

Chapter Seven

Agriculture Policy Implications amongst Scheduled Tribes in Chhota Udepur District - Outcome, Gap and Way Forward



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7.1 Introduction:

The tribes differed from the non-tribes in many aspects of their life and living. The tribes have survived for millennia by using long-standing social and economic customs to keep a careful balance with their fragile ecological environment. With the progress of time, the penetration of various non-tribal formations into the tribal territories has resulted in the destabilization of tribal social and economic modes and the erosion of their traditional economic resource base. Today, these lagging tribal territories of the country stand as a formidable barrier on the path of national progress. Following independence, deliberate interventions were carried out in a determined manner to encourage development in the tribal areas. Scholars belonging to various disciplinary backgrounds have contributed enormously by way of enlightening ideas concerning the development of tribal areas of the country. A voluminous literature has accumulated today prescribing planning measures, and a host of them have been designed and implemented. The efforts have undoubtedly produced results. However, data acquired by numerous field researchers—especially after a few decades of the planned interventions—showed the numerous destructions brought about by the flawed planning techniques in the tribal territories. Considering the vastness of the available literature on the issue and the scope of the present research, elaborate analysis of their findings has been avoided in the chapter. Instead, policy concerns about the usage of resources—especially land and forest resources—in tribal territories generally and the study region specifically have received attention. The analysis is mostly based on secondary information available in the government documents.

Keeping the purpose of the chapter in mind, it is considered relevant to comprehend the related ongoing policies and their implications on livelihood of the tribes and development of tribal areas. For the purpose, the chapter is divided into three sections. The first section highlights the dynamics and characteristics of the study area as well as of the tribal areas of Gujarat in terms of their forest and land resources. Some of the government policies pertaining to resource mobilization in the tribal areas have been discussed along with their implications in the second

section. Finally, before concluding the chapter, an attempt has been made to envisage the future prospects of forest and land resource utilization in the tribal areas.

7.2 Dynamics and Characteristics of Resources of Tribal Areas:

Traditionally the tribes heavily depended upon their immediate surroundings which offered a variety of choices – food in the form of foliage, seeds, fruits, tubers and roots, and in the form of animals and fish. Their survival depended on food gathering and collection from the forest, which was by and large bountiful although surplus dwindled with the change of season. This necessitated for a few groups to rhythmically migrate in search of forest resources and for others to cultivate with rudimentary practices, coarse variety of food grains in the valley floors and hill slopes. They were organically linked to their milieu and lived in complete harmony with nature. Gradual depletion of forests and consequential degradation of soil and water resources of the traditional tribal habitats stripped off their life supporting capabilities. Due to both physical and human limitations, the tribes' interactions with their environment were more and more limited to the use of land resources for crop production, the products of which could not sustain the bulk of people for longer than a few months each year. Gujarat's tribal regions provide as a prime illustration of how, under these situations, the unorganized urban labour market offers an alternate source of income and employment. Families, mostly young couples with or without small children, seasonally migrate to the cities and work as wage labourers mostly in the construction sector. Given the conditions, evaluating the policy options to improve the situation in the tribal territories is relevant.

7.2.1 Forest:

Taking into account the sustainable regeneration of the degraded forests and granting the tribes access to the designated village forest for controlled resource consumption are crucial given the significance of forests to the tribes' way of life. There are several success stories in the country in this regard, where the tribes have managed the village forests and other local resources themselves extremely efficiently, sometimes even without support from government agencies (Gadgil and Guha; 1991 & 1995; Beninger, 1992). The story of the Forest Protection Committee (FPC) programme actively supported and developed by the West Bengal Forest Department in Arabari Range of Medinapore district in 1973 is well-known today (Patil, 1992). Encouraged by the experience of Arabari Range, the Ford Foundation and the West Bengal Forests Department

developed a research and training support programme and allowed the FPC experience to extend it within and outside West Bengal (Ibid.). Following West Bengal, the governments of Karnataka and Maharashtra have successfully tried to employ the FPC type programme in their tribal areas.

It is time for a well-rounded strategy aimed at preserving forests and tribal members' means of subsistence. To improve the tribes' agricultural revenue, the Gujarat government has launched a number of initiatives. Improving farmer income alone, however, would not be the best approach for the development of tribal communities; instead, the entire region needs to be developed sustainably. It is imperative to sustainably maintain the tribal way of life. Forest resources and access to them has great significance in the livelihood of tribal farmers. Most of the Non-Timber Forest Produce (NTFP) used by them for household consumption are procured from the neighbouring forest.

(a) Forest Cover:

Though the percentage of forest area to the total geographical area of Gujarat has increased from 9.89 per cent in 1991-92 to 11.14 per cent in 2019-20, most of it is categorized as protected forest. The percentage share of forest area to the total geographical area of Chhota Udepur district is nearly 20.95 per cent, but there is a shortfall of 13 per cent of forest area from the prescribed international standards.

(b) Forest Grasslands or *Vidis*¹²:

The main concern of tribal livelihood is collection of NTFP such as, fuel wood, animal fodder, fruits and medicinal herbs from the nearby forest. Gujarat has a total of 614 grasslands, which are managed by four forest circles. Out of 469 non-reserved grasslands, maximum grasslands are in Rajkot district. Percentage of grass collection in Chhota Udepur district has reduced from nearly 7 per cent in 2016-17 to 1.60 per cent in 2020-21. The overall percentage of grass collection for the entire State has increased from 207.18 to 323.19 per cent in the same period. There are no reserved and unreserved *Vidis* in the Chhota Udepur district. Only one fodder grass godown is available in the District against 292 grass godowns for the entire State. Tribal farmers of Chhota Udepur district would be benefited if the amount of grass collected and the number of

¹²*Vidis* (in Gujarati language) means grasslands for animal fodder. The Gujarat Forest Department manages the *Vidis*. Animal fodder is stored in godowns as buffer stock, for distribution among local tribes during dry season for animal rearing.

grass godowns increase. Location of the godowns need to be planned judiciously to ease the accessibility.

(c) Importance of NTFP in Chhota Udepur:

Medicinal herbs and other forest products are gaining importance in tribal areas of Gujarat. Tribal Co-operatives Marketing Development Federation of India LTD (TRIFED) along with Indian Council for Agricultural Research (ICAR) is enhancing the procurement of these forest products like Baheda, Mahuwa seed, wild honey, Kusumilac, dried Jamun seeds, Chironji pods with seeds, seeded tamarind, Bael pulp, Giloe, Puwad seeds and Aritha (Govt. of India, 2020: 35). Burning of crop residues in the farmlands adjacent to forested areas, where cotton, paddy, maize and wheat are grown, poses a significant issue. This practice not only has the potential to trigger forest fires but also disrupts local pollinator populations.

7.2.2 Agricultural Growth and Development in Chhota Udepur:

Over the last seven decades the Indian economy has experienced unprecedented changes. Though agriculture remains the key sector, contributions of non-agricultural sectors have increased substantially. The share of agriculture in the Gross Domestic Product (GDP) has declined from an average 55.12 per cent in 1950-51 to 15.51 per cent in 2021-22 (Kumar, 2022: 2). Annual growth rate of Gross State Value Added (GSVA) of agriculture and allied sectors at constant (2011-12) prices for Gujarat was the highest (15.54 %) in 2016-17, during 2015-16 to 2020-21. However, the growth rate kept fluctuating and increased only by 1.12 per cent in 2020-21 (Govt. of Gujarat, 2023: 9).

(a) Land Holding:

Traditionally the tribes were dependent on their natural surroundings for a variety of products like fruits, seeds, herbs, tubers and roots along with animals and fish. The change from forest centric to settled agriculture centric livelihood has transformed their social and economic characteristics to a great extent, as several factors influence current farming system. Among them, distribution of land, which is now the only available productive resource for the tribes, acquires the greatest significance. A perusal of the statistics on the land size category-wise percentage of land holdings and the proportion of area they cover in Chhota Udepur district indicates dominance of smaller size land holdings. As per the latest count (2015-16), marginal and small land size holdings occupy 72 per cent of the total number of land holdings in the District, which account for

42 per cent of the total area of all holdings in the District. Fragmented land holdings and rain fed farming do not allow tribal farmers to produce sufficient crops to sustain them for the entire year. According to Agricultural Statistics, Chhota Udepur district ranks much below several districts of the State in terms of crop production (Ibid: 44).

(b) Changes in Cropping Pattern:

Changes in cropping pattern for in the country as well as in the study area are closely associated with the population pressure on land. With increased population, there is tremendous pressure on land for food production as the net cultivated area remains the same. To keep the pace of crop production with the increasing population, farmers resort to agricultural inputs like chemical fertilizer and irrigation. The resultant outcomes reveal the following with respect to crop production in Chhota Udepur district.

The yield gap analysis between the State and Chhota Udepur district for 2012 to 2017 reveals that, yield of cereal crops like Rice (average yield is 1253 kg/ha against 1060 kg/ha of the State) Wheat (29.34 quintal/ha against 29.64 kg quintal/ha average yield of the State) and Maize (2176 kg/ha against 1714 kg/ha of the State), in Chhota Udepur district is relatively better than in the State as a whole though the input cost is increasing per annum. Soil salinity and alkalinity are major constraints for Wheat. Poor soil fertility and moisture holding capacity particularly in Chhota Udepur along with Panch Mahals, Dohad, Aravalli, Sabar Kantha, and Banas Kantha districts are the major constraints of the yield of Maize.

(c) Changing Crop Yield:

The yield gap for Groundnut in Chhota Udepur is -11.6 per cent compared to the State average. Mainly weed infestation is the major reason behind low productivity. Water management from canal irrigation for Groundnut cultivation in middle Gujarat needs to be taken care of. Soyabean is a new variety of non-traditional crop and in Chhota Udepur district, and is cultivated with other major crops under the intercropping system. Soyabean yield is more than 10 per cent over the State average. Production of pulses is not very much developed in the District. The yield gap of Cotton is on the positive side over the State average.

(d) Changing Horticulture Yield:

The 29.09 metric tons per hectare yield of horticulture crops of Chhota Udepur district is better than the corresponding State average of 21.24 metric tons per hectare. However, the District lags behind the State as a whole in flower crop yield with 6.40 metric tons per hectare against 9.46 metric tons per hectare in the State. Similarly, the yield of vegetables of 18.48 Mt/Ha in the District is lesser than of the State (20 Mt/Ha).

(e) Livelihood and Employment in Agriculture:

To enhance the employment, income and livelihood opportunities of small and marginal farmer's, agro forestry is the most suitable option. To meet the fuel, fodder, and other forest products, agro forestry plantation like windbreak, shelterbelt, bund plantation, nitrogen-fixing trees, green cover for controlling carbon emission are carried out. Major constraints of agro forestry in Gujarat are, less awareness among farmers about the species to be planted for different purposes, and lack of information on demand-supply chain of wood-based industries (Govt. of Gujarat, 2020b: 78).

(f) Focus on Production of Millets or Coarse Grains:

Gross cropped area declined by 11.62 per cent mainly due to fall in area under coarse cereals by 16.78 per cent between triennium ending (TE) 1970-71 and TE 2020-21 for the entire country. Food and Agriculture Organisation United Nations (UN) has recognised 2023 as International Year of Millets. Government of India had proposed to the Organization to declare 2023 as the Year of Millets to increase domestic and global nutritional food demands (NABARD, 2023). This initiation is a good step for semi-arid Chhota Udepur district as millets can be the best staple crops under the agro-climatic condition of the District. Inadequate diversification of crops and the tendency to give preference to commercial crop farming are the major problems to introduce Millet cultivation in the tribal areas. Integrated farming¹³ and conservation farming¹⁴ are more suitable to the dry land farming system followed in the tribal areas. Unfortunately, however, majority of the tribal farmers are having marginal and smaller sizes of operational holdings, which

¹³ Integrated Farming system is a sustainable agricultural system, that associate livestock, crop production, fish, poultry, tree, plantation, and other systems that benefit each other.

¹⁴ Conservation Farming promotes maintenance of a permanent soil cover, minimum soil disturbance and diversification of plant species.

are susceptible to the risk of price fluctuations and market trends. Unfortunately, however, majority of the tribal farmers are having marginal and smaller sizes of operational holdings, which are susceptible to the risk of price fluctuations and market trends.

In favour of Millets another point to be noted is that, coarse grains need minimum irrigated water, but the maximum share of irrigated water are consumed by Cotton (48.54% of total irrigated area) followed by Maize (16.68%), Rice (8.95%), Oil Seeds (2.74%), Fodder crops (2.69 %) and other crops (20.40 %) (Govt of Gujarat, 2023b: 58).

Over dependence on Maize as food crop, results in less crop diversification among the majority of tribal farmers. Rathva is the predominant ST community in Chhota Udepur district, which invariably consumes Maize as staple diet. But monotony in the dietary pattern brings ailment among Rathva youths.

According to Nambiar, more than 79 per cent students in Chhota Udepur district are vegetarian who continuously consume Maize in their daily diet along with Rice flakes in the morning breakfast. Inadequate consumption of other cereals and pulses. causes anaemia and vitamin C and B-complex deficiencies among them (Nambiar et. al 2015: 4). Crop diversification involving introduction of oilseeds, pulses and Soyabean in the District is a good initiative, but simultaneous stress on the improvement of irrigation infrastructure in the District is also important.

7.2.3 Impacts of Irrigation Changes in Chhota Udepur:

As irrigation is a leading factor for good agricultural activities, farmers are very much dependent on different sources of irrigation in India as well as in Gujarat. There are two major problems related to irrigation apart from inadequacy in gross irrigated area in Chhota Udepur district.

(a) Rainfall Impacts:

In the rainy months from June to September, torrential rains do not support rainwater harvesting. Due to heavy rainfall for a short period of time, most of the rain water flows down before the groundwater is recharged. Local inhabitants call the Orsang River 'insane' in the rainy season as they have to bear heavy crop damage caused due to flooding.



Collapsed Bridge and check dam in Kavant *taluka*.

(b) Construction of Check Dams:

Check dams and small bridges for communication are becoming fragile due to heavy rainfall. The small bridges become useless when they are in utmost need. Specially in Kavant and Chhota Udepur *talukas*, the rain water gushes down the hilly gradient with great speed causing severe damage to the road and other infrastructure.

(c) Micro Irrigation System (MIS):

MIS is an initiative of Gujarat government for agriculture in semi-arid and arid regions facing water scarcity. Micro irrigation works with the objectives of less water wastages and multiple crop choices (with the slogan ‘*per drop more crop*’). Being a cost intensive scheme, the MIS has been poorly implemented in the State covering only 10 per cent of the marginal farmers, 30 per cent of the small farmers, 55 per cent of the medium farmers and 4 per cent of the large farmers.

In the Chhota Udepur district, the total area (in hectares) covered under MIS from 2005-06 to 2022-23 (up to March 2023) is 2.55 per cent of the total area of the entire State with MIS. The cumulative number of MIS in the District during the same period accounts for 3 per cent of the State’s total number of installed MIS. From this data it is clear that there are still a lot of awareness projects required to involve marginal and small landholders to make the MIS successful.

Current (2022-23) estimation shows that *taluka*-wise installation of MIS with respect to percentage share of number (N) and area (A) (Ha) out of whole District, is the highest in Kavant (38.8% N, 37.3 % A) followed by Sankheda (21.7 % N, 24.7 % A), Bodeli (22 % N, 21.7% A),

Jetpur Pavi (8.9% N, 7.55 % A), Nasvadi (5.1% N, 6.1% A) and Chhota Udepur (2.5% N, 2.4 % A). Implementation of MIS in the predominantly tribal *talukas* of the District, except in Kavant *taluka*, compares poorly with MIS implementation in its predominantly non-tribal *talukas* (GGRC, 2023).

7.2.4 Agricultural Inputs:

(a) Fertilizer:

It has been mentioned in the previous chapter that fertiliser consumption in the semi-arid agro-ecological condition results in soil and land degradation. Actually, imbalances in the application of chemical fertilizers have increased in India increasing the level of emissions during 1980-2017 (Chand et. al, 2022: 30). Fertiliser consumption has increased substantially in almost all districts of the State since 1980.

Total NPK (Nitrogen, Phosphorous, Potassium) consumption in Chhota Udepur district in 2021-22 accounted for 2.73 per cent of the total NPK consumption in the State. Use of organic manure is gradually reducing in the District. To achieve quick results with better yield and profit, tribal farmers depend on chemical fertilisers. Indirectly fertilisers harm farmers' health. As physical work is one of the capitals of farming, health deterioration in the long term due to excessive fertiliser use is a serious issue. A survey conducted in Vadodara district reveals that green fodders are low in Ferrous (17 %), Zinc (5 %) and Copper (23 %). All these inadequacies of vital nutrients have affected human health. Algal blooms and agro-chemicals contribute to water and air pollution, which directly and indirectly damage human health (Shukla & Behera, 2022: 37).

(b) Crop Insurance:

Comparison between districts display a great imbalance regarding crop area insured under Pradhan Mantri Fasal Bima Yojana. For the Chhota Udepur district, the percentage of area covered under insurance out of total cultivated area is only 1.19 per cent against 21.59 per cent of the State average during 2019-20 (Govt. of Gujarat, 2023: 74).

(c) Agro Infrastructure:

Out of the total tube wells installed in the State, 2.57 per cent of tube wells are serving in Chhota Udepur district irrigating the area of 656 ha which is 1.7 per cent of the total irrigated area under tube wells in the State. The number of wells electrified in the District until 2021-22 is 1,563,

which is 2.48 per cent of the total electrified wells in the State. Post-harvest procurement, management and trade of crops are yet to be developed in the Chhota Udepur district. Agricultural expenses for all agricultural inputs are becoming very high. Agriculture, forestry and migration are the three main sources of earning for tribal farmers. They are mostly self-employed and have irregular job opportunities. Under the situation, the burden of agricultural input costs like expenses on agricultural machinery, water for irrigation, chemical fertilisers, interests on loans etcetera are increasing their burden and continuing their poverty trap.

7.2.5 Poverty and Migration:

(a) Poverty: There is a high incidence of poverty among rural agricultural labour and urban casual labour households due to discrimination in the labour markets for their unskilled condition. During 2011-12, 38.3 per cent of total poor households in Gujarat belonged to the ST community against the corresponding 17.4 per cent ST share in the entire Nation. (Radhakrishna, 2015: 64). In addition, the climate shock is pushing the marginal and small farmers to informal credit and ultimately leading them to a vicious cycle of poverty.

(b) Migration: The study reveals that the tribal farmers work as migrant labourers for 6 to 8 months in a year. The intention of the government through several programmes is to provide the tribal farmers with better access to health and education, and to improve the productivity of their crops. Unfortunately, however, the tribal youth tend to lose their traditional wisdom about farming due to seasonal migration which detaches them from the rural circumstances. They have started living dual lives, in which they are neither able to adopt the urban life nor concentrate on farming. From the primary survey, it is observed that there are two types of out-migration in the Chhota Udepur district (i) Short duration migration, extending for a month or so, of young males to neighbouring areas, and (ii) Long duration migration of the entire family to the Kachchh and Kathiawar for 6-8 months.

These contrasting patterns of migration develop due to different patterns of borrowing, and different strategies adopted for managing debt. Differences among households in terms of land holding, domestic cycle shifts and social position can be well comprehended from the nature of indebtedness. Poorer households migrate immediately after the harvest to repay the loans taken during the monsoon season for sustenance and emergencies (Mosse et. al., 2010:69). Nearly half

of the adult villagers live away from farms and families for half of the year, which is indeed a matter of serious concern for the village economy and livelihood.

7.2.6 Women and Employment:

Rural women are mostly engaged in agriculture and allied activities. More than 80 (81.7%) per cent of women of Chhota Udepur engaged in agriculture clearly reflects the gap in sector-specific employment of women in the District. In addition, 65.4 per cent of women are self-employed and 54 per cent of these women work as unpaid workers helping their household enterprises.

MGNREGA employment accounts for only 2.3 per cent of total women employment in casual work in the State, which is 6.4 percentage points lower than the National average. Traditional stereotyped gender discrimination ideas perhaps also act as hurdles for regular wage employment of rural women. (Pandey and Mitra, 2020: 6).

Around 57.7 per cent of the females in the sample villages of Bodeli and Jetpur Pavi *talukas* declared agriculture and animal husbandry as their main occupation, but their involvement is decided mostly by the male members of the family. Analysis of the present research clearly shows that age, education, experience of farming and family type play a significant role in the participation of tribal women in agricultural practices.

The results of the present study are similar to the study conducted by the World Bank and ILO in Sri Lanka. According to that study, there is a need to change the outlook of all the work done by females. Because the **measurement of work** does not include the value of women's unpaid expenditure-saving work like collecting firewood, cooking, tutoring children and much other work which uplifts the standard of living (Discenza et. al., 2021 cited in Govt of India, 2023: 161). The tribal regions of Chhota Udepur face the following issues pertaining to women.

- a) Lack of availability of job opportunities for women as men benefit disproportionately from increased demand for skilled labour.
- b) Women are mostly engaged in those sectors where sectoral growth are not generating employment or more job opportunities.
- c) In rural areas marriages exert a lot of influence on women's participation in jobs other than domestic work.

- d) The women's work participation declines due to modernization of agriculture and expansion of non-agricultural economic activities across time and space than men's work participation.

7.3 Policy Implications:

Government policies and their implementation is an important aspect for the development of communities and areas including the tribal communities and tribal areas. The implementation of these policies and programmes initiates the processes of development among the target populations and areas. An attempt has been made in the following section to assess the prospects of some of the policies and programmes targeting development in the tribal areas with special reference to the area under study. Emphasis has been given to the initiatives pertaining to forests and land resources.

7.3.1 National/State Policies:

Retrospectively looking at the agricultural scenario in the country, the following observations can be made.

- i. Agricultural growth during the first two phases (1951-56 to 1961-66), required advanced technology.
- ii. The Nation started recovering from food grain deficiency with the implementation of Green Revolution technologies.
- iii. The accelerated agricultural growth rate achieved through the application of Green Revolution technologies could not sustain, as these were specifically designed for the irrigated and capital-intensive farming areas and some human factors.
- iv. Diversification towards horticulture and livestock played a significant role for agricultural growth during the 1980s and the first half of the 1990s.
- v. The liberalisation of agricultural trade proposed by the World Trade Organisation (WTO) could influence agricultural growth for a few years but with the fall of prices internationally

after 1998, domestic prices also pulled down for some years during the 2000s, to be specific till 2006-07.

- vi. During the next 15 years ending at 2021-22, the growth rate again accelerated and settled at 3.61 per cent, which is the highest among all the phases so far (Chand and Singh, 2023: 5).

Although all the National and State level schemes have been implemented in the study area to support agricultural operations, the farmers are aware only about the Direct Benefit Transfer (DBT) schemes, which are linked to their bank accounts. These schemes are:

- a) *Pradhan Mantri Kisan Sanman Nidhi Yojana*: A farmer family gets Rs.6000 per annum through DBT.
- b) *Pradhan Mantri Krushi Sinchai Yojana*: It includes Integrated Drainage Management Programme, Watershed Development Programme, Accelerated Irrigation Benefit Programme (A.I.B.P), Har Khet Ko Pani, Per Drop More Crop.
- c) *Rashtriya Krishi Vikas Yojana (RKVY-RAFTAAR)*: Different projects targeting infrastructure development and asset creation.
- d) *Paramparagat Krishi Vikas Yojana*: A scheme under National Mission for Sustainable Agriculture (NMSA).

The above-mentioned programmes and schemes are specifically designed to kindle agricultural progress and implemented uniformly in all areas without considering the differences in their ecological and socio-economic characteristics. For instance, majority of the tribal areas of the country are agriculturally unsuitable. A holistic approach involving crop production, horticulture, pisciculture, livestock rearing, household industries etcetera is more desirable than a constricted approach stressing on agricultural progress alone. To elevate the tribal farmers to the level of mainstream agriculture and its sustenance, the following aspects are most crucial.

7.3.2 Land Related:

- a) The Bombay Land Revenue Code-1879, and Gujarat Tenancy and Agricultural Land Act 1948, maintained agricultural land management by landowners and tenants. The regulation of agriculture, its transfer and management ensure sustaining the agricultural practices.

- b) Model Agriculture Land Leasing Act 2016 - Through this act, landlords can lease the land with mutual consent for agriculture and allied activities.
- c) Model Contract Farming Act 2018 - According to this act, the purchase of whole quantities of one or more agricultural produce, livestock or contract agricultural product, at the pre-agreed rate is ensured.
- d) Soil Health Card: Soil Health Card has been launched on 19th February 2015. Under this scheme soil health cards will be provided to farmers at an interval of 2 years so as to enable farmers to ask for consultation for their farm soil.

7.3.3 Farm Support or Welfare:

- a) Minimum Support Price (MSP) to Ensure Returns Over the Cost of Production - The Union Budget for 2018-19 announced that farmers in India would be given an MSP of at least one and a half times the cost of production. In Gujarat major crops like *Bajra*, *Sorghum*, Maize, Paddy, Cotton, *Tur*, *Mung*, *Udad*, Groundnut, Sesame, Wheat, Gram, Mustard and Sugarcane are covered under MSP.
- b) *Pradhan Mantri Fasal Bima Yojana* (PMFBY) - Weather Based Crop Insurance Scheme (WBCIS), to safeguard farmers from natural disasters.
- c) *Gujarat Saat Pagla Khedut Kalyan Yojana* started in 2020-21 to make the farmers more self-reliant in the areas of,
 - *Mukhya Mantri* crop storage structure.
 - *Kisan Parivahan Yojana*.
 - Assistance in maintenance cost of farm animals.
 - Assistance in natural farming to make *Jeevamrut*.
 - Free of charge umbrellas to fruit and vegetable vendors.
 - To provide smart hand tool kits to marginal farmers and farm labourers.
 - Wire fencing scheme.
- d) Crop Loss: Relief packages declared by State government in cases of losses of agricultural crops.

7.3.4 Agri-Business Support:

- i. Agriculture Produce Market Committees (APMC): APMCs are active in all 33 districts.

- ii. National Agriculture Market (e-NAM): To promote online marketing of agricultural products. In Gujarat 79 *Mandis* are integrated with the e-NAM.
- iii. Gujarat State Seeds Corporation: Production of seeds as well as to store produced seeds scientifically.
- iv. Gujarat Agro-Industries Corporation Limited: Chemical fertilizer, pesticides and bio fertilizers are sold through the Corporation.
- v. Gujarat State Horticulture Mission: To double the horticulture production.
- vi. Centre of Excellence: Under the Indo-Israel Work Plan, six centres of excellence are working to provide guidance/training to utilize improved technology for horticultural crops, such as;
 - a. Mission Honey Bee
 - b. Kamalam Fruit (or Dragon Fruit), Indian version
 - c. Kitchen gardening and canning
- vii. Formation of Farmer's Association (FPOs): To organise small-marginal farmers for establishment of collection centres, value addition, and marketing of farm produce to get better market price.

7.3.5 Animal Husbandry

- a) Intensive Cattle Development Projects (ICDP): To improve the breed of cattle and buffaloes for increasing milk production.
- b) Intensive Poultry Development Projects (IRDPA)
- c) Intensive Sheep Development Projects
- d) Co-operative Milk Societies.

There are primarily three different sources for the above discussion. Chand and Singh, 2023, Govt. of India, 2023 and Govt. of India, 2018.

7.3.6 Tribal Development Schemes:

The previous section mentions the agricultural programmes and scheme meant for all cultivators and farmers. With beginning of the planned development period in the country, specific policies focusing development of Scheduled Areas have been initiated. The farmers of Chhota Udepur district have taken advantage and benefited from these which are worthy to note.

7.3.7 State Level Programmes:

The eastern tribal regions of the State were provided with the benefit of the policies meant for STs of Gujarat. These are as follows:

- a) The State government has implemented Tribal Sub-Plan (TSP) scheme since the initiation of Fifth Five Year plan (1976). Main objective of TSP is to bridge the gap between ST population and the general population. During the year 2022-23, the outlay in TSP is Rs.14,638.29 crores, out of which Rs 7857.50 crores have been spent up to December 2022.
- b) The government of Gujarat has adopted New Gujarat Pattern Schemes under which, 14.75 per cent of the fund is allocated every year for the development of the TSP areas, a proportion equal to the tribal population share in the State. While 90 per cent of the fund is handled by the District Tribal Development Committee, the State Level Committee handles the remaining 10 per cent.
- c) The main function of the Gujarat Tribal Development Corporation (GTDC) includes economic activities along with marketing, processing, supply and storage of agricultural products, small-scale industries, building construction and transportation.
- d) Under the Capital Contribution Fund Scheme, loans are given to tribal beneficiaries and institutions or cooperative societies where majority of the members belong to tribal communities at interest rates of 9 per cent and 14 per cent respectively for,
 - i. Consumer activities of tribes
 - ii. Supply of agricultural inputs
 - iii. Sale and purchase of surplus agricultural products of tribal farmers
 - iv. Collection of major forest produce
 - v. Fixed and working capital for industrial activities
 - vi. Grant of loan to tribal individuals to purchase milch cattle and bullocks
 - vii. Purchase of tractors
 - viii. Margin money for the purchase of auto-rickshaw
 - ix. Individual and family-oriented schemes of various departments like Rural Development, Agriculture, Animal Husbandry etcetera.

7.3.8 National Level Programmes:

The National Scheduled Tribal Finance and Development Corporation (NSTFDC), New Delhi sponsors schemes, under which individual tribal beneficiaries get loans at interest rates of 4 to 8 per cent. These loans can be availed directly or through cooperative institutions in order to procure income-generating assets like auto-rickshaw, tractor with trailer, truck, jeep, van, Sumo and dairy unit. From 1993 up to October 2022, the Corporation has sanctioned and released Rs.32,043.17 lakhs as loans to 1,37,143 tribal beneficiaries.

(a) Under schemes implemented for the upliftment of ST beneficiaries, the Corporation had sanctioned loans in the year 2021-22 for the following purposes:

- i. Loan assistance of Rs.200.20 lakh to 27 beneficiaries for higher studies in foreign countries
- ii. Financial assistance of Rs.4.63 lakhs to 76 law graduates
- iii. Loan of Rs.30 lakhs to 6 institutions of Nahari Kendra
- iv. Loan assistance of Rs.402.43 lakhs to 174 beneficiaries under self-employment scheme.

(b) During the year 2021-22, the Corporation had sanctioned loans covering 283 ST beneficiaries and 6 institutions.

(c) During the year 2022-23 (up to October 2022), the Corporation has sanctioned loans for the following purposes:

- i. Rs.207.50 lakhs to 27 beneficiaries for higher studies in foreign countries
- ii. Financial assistance of Rs.148 lakhs to 9 law graduates
- iii. Loan of Rs.10.00 lakhs to 2 institutions of Nahari Kendra
- iv. Loan assistance of Rs.292.81 lakhs to 227 beneficiaries under self-employment scheme.

(d) During the year 2022-23 (up to October 2022), under all above schemes, the Corporation has sanctioned loan assistance of Rs.511.79 lakhs covering 256 ST beneficiaries and 2 institutions (Govt. of Gujarat, 2023c: 105).

7.4 Way Forward or Prospects of Farming:

The preceding section makes it clear that the Central and State governments have tried their level best to enhance the future prospects of agriculture in the tribal areas with the help of a number of programmes and schemes. Tribal farmers are also benefiting from these but the outreach is limited. However, findings of primary investigation in tribal *talukas* in Chhota Udepur district reveals that the non-tribal farmers have appropriated these benefits relatively better than their tribal counterparts.

7.4.1 Initiatives of the Nation for Agricultural Prospects:

For the success of the contemporary programmes and schemes envisaged for the development of agriculture and allied activities, it is essential to increase the level of awareness and trust among the tribal farmers. This could inspire them to take risk and adopt modern methods of agriculture. Some of the promising programmes, which can benefit the tribal farmers more in Chhota Udepur and rest of eastern tribal regions areas of the State are as under;

- (a) **Kisan Credit Card**: As of 30 December, 2022, banks issued KCC to 3.89 crore eligible farmers in the country.
- (b) **Farm Mechanisation**: Under the **Sub Mission on Agricultural Mechanisation (SMAM)**, initiation of farm mechanization by the state governments to assist farmers to procure various farm machinery has achieved satisfactory success. The SMAM is now looking forward to launch suitable machinery for fragmented farms of India (Govt. of India, 2023: 247).
- (c) **Organic Farming**: Promotion of natural farming through **Bhartiya Prakratrik Krishi Paddhati** (BPKY) is a sub-scheme of *Paramparagat Krishi Vikas Yojana* (PKVY). This Zero Budget Natural Farming (ZBNF) launched in 2019-20 focuses on capacity building, training, on-field demonstration of natural farming etcetera.
- (d) **Agricultural Infrastructure Fund (AIF)**: It is a financing facility, operational from the year 2020-21 to 2032-33 for the creation of post-harvest management of infrastructure and community farm assets, with benefits of 3 per cent subvention and credit guarantee support.

- (e) **Sahakar-Se-Samridhi**: This is a new programme to focus on the co-operative societies. There are 8.5 lakh registered co-operative societies in India with 29 crore members mainly from marginalised and lower income groups, whose cooperation with each other could enable small farmers to sustain. The Ministry of Cooperation was established in July 2021 to look after the cooperative sector. In addition, 63,000 functional Primary Agricultural Credit Societies were equipped with computers to ease the task of transactions in cooperative societies.
- (f) **Pradhan Mantri Kissan Sampada Yojana (PMKSY)**: It provides financial assistance to the food processing sector for overall growth and development. As of 31 December 2022, loans amounting to Rs.1,402.6 crores have been sanctioned to 15,095 beneficiaries. This is a new and better development in the agricultural sector as it is approaching the One District One Product (ODOP) to obtain the advantages of procuring inputs, using shared services and marketing the products. In the same way Ready to Cook, Ready to Eat products are also gaining importance and popularity under the Production Linked Incentive Scheme for Food Processing Industry (PLISFPI), launched in March 2022.
- (g) To transport perishable food products from the hilly areas, north eastern states and other tribal areas, **Krishi UDAN 2.0** version was launched in October 2021 as a six-month pilot project. The scheme covers around 25 airports from where Airport Authority of India provides completely free transportation of agricultural products from north eastern states, hilly and other tribal regions. This scheme supports tribal farmers in transporting perishable goods and realizing improved values (Govt of India, 2023: 256).
- (h) Food processing sector or **The Sunrise Sector** is bridging the route between agriculture and industry. The processed food industry based on agriculture, could export a huge amount of agro-processed food items which is 10.9 per cent of India's total export during 2021-22.

7.4.2 Initiatives of the State for Agricultural Prospects:

The initiatives for agricultural development in the tribal areas by the State government needs expansion, as a substantial proportion of the stakeholders in these areas are ignorant about these programmes and schemes envisaged for the purpose. Following are some of the programmes and schemes, which need expansion among the tribal farmers of Chhota Udepur district.

- (a) **Soil Health Card:** Soil Health Cards provide information on the nature of soil. In the Gram *Panchayats*, farmers can log in through the internet and access the information regarding soil problems under the e-gram project.
- (b) **Water Harvesting:** The purpose of water harvesting projects is to conserve soil and water. During the last five years, around 3 lakh ground water harvesting structures have been constructed in Gujarat.
- (c) **Drip Irrigation:** Drip irrigation projects are extremely suitable for successful conservation and utilization of water in the semi-arid areas.
- (d) **Krushhi Mahotsav:** The local folk-based events are organised where traditional artists sing songs on the themes related to farmers and agriculture. Scientists, researchers, experts, and administrators interact and exchange information on agriculture related issues with the farmers. They mobilize, counsel and motivate farmers on soil health, organic farming, modern farming technology and inputs
- (e) **Watershed Development:** Villagers are trained and supported to construct ponds, check dams and *Boribandh* dams (sandbag dams) to control manage/regulate water resources.
- (f) **Demonstration of New Technology / Equipment:** Agricultural officers demonstrate new instruments like ‘drones’ in the villages. The farmers are informed about value added products and GI tags to facilitate projects of value addition for the products from farm to market. The ‘Food and Agri Business’ Sector at the Vibrant Gujarat Summit 2009 saw 190 Memorandum of Understanding (MoUs) with investment up to Rs 35,456 Crores and job opportunities leading to 3,88,761.

7.4.3 Focus on Community Participation:

Mobilization of resources involving the community brings better and sustainable results, and is being widely admired all over the World. The need of time is to disseminate these success stories, particularly among the less exposed tribal communities with the help of contemporary

telecommunication and internet facilities. The programmes and schemes benefiting the tribes may well be communicated through these initiatives. The tribes can be enlightened about the goals of *Vikshit Bharat* and 'inclusive development for all', which are the focuses of *Amrit Kaal* (2022-2047). The two big challenges of climate change and overexploitation of natural resources faced by the World today can also be conveyed. Traditionally, the tribes managed their resources jointly, involving the entire community, based on communal mode of living. It would not be difficult to make use of their traditional communal mode of community living in implementing the contemporary programmes and schemes like the following even in the remote tribal areas.

- a) Significant and Sustained Increase in Farmers' Income: It is a well-coordinated programme for the development of agriculture for all communities.
- b) The *Panchayats* and institutions should lay emphasis on efficient growth rather on simple growth, and manage agriculture produce markets (APMC). They should cooperate in providing liberalisation to the agricultural sector in the form of sufficient public and private investments.
- c) Communities must implement low water consuming crop cultivation practice with innovative crop combinations.
- d) The diversification of crops should take note of the contemporary trend of natural cosmetics use. To utilize this popular contemporary sentiment, herbal products procurements, processing and distribution could be a future prospect (Chand and Singh, 2023: 30).
- e) The farmers must use the technologies available now to produce bio-energy (ethanol) from crops or livestock waste. The Government of India is supporting this with the Galvanising Organic Bio-Agro Resources Scheme (*GOBAR DHAN*) and Sustainable Alternative towards Affordable Transportation (*SATAT*) scheme.
- f) Proportion of marginal workers among the cultivators is increasing more than the main workers in the villages under study. The community needs to encourage the strategies to avert the economic crisis, employment opportunities, Self Help Group (SHG) formation, getting credits and profits by farmers should be encouraged and monitored.
- g) Tribal farmers should be encouraged to participate in the activities of the Agri-Business Extension Bureau (Govt. of Gujarat, 2022c: 64).

- h) To initiate and encourage at community level agricultural start-ups and digital technologies to play an important role in transforming and inspiring innovative crop production and marketing.
- i) To participate in the preparation of infrastructure such as health, education, sanitation, road and transport.

To promote integrated agriculture and rural development of the State, NABARD has made suggestions on the critical infrastructural support which should be provided to the districts. These suggestions will assist in accomplishing the Vision of the Government of Gujarat, which is “to make Gujarat a globally preferred place to live in and to do business through accelerated, balanced, inclusive and sustainable growth driven by robust social, industrial and physical infrastructure”. The suggestions made for the integrated development of Chhota Udepur for various sectors are:

1. Soil:

- a. Establishing soil testing laboratories to ensure adoption of corrective measures by farmers based on soil reports.

2. Water resources:

- a. De-silting and excavation of all village and *Panchayat* ponds, integrated development of tanks, deepening and de-silting of tanks.
- b. Propagation of sprinkler and drip irrigation methods.
- c. Promotion of a greater number of watershed projects to tap the runoff water and to increase water storage capacity.

3. Farm Mechanization:

- a. Setting up repair centres and shops for spare parts of combine harvesters.
- b. Custom hiring centre needs to be established in *Gram Panchayat*.
- c. Appointment of dealers for tractors, power tillers, combine harvesters and other farm machinery in and around the district.
- d. Skilled manpower for operation and maintenance of machines.
- e. Procurement of farm equipment/implements through PACS.

4. Plantation and Horticulture:

- a. Establishing modern and recognized nurseries for fruits and vegetable seedlings.

- b. Establishment of Common Service Centres for collection, grading and packing for value addition.
 - c. Top priority to be given for development of agro-based and food processing infrastructure.
5. Forestry:
- a. Setting up of forest-based cottage industries like the gum processing unit, charcoal manufacturing unit, furniture making, bamboo basket making, tendu leaf processing, medicinal plant processing, processing of Mahua plants and seeds.
 - b. Value addition to forest-based products needs to be encouraged and facilitated by provision of training and other infrastructural support.
6. Animal Husbandry:
- a. Setting up of Breeding Farm and Veterinary Centers.
7. Agriculture -Farm Credits:
- a. The banks, Agriculture Department and Animal Husbandry Department need to push use of new and mini farm implements for the small and marginal farmers. (NABARD Report, 2019-20: 150-176).

Innovative measures implemented nationwide to enhance the livelihoods of tribal communities:

1. High-density farming: Spreading awareness among farmers regarding the benefits of high-density farming and involvement of the district administration in order to improve agricultural productivity and optimize resource utilization has accelerated agricultural development in Jammu & Kashmir.
2. Potable water to households in hilly tribal regions through a gravity system: Gravity flow system takes advantage of the terrain and collects water from springs, which is harnessed and brought down to lower levels.
3. Solar power driven *Khawa*: Farmers in Maharashtra sell *Khoya* or Khawa along with milk which has more demand and shelf life than milk, and helps them to ensure their survival and sustenance during severe droughts.
4. Construction of subsurface dams: In drought-prone districts of Andhra Pradesh, subsurface dams have been constructed using Z sheet piling technology.

5. Handloom weaving skill in Assam: River bank erosion and sand deposition as a result of recurrent floods reduced the possibility of agriculture-based livelihoods in the Mising villages of Assam. Mising Autonomous Council and the Centre for Microfinance and Livelihood along with Tata Trusts introduced technology to make handloom weaving a sustainable livelihood and increase production efficiency. Steps taken to do so were introduction of warping drums, utilization of bamboo instead of steel for the looms and provision of a 60-day skill training.
6. Cage fish farming in Jharkhand: Fisheries and aquaculture are an integral part of the food production system of the State and provide livelihood to over 1,35,000 people in Jharkhand. There has been improvement in the production level of the sector from subsistence to extensive, semi-intensive and near commercial scale due to the efforts of the Department of Fisheries.
7. *Kadakhnath* poultry farming in Madhya Pradesh: Introduction of low-cost poultry sheds, training of farmers on newer technologies, optimum feed and balanced diet and vaccination to prevent diseases has significantly reduced mortality of the breed, ensuring its survival against extinction while also securing poultry farming as a sustainable means of livelihood.
8. '*Pattals*' of Odisha: Production of siali leaf plates or '*pattals*' has provided employment to over 3,500 women of Odisha due to the high demand of these biodegradable plates in European countries.
9. Fermented Areca nut in Tripura, Meghalaya: Areca nut cultivation is an important source of livelihood for rural people whose lands are not suitable for cultivation of other crops. Adoption of modern agricultural inputs instead of simple traditional methods would improve production.
10. Bamboo village in Medhna Lekha: Community Forest rights granted to the village of Medhna Lekha in Maharashtra under the Forest Rights Act of 2006 has helped the village to develop a successful bamboo economy. Profits made are used in development and social welfare activities.
11. Livelihood through Lemongrass Promotion: Lemongrass production has generated employment opportunities in Hapamuni village of Jharkhand. The initiative has many positive aspects like exportation of lemongrass oil to global markets, employment of women and utilization of barren lands.

12. Pickle making from Jackfruit in Jharkhand: Areas with high concentrations were identified and pickle making was introduced for commercialization of Jackfruit. SHGs were created and training was provided to the members on processing and preservation of Jackfruit and pickle making (Tiwary, 2020: 28).
13. Remarkable land-use changes in Meghalaya plateau and in the life of its tribal shifting cultivators is possible through 'jhum to broom' grass cultivation. In the Meghalaya plateau cultivators have shifted from age-old *jhum* cultivation of subsistence crops to commercial crops like broom grass, areca nut, rubber, cashew nut, tea, coffee etcetera (Behera et. al., 2015: 64)
14. Leading government institute, ICAR-CIRG signed a MoU with Heifer India, a non-governmental organisation, to transform India's goat value chain, which is likely to enhance tribal as well as rural livelihood. (DTE, 2023).
15. In the context of recognising and respecting women's work within households, the Tamil Nadu government announced a scheme of monthly assistance of Rs 1,000 to eligible women in its recent budget. *Kalaignar Magalir Urimai Thogai* is a scheme for eligible female household heads, establishing a significant policy intervention aiming at further strengthening women's contribution (Sridharan, 2015: 13).

A few optimistic adaptations throughout the World are observed for tribal farming. Understanding that most of the farm lands of the tribal communities all over the World are very much dependent on rain water, International Fund for Agricultural Development (IFAD) led projects were carried out in Tanzania, Haiti, Madagascar and Niger. All the parameters like land, water, livestock, and new initiatives are systematically taught to small holders, rural women, and local youth in most of the developing countries ((IFAD, n. d.).

With focus on the above, the farmers in the tribal regions can aspire for sustainable growth of agriculture and allied activities. Any programme or plan for the development of tribal communities must be dealt with due consideration of their spatial characteristics. STs vary in size, they differ in their respective culture, their pursuit of livelihood is also different from region to region. Only one commonality is their overall underdevelopment. A common plan implemented for all the tribes is ought to fail as they are heterogeneous and scattered groups (Dash, 2001: 57). The contemporary processes of development including establishment of large scale industrial and

infrastructural projects have brought the shadow of physical, social and economic displacement of tribes (Bala, 2005: 304). The researcher is hopeful that application of the programmes and schemes specifically suitable for the tribal farmers of Chhota Udepur district can brighten the future prospects of the tribal farmers of Chhota Udepur district and enable them to create sustainable and settled living conditions. The suggested Lean, Green and Clean (LGC) technology for contemporary production processes, where Lean defines smooth or zero waste production, Green refers to production with sustainability and Clean is simple methods (Muralidharan, 2021: 16) was the basic principle of tribal traditional wisdom. Doubtlessly, programmes and schemes equipped with LGC technology can easily be adopted and accepted by the tribes.

7.5 Conclusion:

The programmes and schemes envisaged by the Central and State governments, to enable tribal farmers relish and realise the essence of income enhancement staying at their village rather than migrating to urban areas, have been judiciously designed and are capable of generating positive impulses among the tribes to adopt them. These programmes and schemes are all pervasive, able to cater to the requirements of all sections of tribal farmers from the marginal to the large land size categories. Besides, addressing issues pertaining to agriculture and allied activities, these are endowed with scope to address other areas of activity. The incidents of crop damage by wild animals like porcupines, wild boars, domestic stray animals in the study area, need to be addressed specifically.

Along with proper implementation of the programmes and schemes, there is a need to increase the level of awareness among the tribes about them by conducting workshops and training programmes in the area on a regular basis. For this purpose, the local institutional infrastructure like the *Panchayat* can be utilized.

The DBT and APMC are two important initiatives by the State government. However, there should be check or control over the intermediaries who manage and manipulate the circumstances in their own favour at the cost of the tribal farmers.

Establishment of food processing units with the interventions of PMKSY, have the potentiality of increasing women work participation in economically gainful activities. The

villages can have a well-developed food processing unit with cold storage facility, which would not only engage farm women, but also increase their household income.

The study area in particular and the Chhota Udepur district in general has great tourism potentiality. The tourism in the hilly terrain of Vindhyan Hill Ranges region and Narmada Gorge regions can enhance the prosperity of the local Rathva tribe. Efforts should be made to identify and create infrastructure for tourists at specific locations of the area.

Future prospects of tribal farming in the District should include proper planning by observing the spatial and temporal changes of agriculture in the country in general and the Gujarat state in particular.

