rich horticulture potential and market these products to the rest of the country. The operation of the cold chain could be based on a PPP model or on a lease basis with private entrepreneurs.

### **Transport Network**

An efficient transport network allows farmers to expand their business horizon, resulting in specialisation in production and trade. In the absence of such networks and markets, villages have to become self-sufficient, where each farmer is essentially forced to produce everything he requires, without being able to create marketable surplus. The value of surplus production can be realised in the context of trading opportunities.