Voluntary Organisations and Sustainable Rural Development in Meghalaya

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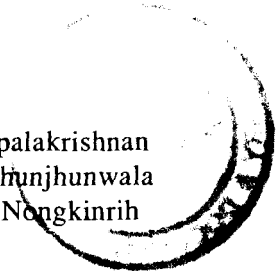

Regency Publications
New Delhi

ISBN 81-87498-29-3

Published by Regency Publications, 20/36–G, Old Market, West Patel Nagar, New Delhi 110 008 for Policy Alternatives for the North-East and Conflict Elimination Awareness (PANACEA), Shillong, and Printed at Radiant Printers, New Delhi 110 008, Phones: 571 2539, 574 0038; Telefax: 578 3571.

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Introduction

Meghalaya is situated in the northeastern region of India, between the Brahmaputra valley in the north and the Bangladesh in the south. It has a total geographical area of 22,489 Sq. Km. and is divided into seven administrative districts, two sub-divisions, six special administrative units and 30 community development blocks. It has a total population of 17.60 lakhs (1991 Census), with an average density of 78 persons per square kilometer. The average decennial growth rate of population was 32.30% (1981–91). More than 80% of the population lived in 4874 villages out of the 5044 recorded villages in the state. The state is characterised by agrarian economy. The level of development is low. Small scale industrial units along with cottage and handloom industries dominate the industrial landscape. Surface transportation, particularly the road transportation plays a vital role in the state's socio-economic activities.

Meghalaya Plateau has an elevation varying between 150m to 1961m above sea level. It is a heavily dissected terrain, particularly in the northern and western sides. Steep scarps or escarpments that fall abruptly to the Bangladesh plains dominate the southern side. The western part of the plateau or the Garo hills has an elevation of 600m above sea level. The most important relief feature of this part of the plateau is the Tura range with its highest point at Nokrek, 1515m above sea level. The central and the eastern part of the plateau or the Khasi and the Jaintia hills district play prominent senile topography. The central upland zone is the most important relief feature of the area and covers more than one-third of the area. It is east of the Garo hills. The highest point of this part of this plateau and that of the entire state is the Shillong Peak whose elevation is about 1961m above sea level. Escarpments mark the southern side of the plateau. It displays prominent erosional features. Cherrapunji and Mawsynram, located at close proximity to

each other, have the heaviest rainfall in the world—more than 400 inches annually.

Soon after attaining statehood in January 1972, the United Khasi and Jaintia hills was divided; the Jowai sub-division was upgraded to form Jaintia hill district with Jowai as the district headquarters. Along with Khasi hills and Garo hills, this district formed the state of Meghalaya. In October 1976, the State Government issued a notification to divide the Khasi and Garo hills, into two districts each. The reason given for this division was administrative and developmental expediency. They were divided to form East and West Khasi hills districts and East and West Garo hills districts. In 1992, the West Garo Hills was further sub-divided into West Garo hills and South Garo hills districts, and, the East Khasi hills district into the Ri Bhoi and East Khasi hills district. The headquarters of these districts are as follows:

i East Khasi Hills District—Shillong
ii Ri Bhoi District—Nongpoh
iii West Khasi Hills District—Nongstoin
iv East Garo Hills District—William Nagar
v West Garo Hills District—Tura
vi South Garo Hills District—Baghmara
vii Jaintia Hills District—Jowai

Subsequent to this, to effect greater administrative control and for management of development efforts, specific areas were created and designated as sub-divisions. These were:

(a) Jaintia border sub-division is renamed as Amlarem in the Jaintia hills district;
(b) Mairang sub-division including those areas of Mairang community development block that fell in the West Khasi hills district with Mairang as headquarters in the East Khasi hills district; and

In addition to these, following administrative sub units were also created. These were:

(i) Khliehriat including Khliehriat development block in the Jaintia hills district.
(ii) Sohra administrative area consisting of Shella- Bholaganj development block as well as parts of Pynursla and Mawsynram development blocks in the East Khasi hills district.

(iii) Mawkyrwat consisting of Mawkyrwat development block in West Khasi hills district.
(iv) Resubelpara administrative area consisting of seven gram-sevak circles in Resubelpara development block and parts of Dembo-Rongsong community development blocks in the East Garo hills district.
(v) Dadengiri administrative unit consisting of three gramsevak circles in Resubelpara and Dadengiri community development blocks and Selsella community development blocks.
(vi) Betasing administrative unit consisting of Zikzak and Betasing community development blocks in the West Garo hills district.

Most interesting feature of the state is that the developmental planning is and has been carried out on the basis of the existing community development blocks. Till 1981, there were twenty-four development blocks. These were:

(a) Laskin community development block, Jaintia Hills
(b) Khliehriat community development block, Jaintia Hills
(c) Thadlaskein community development block, Jaintia Hills
(d) Bhoi community development block, Ri Bhoi
(e) Mawrynkneng community development block, East Khasi Hills
(f) Myliyum. Community development block, East Khasi Hills
(g) Mawphlang community development block, East Khasi Hills
(h) Pynursla community development block, East Khasi I-rills
(i) Shella-Bholaganj community development block, East Khasi Hills
(j) Mawsynram community development block, East Khasi Hills
(k) Mairang community development block, West Khasi Hills
(l) Mawkyrwat community development block, West Khasi Hills
(m) Nongstoin community development block, West Khasi Hills
(n) Resubelpara community development block, East Garo Hills
(o) Dembo-Rongsong community development block, East Garo Hills
(p) Sonsak community development block, East Garo Hills
(q) Selsella community development block, West Garo Hills
(r) Dadengiri community development block, West Garo Hills
(s) Rangram community development block, West Garo I-fills
(t) Zikzak community development block, West Garo Hills
(u) Dalu community development block, West Garo Hills
(v) Chokpot community development block, South Garo Hills

(w) Dambu-Aga community development block, South Garo Hills
(X) Betasing community development block, South Garo Hills

But there were many overlapping and difficulties in identifying the boundaries of the districts and community development blocks. However, these were ratified. Thus, instead of 24 development blocks, six more were created after 1981 for practical convenience Mairang east and Resubelpara west were treated as community development blocks along with Nongstoin, Khonjoy and Sonapahar. In other words, the six new community developmental blocks that were created after 1981 included: (a) Amalram community development block—from sub- division in the Jaintia hills districts. (b) New community development block included 14 villages of Mawrynkneng community development block and 55 villages of Pynursla development block. (c) Nongpoh community development block included 174 villages of the Bhoi area and 61 villages of Mairang development block. (d) Samanda development block consisting of lower portion of Songsak community development block in East Garo hills district. (e) Rongpara development block included areas east of Simsang River in Dambuk-Aga community development block in the West Garo hills district. (f) Mawshynreit (Sonapahar) development block included 220 villages of the Nongstoin-Sonapahar community development block in West Khasi hills district.

Thus from administrative and development point's of view, the state of Meghalaya was divided as follows:

During the period 1901–1991, the population of the state increased from 3,04,525 to 17,60,640 recording a population growth of +292.28%. The average decennial growth rate during this period was 32.04%. Broadly speaking, the population growth in the urban centres of the state was rapid. The population of the state is unevenly distributed and is determined by physiographic factors and accessibility. The population of the state is mainly concentrated in (i) the area around Shillong Urban Agglomeration, Jowai, Nongstoin, Williamnagar, Tura and Baghmara. (ii) The neighbourhood of Cherrapunji and Dawki, and (iii) Northern, western and southern fringes of the Garo hill.

The sparsely populated areas of the state are, therefore, found in the northern and southern Khasi hills, most of the Jaintia hills and the interior of the Garo hills. The average density of population in the state is about 78 persons per square kilometer. It is well

below the national average of 267 persons per square kilometer (1991). The tribal component in the population is about 80% of the total population. In the interior locations of the state, like in the Mauzas of the Garo hills, the tribal component is often as high as 97%. However, in the peripheral parts of the state, the percentage of the total component in the population decreases. More than 40% of the non-tribal population of the state are concentrated in the urban areas and the rest are dispersed in the rural areas.

Percentage of literacy in the state is higher than the national average and stood at 33.35% in the 1991 Census. At the district level, the highest percentage is found in the East Khasi hills district with 41.10% and was followed by 32.28% in East Garo hills district, 30.95% in the West Khasi bills district, 25.44% in the West Garo hills district and 23.77% in the Jaintia hills districts. The percentage of literacy is highest in the urban centres, e.g. 62.92% in the Shillong Urban Agglomeration, 65.84% in Jowai and 58.01% in Tura. The state has also experienced in-migration of population.

The state of Meghalaya clearly illustrated variations in the proportions of working population and percentage of various categories of population to the total population. At the same time, the state also indicated a distinct trend between the urban and rural population structure. According to the 1991 Census, 71.96% were engaged in the primary sector, 11.82% in the secondary sector and 6.32% in the tertiary sector of the economy of the state.

Consideration of the Regional Environment of Meghalaya

With its level of economic development and complex social and political linkages, the state of Meghalaya is faced with immense and consequential environmental problems. Its prevention has become more of compulsion than a mere initiative in Meghalaya. This brief resume offers a reflection of national environmentalism with a concern to protect, preserve and provide remedial measures to the problems that have far reaching impact on the ecological stability of the areas at all levels of the scale. In this sense, such themes involve some accounting of how far and how well the awareness of environmental problems has advanced. It also includes the consideration of successes of the policy initiatives as well as the call for the blending of explanations with criticism at the appropriate levels. After independence, a concerted effort was launched to stabilise and accelerate the development in the country. Administrative re-

organisation, inventory of resources, planning and identification of priority sectors were carried out side by side. Emphasis on sectors like agriculture, irrigation, power, transportation and communication industries and so on in the regional and national level economies encouraged the pace of development. The change and continuity resulted in optimism but compounded the environmental problems that emerged from growing population and rapid urbanisation. This was evident in the 1960's, when plans of the nineteen fifties gradually started materialising. These were coincident with large-scale deforestation and degradation through exploitation of needed building materials and fuels. Correspondingly, snags developed in the implementation levels as they passed through various administrative hierarchies. Conflict situations emerged as the policies confronting the traditional social-political structures in the various geographic regions of the state.

A step to accelerate the development has in its wake brought problems that had serious environmental connotations. These can be highlighted to include a) commercial exploitation of forests, economic development and consequent urbanisation, which has significantly accelerated the demand for timber within the state. In addition, with the presence of competitive markets in other parts of the country, the cutting of forests has proceeded at a faster pace than the natural replenishment of these resources. Correspondingly, efforts towards the afforestation likewise proceeded at a much slower pace. This had increased the area of deforestation. Further, increasing value of forest products, particularly timber has also added to the problem.

b) Shifting cultivation—this annually occupies an area of 530 Sq. Km of forest area with a minimum area of 2650 Sq. Km under jhum cultivation. Nearly 52,000 families are dependent on it, for their subsistence. This practice was congenial when the population density was low, forest area was abundant and the needs were limited. However, with the increase in population and economic development, this practice has triggered off series of negative effects. It's continuation has not only accelerated not only soil erosion and silting but also the loss of top soil, this made the surface barren and exposed the base rocks. This became useless for any future activity.

c) Urbanisation-changes in administrative status and subsequent administrative re-organisations followed by efforts towards diversification of the economy had significant impact on the environment.

Suffice it to say that new administrative units, community development blocks, forest circles and ranges and so on, had given adequate encouragement for new centres to emerge. These became focus of economic activities and became a cause of concern, from the stability of the environment in the respective areas. For example, rapid growths of Shillong Urban Agglomeration (and other district headquarters) have encouraged large-scale movement of population from both rural areas and outside the state. These were to a large extent in search of economic opportunities as well as due to urban center being the capital of the state. Service and tertiary activities developed at a rapid pace. As a result, there was a growing demand for construction materials, sites for location of establishments, etc. At the same time, issues like water supply, sewerage, disposal of garbage etc., assumed major significance. In short, these encroached on the forest areas. Besides, rapid growth of transportation and communication facilities and growth of small scale and service industries compounded the problems of the urban centres of the state,

Mining and Quarrying—Resource wise, the state is endowed with abundance of limestones, coal and other materials and construction materials in substantial quantities. Limestone and coal in particular occur near the surface and are largely located in the forested interior of the state. As a result, the process of mining in the state included removal of surface vegetation cover and the topsoil. The impact of this is obvious from the fact that on an average 4500 truck loads of coal from the state move daily to Guwahati. The movement of a fair percentage of timber for marketing outside the state has not only been an important revenue source but also one that provided meaningful employment to sizable section of people. However, with the legal suspension of felling of trees, a good proportion of work force has now found itself redundant. In the absence of any alternative occupation, this work force has assumed important connotations. The states as well as various traditional institutions, like wise, have yet to identify the alternative to compensate the loss of revenue. There has been an effort to review the decisions on felling of trees. Be that as it may, these only highlight the urgent need to identify and develop alternative economic activities/sectors that can provide the needed impetus for change and growth). The movements of these products through the roads and the urban centers have tremendously added to the vehicular pollu-

tion increasing the level of Carbon Monoxides and sulfur dioxide. Here is hardly any effort to fill up the pit mines or attempts towards afforestartion in these areas. Similar instances are noticeable in the limestone areas as well in the state.

Viewing these problems, one can think about the approaches available to minimise the impact of these activities. As noted earlier, there is no doubt that the costs of environment-stabilising approaches are very high. An effort therefore has to be made to incorporate the alternatives in the development perspectives and policies of the state. For example, the rapid depletion of forest cover in the state can effectively be tackled by regulation and enforcement's as well as by increasing the awareness of the benefits of the forests. The traditional societies of the state have in built institutional setups, e.g., by demarcating certain forest patches as sacred groves, of maintaining certain percentage of their respective territories under permanent forest cover. Although there are instances today of intrusion in these scared groves, efforts could be directed to strengthen these aspects of the traditional institutions and through them, progressively increase the area under forest cover while reserving other areas in a planned manner for commercial exploitation. Besides, the afforestartion clause should also be included as and when certain specified forest areas are earmarked for commercial exploitation. These alongwith other similar measures will go a long way in maintaining the ratio between forests and population.

As far as shifting cultivation is concerned, the development policies cold take into account local-regional needs and requirements of the populations. Alternatives through the capital inputs and locations of site-specific activities with minimum environmental hazards and effects could easily replace the existing pattern of selection. Moreover, the jhum control efforts could incorporate additional facilities that will increase the production and provide alternative opportunities.

There is an urgent need to control the urban pollution that is gradually transcending the urban spatial limits. Rapid increase in the construction of residential as well as commercial buildings, the quantum jump in the vehicular density, increasing emission of carbon monoxide and sulfur dioxide, near impossibility of expanding the existing road network and depletion of green cover within city limits, have all increased hazardous situation in the urban centers. Besides, proper drainage facilities and sewerage are hardly devel-

oped. Existing streams passing through the city are used both as source of water as well as for sewerage. Consequently, urban and industrial wastes have polluted the streams. They have also affected the areas through which the streams pass. Efforts have to be made to construct proper drainage-sewerage systems with outlet away from the urban center. Water and sewerage treatment plants could be incorporated so as to recycle the water before its supply for irrigation etc., while wastes obtained could be used as fertilisers.

As far as fuel is concerned, there is a distinct need to fine alternatives for wood. Substitutes for wood like quick maturing varieties can be grown in less favourable areas of the state. However abundance of forests in the state can be effectively used in this direction. As was suggested in a report from Delhi in the late 1970's, where the scientists used the pine needles for brequetting and found that they gave better energy ratios as compared to wood. Similar efforts in different vegetation situations can also be attempted to seek alternative fuel. Regarding mining and quarrying, it is better to adopt methods that leave the surface untouched. Efforts have to be made to produce more from the existing mines through pit mining.

On Economy

The state has an agrarian economy with more than 75% of the population, directly or indirectly dependent on agriculture. This percentage is concentrated on only 8.2% of the total geographical area of the state. The important crops of the state are potato, rice, maize, pineapple, banana and so on. Climatically, the region is an advantageous position as it favoured cultivation of crops, fruits and vegetables throughout the year. However, the rugged terrain had imposed serious limitations on this. As a result, the intensity of agricultural activity is very high in areas enjoying favourable conditions like in the Dadenggiri community development blocks in the East Garo hills, Mawphlang, Bhoi area and Mawrynkneng community development blocks in the East Khasi hills and Ri—Bhoi districts.

Animal husbandry and dairy farming are important; the state has 5.4 lakhs head of cattle, 29,000 buffaloes, 26,000 sheep's, 1.8 lakhs goats, 2.07 lakhs pigs and 14.19 lakhs birds in the poultry (1982 Agricultural census). The state also had the highest number high yielding crossbred cattle in the country.

The forest covers in the state are rich and extensive. Many of the existing locations of the forests in different parts of the state have been brought under reserved forests category today. They provide good quality timber and other forest products such as fodder grass, bamboo, firewood, etc. along with various medicinal plants and orchids. The state is also rich in mineral resources, particularly coal, limestone and sillimaninite. The state has a great potential for hydel development. However, per capita power consumption is far below the national average, i.e., 69 units as compared to 154 units of electricity. Yet, within the northeastern region, its consumption is the highest. Thus, out of the total energy generation of 1 155 million units in the region, the state's share was 367 million units and was second only to Assam.

Important industries in the state are confined to the manufacture of cement, plywood, a chemical factory, oil mills and so on. Almost all are of the medium scale industry. Other enterprises classified within the industries are sawmills, engineering units; flourmills, preservation units; sericulture, etc. come under the small-scale industry.

Roads are the main lines of transportation and infact the lifeline of the state. There are two national highways—one from the north to south via Guwahati to Shillong and extending upto the Bangladesh border and terminates at Tamabil—a distance of 155 Km; and the other from Shillong to Silchar via Jowai. It has an east to west orientation. This highway from Silchar in Assam extends to Aizawl in Mizoram and to Agartala in Tripura. Other important regional roads are Paikon-Bajendobe-Tura-Dalu-Baghmara road in the Garo hills and the Mendhipathar-PhulbariTura road. Besides these, Shillong-Jowai-Garampani road and the Shillong-Nongstoin-Tura road are also important.

The state has a total road length of 5,200 Km of which surface road length was only 2,761 Km. The density of the roads per 100 Km was 23.17 Km while 3.92 Km of road was available for every thousand population in the state. It is apparent that the high density of roads coincided with favourable relief and higher productivity and vice-versa. However, much of the state is dominated by difficult terrain and remained inaccessible; thereby reflecting low level of development.

Level of development in the state is low. Apart from Shillong and few other centres in the state, all other areas display the

characteristics of backwardness and inaccessibility, in agriculture and industrial development. But by far the most important factor that has determined the developmental process in the state, has been accessibility pattern and availability of investable capital within the population of the state. Besides, the mountainous topography and the availability of suitable sites for carrying out economic activities had also exerted considerable influence. However, following are the main problems of economic development of the state, (i) Topography and imposed isolation are the limiting factors that inhibited growth; (ii) Location of major resources in relatively inaccessible areas; (iii) lack of market for capital goods followed by minimum interests in investments; (iv) high cost of transportation, and (v) Scattered nature of the exploitable resources and the relative geographical inertia combined to retard growth and development of the state.

Since 1987, efforts have been directed towards increasing the area under plantation of trees, though sustained afforestartion programmes, so that, area under Teak indicated plantation in 120 Ha in 1987–88. This increased to 140 Ha in 1988–89, to 200 Ha in 1991–92 and 225 Ha in 1995–96. Similar trends have been noticed in plantation of Sal from 220 Ha in 1987–88 to cover an area of 650 Ha in 1995–96, Pine from 150 Ha in 1987–88 to 740 Ha in 1995–96. Nearly 37% of the state is under vegetation cover. Of these, nearly 50% of the forest area is in the unclassed category and belong top either individuals or communal ownership. The rest comes under the control of the District Councils and the State Government. The State does not have a uniform land tenure system.

Despite the efforts for introducing more suitable varieties of rice, productivity of rice has declined at an average annual rate of 4.39 Kg per hectare in the last twenty-five years. Rice accounts for 78.38% (1,04,512 ha) of the total area under foodgrains (1,33,344 ha) in the mid-1990's. The decline in rice yields were off set by the HYV's of rice where the yields have been constant at 2, 300 kg/ha. This was against the overall average of 1138.71 kg/ha for traditional varieties of rice in the state (the traditional varieties of rice occupy nearly 65% of the total area under rice in the state).

Besides, most of the rice growing areas was located along the valley bottom areas. These areas are frequently subjected to flooding and deposition of silt and sand from higher slopes. Consequently, many of these areas are damaged and most of their standing crops

destroyed seasonally and annually. These also damage the terrace fields, silting up of drainage channels and irrigation systems and so on. Another factor that has caused wide fluctuation in rice production is the erratic rainfall pattern during some years. Rainfall pattern during the period 1986 to 1996 has varied considerably and has compelled the need to resort to irrigation.

In the oilseed sector, Rape & Mustard which are largely grown in West and East Garo Hills Districts The area under Rape & Mustard in these districts has been gradually increasing (of the total area of 6632 Ha under Rape & Mustard, 5754 Ha (86.76%) was in West Garo Hills District, and 730 ha (11%) was in East Garo Hills District). There is adequate scope to increase the area under Rape & Mustard during the Rabi season in the state. Productivity increased at an annual average rate of 4.26 kg per hectare.

Sugarcane, Potato, Sweet potato, Tapioca and Tobacco are the important commercial crops grown in the state. Potato is the single most important commercial crop of the Shillong plateau—from Mawrynkneng village in the East Khasi Hills District to Nongstoin in the West Khasi Hills District. Potato was introduced very early in Khasi Hills during the British Period.

In order to strengthen the food grain sector of agriculture, efforts have been directed by the state towards the dissemination of modern technology applicable to small holdings in hilly terrain, Conversion of jhum land into permanent cultivated tracts, increasing area under High Yielding Varieties (HYV) of rice, wheat, maize, oilseeds, pulses and millets having resistance to diseases and pests, increasing double-cropped area through multiple cropping, adoption of short duration HYVs of rice to fit into the double/multiple cropping cycle, popularisation of the use of fertilizers, HYV seeds and need-based plant protection measures, and Integrated Pest Management, making available more numbers of power-tillers, tractors, power pumps and sprayers to farmers at subsidised rates, and dissemination of post-harvest technology to minimise post-harvest losses through pests and diseases.

Besides the state sponsored schemes like distribution of manure's and fertilisers at subsidised rates, there were Centrally Sponsored Schemes, (like Control of Pests and Diseases of Agricultural importance, Intensive Jute/Mesta Development Programme, Intensive Pulses development Programme, National Pulses Development Programme, Production and Supply of Quality Planting

Materials, Setting up of Integrated Pest Management Programme and Integrated Programme for Rice Development) and Externally-Aided Schemes/projects like Crop Husbandry, Commercial crop; Mushroom Processing Units, Tea Processing Units, Marketing & Quality Control Cold storage facilities for Agricultural produce and Expansion and modernisation of existing Fruit Processing Units) were implemented in the state.

Fibre Crops

Cotton, Mesta and Jute are important fibre crops and are concentrated in the Garo Hills sub-region of the State. Of these, Cotton and Mesta are Jhum Crops. Jute is grown as the second crop in paddy fields. These crops have been the traditional cash crops of Garo hills. The average annual area under Cotton was 7,460 Ha, with an average annual production of 4.280 bales at an average yield of 97.32 kg/ha. The average annual area under Mesta was about 5,500 Ha, with an average annual production of 22,580 bales at an average yield of 747.95 kg/ha, respectively. The average annual area under Jute was about 5,670 Ha, with an average annual production of 39,720 bales at an average yield of 1260.71 Kg/ha, respectively.

Spices

Varieties of spices are grown in Meghalaya, such as, turmeric, ginger, chilies, black pepper and bay leaf. Except for bay leaf, which is a forest product, the other spices are cultivated. The cultivation of turmeric (Lakadong variety) is concentrated in the Nongbah—Shangpung belt of Jaintia Hills District, while bay leaf is concentrated on the southern slopes adjoining Bangladesh. Chilies are grown all over the State while ginger cultivation is concentrated in East and West Garo Hills and East Khasi Hills Districts. Large cardamom has been introduced recently and is slowly becoming popular.

Plantation Crops

Arecanut, Rubber and Tea are important plantation crops. In recent year's coconut plantations is being introduced in a limited scale. Aeronaut cultivation has been introduced in an extensive scale in the northern slopes of Khasi Hills in the Ri-Bhoi district. A disease

called Bud-Rot, which starts from the top and moves downwards, frequently afflicts this crop. Between 1971–72 to 1991–92, the area, production and productivity have been increasing at an annual average computed rate of 40 ha. 150 M.T. and 9.71 Kg/Ha.

Tea Experimental Stations were established at Umsning in Ri-Bhoi District (2.5 hectares), Riangdo in West Khasi Hills District (2.0 hectares) and Thebronggiri in West Garo Hills District (1.6 hectares) in 1976–77. Since then, the results have been encouraging and it was decided to grow tea as a homestead crop. In order to ensure the constant supply of good planting varieties, a Tea Nursery at Umsning in the Ri-Bhoi District and Rangram in the West Garo Hills District in 1982–83. To encourage the expansion of tea plantation in the state, several incentives, such as Cash subsidies of Rs. 12000.00 per hectare, released in five annual staggered installments, supply of plant protection materials like insecticides, fungicides etc., at 50% subsidy, and so on were provided. There is a private tea-processing unit at Sonapur. It processes green tea leaves from Umsning. At Rangram, local entrepreneur converts green tea leaves into finished product, which is mostly sold in the local market. At present, efforts are being made to accelerate the pace of expansion of area under Tea around both Umsning and Rangram, to achieve the production level to warrant the establishment of a mini tea-processing unit, at the earliest.

Meghalaya offers great potential for production of Mushrooms. A Regional Centre for Training and Production of Mushrooms in the Northeast was established in Shillong. The Centre is currently concentrating on the production and extension of (i) Agaricus spp. (White Button Mushroom) and (ii) Pleurotus spp. (Dhingri/Oyster). Of all the different mushrooms that can be grown by farmers, these two varieties have the strongest market Potential. Up till now, more than 700 farmers have been identified as trained growers and training sessions are being held regularly in villages in all the districts of the State.

Horticulture

Meghalaya is blessed with tropical, semitropical and temperate climates that permit the cultivation of a Wide variety of horticultural crops. The important horticultural crops currently being grown in the State are Banana, Oranges, Pineapple, Papaya, Jack fruit, Li-

tchi, Plum, Peach, Pear, etc. At present around 9 per cent of the geographical area of the State is net sown area (1,98,000 ha) and the chances of adding new areas under agronomic crops are limited.

On the other hand, around 22 percent (4, 92,880 hectares) and 7.50 per cent (1,67,270 hectares) of the total reporting area of the state (22,39,000 hectares) are lying as Culturable Wasteland and Fallow land other than Current Fallow, respectively. In other words, the areas under these two categories (6,60,150 hectares) covers about 30 per cent of the total reporting area of the State, represents potential areas, in addition to the current area (30,000 ha) under Horticulture.

Pineapple, Citrus (Mandarin Orange) and Banana are most important Horticultural crops in the state. The average annual growth rate in production of all the horticultural crops is positive except Mandarin Orange which showed a negative trend 29.97 thousand MT In order to tap the horticulture potential, efforts have been directed to establish nurseries in all the districts of the state. These can be identified as follows:

No.	Location/Nursery (in Ha)	Area	Fruits & Plants
1.	**East Khasi Hills**		
	Fruit Garden Shillong	35.001	Plum, Peach, Pear, Naspati, Apricot and Chestnut
	Temperate Fruit Research Station Upper Shillong	6.00	Plum, Peach, Pear
	Horticulture Fruit Nursery, Wahjain	8.80	Litchi, Arecanut, Coconut, Orange, Assam lemon, Pineapple, Bay Leaf
	Horticulture Fruit Nursery, Pomshutia	8.00	Litchi, Arecanut, Coconut, Orange, Assam Lemon, Pinapple
2.	**Ri-Bhoi**		
	Pineapple Research Station, Dewlieh Umsning	10.00	Pineapple, Sweet Oranges, Naspati, Litchi
	Horticulture Fruit Nursery, Byrnihat	6.00	Banana, Pineapple, Guava, Black Pepper, Arecanut, Litchi, Assam Lemon, Coconut
3.	**West Khasi Hills**		
	Horticulture Fruit Nursery, Phodkylla	9.00	Orange, Arecanut, Coconut, Sweet Potato
4.	**Jaintia Hills**		
	Horticulture Fruit Nursery, Thadlaskein	10.00	Plum, Peach, Pear, Naspati

contd. . . .

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	Horticulture Fruit Nursery, Muktapur	3.00	Litchi, Arecanut, Orange, Assam Lemon
	Horticulture Fruit Nursery, Mynkre	10.00	Assam Lemon, Orange,
5	**East Garo Hills**		
	Horticulture Fruit Nursery, Sambrak	25.00	Orange, Coconut, Black Pepper, Litchi, Assam Lemon, Ginger, Turmeric
6	**South Garo Hills**		
	Horticulture Fruit Nursery, Mineng	8.00	Orange, Black Pepper, Arecanut, Cinnamon, Litchi, Grape fruit
7	**West Garo Hills**		
	Horticulture Fruit Nursery, Rangram	4.00	Orange, Arecanut, Cinnamon, Bay leaf, Large cardamom
	Horticulture Fruit Nursery, Zikzak	8.00	Orange, Arecanut, Bay Leaf, Litchi, Assam Lemon, Coconut
	Horticulture Fruit Nursery, Damalgiri	5.00	Orange, Arecanut, Litchi

N.B. In some of the above-noted farms vegetable seeds are also being multiplied.

Meghalaya is known for its vegetables in the region. Cabbage, cauliflower, radish, and squash are regularly marketed outside the State. The area, production and productivity in the vegetable sector have been showing an upward trend. In the base year 1978–79, the total area and production of vegetables was 4.66 ha. And 43.99 thousand MT, whereas the average for the 13 years period from 1978–79 through 1990–91 the area and production was 5.01 thousand hectares and 45.74 thousand MT and in 1990–91, 6.56 thousand hectares and 64.76 thousand MT, respectively. The most heartening thing in the vegetable sector is the rise in productivity in most vegetable crops. The extension of tomato cultivation during the last 3–4 years in the Umsning—Nongpoh belt deserves special mention. The farmers of this region are growing tomatoes in both the Wharf and Rabi seasons. The agro-climatic conditions in Meghalaya favour the cultivation of vegetables round the year. This climatic advantage is reflected in good prices fetched by vegetables when they are in off-season in neighbouring states. On the whole, the revenue return from vegetables tends to be higher than from cereals, and moreover, they can be grown in homesteads or on gentle slopes near the homesteads, facilitating the farmers to pay full

attention to their care-maintenance regime. Corresponding developments were evident in fish seed production and distribution. This rose from 678200 units in 1991–92 to 1507000 unit's 1995–96, number of fish seed farms increased from 14 in 1991–92 to 16 in 1995–96. Nursery area declined from 3.2 Ha in 1991–92 to 2.3 Ha. in 1995–96 and Bhil and lakes from 375 Ha to 368 Ha. Number of villages under sericulture rose from 1469 in 1985–86 to 1812 in 1995–96.

Infrastructure

Fruit Processing-units

There are two existing fruit processing units in the State, one at Shillong in East Khasi Hills District with an installed capacity of 60 MT, and the other at Dainadubi in East Garo Hills District with an installed capacity of 40 MT. These factories manufacture Squashes, Canned fruits and juices, Jams, Jellies, Marmalade and Pickles. Apart from producing the conventional items like Orange Squash and Pineapple Jam, etc. these factories have recently started using indigenous fruits like Sohbrab (passion fruit), Sohiong (Prunus nepalensis) Soh Be] or Bael (Marmalades), Soh Pyrshong (Carombola), Soh Shang (Elacagnus sapida) and Soh Phie (Myrica nagi), to produce squashes, jam, pickles, etc. Recently Pineapple and Orange drinks packed in 200 m. RTS (ready-to-serve) packs have also been added to the list of items produced by these factories. These two factories form an integral part of the strategy for growth of the Horticultural sector in the state. They are equipped with state-of-the-art machines and manned by personnel trained at the various Food Technological Research Institutes.

Policies of Economic Development

Changing global economic linkages, rapidly interacting national economic situations, and local-regional level economic requirements and compulsions, induced parameters that needed immediate resolutions. As a consequence, the state reviewed its industrial and economic development policies and identified creation of employment opportunities in industry and allied sectors, development of human resource to aim at balanced growth oriented development

with specific emphasis on promotion of village and small scale industries, creation of infrastructural facilities, industrial growth centres and industrial parks, identification of medium and large industries utilising local resources, encouragement to local entrepreneurship, promotion of local interests through joint ventures and promotion of high value—low volume products in view of transportational bottlenecks as priority sectors.

These were incorporated in the State's Industrial Policy of 1997. This policy also envisaged promotion and introduction of advanced technologies, external investments, and so on. Based on the available resources of the state, the Industrial Policy of 1997, aimed at encouraging the growth of Agro-Based Industries (like Horticulture based units, Bio-Technology based units, Tissue culture and Orchid units, Spice, Oleoresin and other essential oil units, Medicinal plants, Tea and Rubber), Animal Husbandry and Meat Processing Units, Development of Mineral based units (like Coal based units, Limestone based units such as cement plants, lime purification plants, calcium carbonate plants, Precipitated calcium carbonate units, Bleaching powder units, etc.,Other units such as Granite mining and polishing units, Sillimanite refractory and allied plants, Clay washeries, Ceremic glazed tiles, Ceramic crockery. Ceramic low-tension insulation) and Electronic and Information technology units in the state.

These units were to be encouraged by providing necessary infrastructural facilities, credit and finance subsidies, access to technology, relaxation in controls, better marketing strategies and so on. Besides, tourism was to be given adequate support, as it forms one of the few sectors in the State's economy that had the potential to provide more than adequate returns. Besides, there have been significant efforts to tap the Southeast Asian markets for export products, such as coal, lime stone, beetle leaf, handicrafts etc., (particularly with Bangladesh). The state's favourable agro-climatic conditions, provides the much required thresh hold point for accelerating economic growth. These prospects are enhanced by the location of the state in the wider regional environment. The latter, provides the required networks and linkages for such an effort

The above paragraphs clearly suggest that the Non-Governmental Organisations have ample scope to function and operate in the state. They can supplement the development effort and thereby induce economic development. It is in this context that the proceed-

ings of the Voluntary Organisations and Sustainable rural development in Meghalaya have been presented.

Selected References

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2. *Review of Agriculture Meghalaya*, Department of Agriculture, Government of Meghalaya, Shillong, 1996.
3. A.K. Nongkinrih, *On Sustainable Development*, 1996. (Occasional Paper)
4. R. Gopalakrishnan, (2000) *Meghalaya, Land and People*, Revised Edition, Omsons, Guwahati and New Delhi. It is in this scenario that the Non-Governmental Organisations can function and operate in the state.