

MANIPUR VISION 2030

Leaving No-One Behind:

***Achieving Inclusive Growth and the
Sustainable Development Goals***



PLANNING DEPARTMENT
GOVERNMENT OF MANIPUR



“There is no cause greater than shaping a world, in which every life that enters it can look to a future of security, opportunity and dignity; and, where we leave our environment in better shape for the next generation. And, no cause that is more challenging.

At 70, we are called to rise to that challenge, with our wisdom, experience, generosity, compassion, skills and technology I am confident that we can.”

Shri Narendra Modi at the UN Summit for the adoption of Post-2015 Development Agenda



N. Biren Singh



**CHIEF MINISTER
MANIPUR**

IMPHAL
November 11, 2019

MESSAGE

Sustainable Development Goals (SDGs) form a new paradigm of progress. I am glad that my state Manipur has developed 'State Vision 2030 Document' as a roadmap for inclusive growth and sustainable development'. The document is designed and developed by incorporating 15 SDGs goals and 98 state specific indicators based on inputs given by various stakeholders viz. government department & non-government organisation, policy makers, academicians, researcher and representative from various sections of the society.

The document will provide a holistic and futuristic actionable approach, guiding us in formulating public policies and programmes for the development of Manipur, leading to 'Sarvodaya' - Welfare of all.

I firmly believe that by 2030 the state will achieve all round peace and prosperity; bridge hill-valley divide; attain food security and freedom from malnutrition and hunger; ensure housing with adequate sanitation; eliminate violence against women, provide water and 24 x 7 power; and establish connectivity and good infrastructure.

The document will enable Manipur to utilize the available resources optimally without compromising the needs and wants of future generation to come.

I humbly appeal to all citizen of the state to actively participate on attaining regional specific goals in particular and globally recognised goals in general.

I finally congratulate Planning Department, Government of Manipur, Manipur University, Canchipur and UNDP for successfully bringing out the Vision Document.


(N. Biren Singh)



Dr. J. Suresh Babu, IAS



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MESSAGE

Manipur Vision 2030 Document is a roadmap of development with clear, concrete and quantifiable goals. It is a result of extensive consultations organised at state and district levels. Policy makers, government departments, non-government organisations, academicians, researchers and others have actively contributed.

Manipur prepared this document as part of India's commitment to United Nation towards realization of Agenda 2030. The targets are meticulously developed based on needs and aspiration of the people of Manipur in compliance with globally and nationally adopted SDGs and indicators.

This is an actionable document with futuristic approach enabling concerned departments and agencies to work in clearly defined direction for quantifiable goals towards people's prosperity and sustainable development.

I take the opportunity to appreciate the team of Planning Department, Manipur University and UNDP for bringing out the Vision Document 2030.

(Dr. J. Suresh Babu)

ACKNOWLEDGMENTS

I would like to acknowledge the guidance of Hon'ble Chief Minister of Manipur towards developing the Manipur Vision 2030 Document, a roadmap for Manipur's development for the next 10 years.

I express my sincere thanks to Dr. J Suresh Babu, Chief Secretary, Government of Manipur for his valuable guidance and direction in preparing the Vision Document.

My thanks go to all the Administrative Secretaries, HoDs and other officers of concerned departments of Government of Manipur for their active cooperation and support in bringing out the Vision Document.

I am pleased to acknowledge the continuous support of NITI Aayog, New Delhi for providing technical inputs while preparing SDGs goals and state specific indicators.

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I thank Prof. E. Bijoy, Manipur University for preparing the preliminary draft of the Manipur Vision 2030 document. I would like to place on a record the enthusiasm, involvement and support received from the team of Planning Department in bringing out the document in time.

Lastly, I express my gratitude to all people who were directly or indirectly involved in shaping the document.



Sumant Singh, IAS
Commissioner
Planning Department
Government of Manipur

MANIPUR OF 2030

THE CHERISHED VISION

The Vision 2030 captures the aspirations of Manipur state for next 10 years. The vision aims that by 2030 every citizen in the state will be in a position to enjoy all round peace and prosperity. Peace will encourage various ethnic groups in the state to live in harmony and work together for the collective interest of the state. The hill-valley divide will be bridged. With food security and freedom from malnutrition and hunger, people will have jobs commensurate with their skills.

Everyone shall have the opportunity for utilizing his/ her talents for own benefit as well as the society. With 24 x 7 power, housing with adequate sanitation and drinking water facilities, people will have quality life. Transport system will improve with affordable and reliable public transport and railways crisscrossing the state.

They will have access to good hospitals in the neighbourhood and schools, both public and private, will be equipped with state of art academic and sports facilities. The government is committed to the realisation of the vision.

EXECUTIVE SUMMARY

A vision document assists in aligning the priorities of the Government of Manipur with the larger challenges and in sync with the global goals envisaged in the Sustainable Development Goals to be achieved by 2030. These 17 Goals lay the path forward for planning for the future, keeping in mind those who have been left behind. The SDGs which were drafted in an inclusive and participatory manner can assist states in preparing for future ready governance systems. Governments around the world are realigning their policy planning processes to achieve the SDGs. NITI Aayog which is the nodal agency for achieving the SDGs in India, has directed States to prepare their long-term seven-year strategies and shorter three-year action plans along with an overall Vision Document. The Government of Manipur is committed to the achievement of the 17 SDGs and aims to through its 'Manipur Vision Document' lay down its commitments and path forward for the state.

The first chapter of the Vision Document lays down the 17 SDGs and the strategic planning exercise for taking forward the 17 goals. The second chapter gives the historical background on the initiatives undertaken by the Government of Manipur to institutionalise the SDG integration process. Inter-departmental discussions have been organized with Manipur University taking the lead with nodal officers from nearly 35 departments through state level consultations and furthermore 10 district level consultations. A three-tiered committee has been constituted for monitoring and implementing the policy and programmes under the aegis of achieving the larger SDG vision. Manipur 2030 is a testament of what the Government of Manipur aims to achieve through detailed understanding on the current achievement of the SDGs, socio-economic indicators in the state, underpinning challenges and path forward for achieving the same. As per 2018 NITI Aayog's SDG India Index Manipur is an achiever in goal 15, front runner in goals 2,3,4,9,10 and 16, aspirant in goals 1,5,6,7,8 and 11. Manipur is the lowest ranked state in goal 8, decent work and economic growth. Manipur's overall SDG index composite score of 59 jointly ranks 6th with Mizoram among 29 states. Manipur's vision gives top priority to the eradication of hunger (SDG 2), improvement of health outcomes (SDG 3), provision of quality education (SDG 4), growth with decent employment (SDG 8) and the promotion of just, peaceful and inclusive societies (SDG 16). Chapter three focuses on agriculture and food security, SDGs 1, 2 and 3. The agricultural output in the state is not just linked to the economic growth but also closely interlinked to achieving food security and ensuring good health and well-being especially for children and pregnant women. This chapter gives an overview of agricultural sector in the state and the health conditions as per consumption in each district. The main objectives outlined are optimising agricultural output with, sustainable use of land and water, make agriculture a viable livelihood option, diversification of horticulture potential of the state, ending all forms of hunger and malnutrition, promoting farmer producer organisations and cooperatives among others. With 67% of the cropped area being rice paddy, pulses accounting for 5.55% and fruits and vegetables approximately 26.84%. However, the state has consistently had deficit in rice production primarily linked to jhum cultivation practices in hill areas which affects food security and achievement of nutritional goals in the state. A well designed land use policy, strengthened extension services,

feasibility of double cropping, and means of doubling output and farmers income taking into account the irrigation, eco systems and disaster management plans against floods is emphasised. Regulating the market to create conducive pricing and market advantages for farmers who are engaged in vegetables and fruits is critical. Along with agricultural productivity other sectors such as livestock management there is a need to revisit existing programmes, developing new and enhanced schemes, developing strategies for livestock care, health and management, fodder and feed. Improving the dairy sector through better infrastructure, training and organisation. Introducing integrated livestock farming methods for increasing productivity in cattle, pig, duck and poultry fish culture. In terms of fisheries there is a need to maintain the right ecological balance to ensure sufficient fish for consumption. This would require mapping of possible culturable land and protecting existing water bodies by ensuring sustainable fishing practices. Furthermore, the chapter emphasises on the need for linking agriculture sector closer to private entities for enhancing income, creating market linkages for export potential, creating public private-producer partnerships for increasing trade, creating value chains and creating access to markets and finance.

Chapter four highlights the current health institutional structure and human resources along with ongoing programmes and policies. With three levels of healthcare available in the form of primary, secondary and tertiary care at all levels in the state. Manipur has a doctor (private and public included) to patient ratio at 1:1135, which fares better than most other states in the country. Some of the major programmes of the state are Chief Minister's Hakshelgi Tengbang (CMHT) which provides cashless hospitalisation upto monetary value of 2 lakhs, Ayushman Bharat Pradhan Mantri Jan Arogya Yojana which covers cashless hospitalisation of upto 5 lakhs for secondary and tertiary care. Rashtriya Bal Swasthya Karyakram (RBSK), which envisages child health screening and early intervention services for reducing malnutrition and underweight of children below 5, reducing developmental delays, reducing and detecting birth defects. Rashtriya Kishor Swasthya Karyakram (RKSK)/ Adolescent Health (AH) focuses on improving adolescent health through increasing understanding on adolescent health and hygiene, menstruation and education. Other focus areas within the health sector is on achieving 100 percent immunization on all life threatening diseases and communicable diseases especially for children. Other programmes which the state is focusing on are vector borne disease prevention, leprosy eradication programme, family planning, tuberculosis control programme, viral haepetitis control programme, iodine deficiency disorder control and care for mental and psychiatric health care patients. The state has decentralized Integrated Disease Surveillance Programme (IDSP) which provides laboratory based IT enabled disease surveillance system for epidemic prone diseases to monitor disease trends and to detect and respond to outbreaks in early rising phase through trained Rapid Response Team (RRTs). All of these programmes need to be strengthened and monitored closely, for fulfilling the goals set out for achieving good health and well being for all in the state. For controlling the non-communicable diseases the state has rolled out the National Program for Prevention and Control of Cancer, Diabetes, CVD and Stroke (NPCDCS) in 16 District Hospitals however there is a need to set up specialised facilities for diagnosis and treatment of heart diseases, cancers, diabetes and chronic kidney diseases. There is a further need of upgrading skills

of medical officers and other staff in auxiliary services. In geriatric services the current set up has geriatric wards in 16 hospitals but there is a need for fully dedicated geriatric wards, strengthened services for the elderly, OPD's and home based care services for the elderly. Manipur has a Maternal Mortality Ratio (MMR) of 39 and aims to bring it down to a single digit. Similarly, the Infant Mortality Rate (IMR) and Under 5 Mortality Rate is currently at 12 and 26 respectively and these need to be brought down through sustained efforts, knowledge dissemination, adequate nutrition and improved health services and adequate access to services such as ambulances in remote rural areas. As per National AIDS Control Organisation (NACO) Manipur rates as one of the highest cases in terms of HIV/AIDS in the state and the state aims to reduce transmission in general and from parents to children a 100% through strengthened policy and monitoring.

Chapter five stresses on education both in terms of quality and access. Currently almost 70.4% of the children in the state are enrolled in private educational institutions. Thus the role of government is to ensure proper guidelines and monitoring towards quality education across both private and government schools in the state. As per NAS 2017 surveys there is a need for providing further training to teachers to understand the curriculum better and preferably recruit teachers for ensuring adequate attention and care to all students and rationalizing the teacher to student ratio in the state. A cadre of teacher trainers are to be formed for ensuring teachers are skilled, equipped and upgraded to the most relevant knowledge. School education vision 2030 envisages complete free, equitable and quality primary and secondary education, to all boys and girls, improved early childhood care and education, access to technical and vocational skills among all, promoting adult literacy, vocational education in schools, upgradation of school facilities, digitizing school classrooms and incorporating technologies among other important aspects. In higher education the state aims to achieve 100% accreditation of all colleges under NAAC and have mandatory refresher courses for teachers every three years along with equipping colleges with ICT based tools and technologies.

Economic growth is the sixth chapter which showcases the current growth trajectory which has been gradually shifting from agriculture based growth to services primarily construction and manufacturing sectors. The range of jobs and incremental requirement varies from district to district with some districts like Chandel in cross border trade and others such as Thoubal in handicrafts. The chapter outlines some critical challenges in promoting economic growth addressing youth unemployment, educated unemployment, urban unemployment and the size of the informal economy.

Chapter seven outlines the need for peace, justice and strong institutions for achieving the SDGs in the state. A multi-ethnic society Manipur is bound together by its rich heritage, history and common lineage. To achieve peace, justice and inclusive institution, it is important that government, civil society and communities work together to adopt and implement viable mechanisms for lasting solution to all issues and conflicts, reduce violence, deliver justice and combat corruption and ensure inclusive participation at all times. There is a need to reduce all forms of inequality, increase access to opportunities for all through promoting a zero tolerance to corruption policy, increasing accountability and transparency among institutions and creating an active platform for stakeholder engagement for promoting peace in the region. The chapter discusses in details the

reasons for instability and unrest in the state and highlights various perspectives on possible root causes for instability.

Chapter eight states the current scenario in the state with high incidence of poverty and inequality. The current potential of the state in terms of communication, power and energy, high levels of unemployment is the reasons for poverty. Hence the state is accelerating its efforts to provide last mile delivery to the most rural pockets of the state. Economic growth which is a major accelerator for reducing poverty along with a major thrust on creating jobs through government schemes such as MGNREGA and providing food security through Food Security Act. Other schemes related to social assistance, pension, connection to LPG and other important schemes are highlighted. The Pradhan Mantri Jan Dhan Yojana (PMJDY) which was inaugurated in the state in 2014 aims at financial inclusion of the poor in order to enable them to access financial services. Proper implementation of all of the government led schemes is essential to ensure the most marginalised people are targeted and brought out of poverty. Awareness and understanding on the government schemes and campaigns on how people can avail these services is integral to for poverty reduction.

Chapter nine on gender equality reflects on the high status of women in Manipuri society and the low levels of gender disparity in the state. Women's educational status however in the state is far lower than men (13.69% lower) and that is a matter of concern as the educational attainment is a reflection of all forms of socio-economic indicators in the state. Women's participation in political spheres is also extremely low with only 3.3% women occupying legislative assembly positions in 2017 whereas the panchayat elections is stands at nearly 50%. Women in Manipur are engaged in a lower range of occupation than men with women having multiple hurdles in occupying major managerial positions and a big gender wage gap. The workforce participation rate for women especially in rural areas is steeply declining. In terms of health care Manipur has a high rate of fertility among women with lower levels of institutional delivery and access to specialised healthcare. There have been high incidence of violence against women although the decision making powers and economic independence of women in Manipuri society is high. The average daily work hours of women are more than that of man by more than 50% both in the hill and valley districts of Manipur. However, unlike other parts of India, women's participation in paid work is closer to men's with difference in participation rate of less than 1%. The chapter also highlights the rights of transgenders and their challenges and status. It goes on to discuss the various schemes available for women

such as Pradhan Mantri Matri Vandan Yojana which is a maternity health scheme, POSHAN for malnutrition and child, adolescent and maternal health, Beti Bachao Beti Padhao for education, various other schemes for creches for children, helplines for violence and reporting, one stop centres, financial assistance, hostels and other facilities which are essential for achieving gender equality.

Chapter ten discusses the scope for industry and infrastructure development in the state. Currently the growth trajectory of the state is dependent on the MSME enterprises and this has to be the main driver for employment in the state. The state aims to have a cluster based approach for harnessing the potential of local produce such as bamboo, spices, horticulture, agriculture among others. The geographical location of Manipur puts it at an

advantageous position. If the right environment in terms of infrastructure, connectivity and skills is created, Manipur can engage in large scale cross border trade. Establishing Special Economic Zones (SEZs) could boost to the economy. By providing tax incentives and promoting a conducive environment under the ease of doing business model Manipur can attract investments if a peace and justice is maintained. Another major area of development is Tourism in Manipur. The Manipur Sangai festival has been showcasing since 2010 the best of the state's culture, crafts, textile heritage including handloom and handwoven fabrics, indigenous sports, cuisine, music and dance. Government of Manipur has developed 72 tourist spots by 2017. There is a huge amount to showcase in terms of natural beauty, wildlife, dance, music, sports, ecological hotspots, historical monuments in the state and hence harnessing tourism as a potential economic growth sector is essential.

Chapter eleven highlights the current status, underpinnings, challenges and vision for the water and sanitation sector in the state. The current scenario depicts a deficit in water supply in the cities. There is a need for revamping the water supply schemes, protection of water bodies and regulation of forests and protection against deforestation for ensuring sustainable use of land and resources. The chapter states the current gaps of rural water shortage and discusses the various schemes such as NRDWP, Jal Jeevan Mission and others which are designed to reduce the current gaps. In terms of Sanitation, Manipur is much better off in this aspect with only 8.9% of its households indulging in open defecation as per census 2011, however, on 2nd October 2019 Manipur was the 23rd state which was declared open defecation free in the country. Along with development of infrastructure facilities the state aims to also inculcate habits and behaviour which lead to usage and maintenance of toilets and sanitary facilities thus reducing the health burdens in the state. Another important aspect to plan is the sewage and waste water management in the state. Further, there is scope for development of community water harvesting as mini water reservoir at hill ridges, minor/integrated irrigation tanks/community ponds, water harvesting in terms of digging/extension of ponds.

Chapter twelve discusses on terrestrial biodiversity in sustainable development of Manipur. As per India State of Forest Report (ISFR) 2017, released by the Forest Survey of India (FSI) Dehradun, Manipur recorded a Forest Cover of 17,346 sq km in 2017, where the percentage of Geographic Area under forest has been increased by 1.18%. With nearly 77% of the state in forest coverage there is a huge dependency of people on the forests. Out of 34 hotspots across the globe, India has four and out of the four, Manipur has two – Himalayan and the Indo-Burma hotspot. In fact, Manipur has the largest area of Indo-Burma hotspot as compared to other Indian States. Manipur is the home of Brow-Antlered deer called as Sangai (*Rucervus eldii eldii*), one of the endangered deer species in the world, available only in Keibul Lamjao National Park of the State, a unique floating National Park with floating vegetative mass called 'Phumdi'. The 2030 vision for the forestry sector focuses on protection, consolidation and conservation of forests along with increasing carbon stock and sustainable forest management. Furthermore it states methods for designing protected area networks, community participation and livelihood generation, and climate change adaptation and mitigation. It also stresses on improving capacities of human resources engaged in forest management. With rich flora, orchids, medicinal plants, bamboo and other rich resources, the state has and effective actions at

the central, state and local levels to implement provisions under the Biological Diversity Act 2002 and its Rules 2004 needs to be ascertained. There is a need for promoting research, conservation, participatory appraisal techniques, community management systems and enhanced technologies and stricter implementation of rules and regulations for protecting bio-diversity in the state.

Chapter thirteen focuses on affordable and clean energy policy in the state. Manipur has seen tremendous improvement in the power sector tremendous mainly in transmission, Sub- transmission and distribution systems. As on March 2016, 2178 villages have been electrified leaving a balance of 201 un-electrified villages in the state. Energy requirement of Manipur during FY 2015 was 705 MU with 3.8% of deficit. Manipur does not generate enough power of its own. Current requirements, therefore, it heavily relies on the allocations of power from Central Generating Stations like NHPC, NEEPCO, OTPC Pallatana Unit I and Tripura based Baramura power plant to meet its electricity requirement. Hence harnessing the state's ability to generate its own resources is important for reducing the gaps and meeting local needs. The state is moving towards metered system of electricity supply and Manipur Renewable Energy Development Agency (MANIREDA) is regulating and diversifying into the renewable energy sector in the state. With greater focus on renewable sector, strengthening capacities of human resources to understand and work with advanced IT based applications/ programmes and future system strengthening will assist in providing clean and affordable energy to all.

Chapter fourteen on inequality states the levels of inequality in Manipur though initially low is steadily increasing over the years. Low levels of industrialization, leading to low growth and income has led to a cyclic effect of higher inequality. There is also higher inequality based on spatial differences in hills and plain regions of the state. The chapter discusses the need for an inclusive policy to achieve an egalitarian society in the state. There is scope for greater inclusion, more effective social protection measures, removal of discriminatory practices and promotion of laws which promote equality among all. There is a need for investing in better social services, creating access to services and improved communication and socio-economic conditions.

Chapter fifteen on sustainable cities and communities states although the pace of urbanisation is slower in the state there is a huge dependency and growth in Imphal and its satellite areas which is leading to congestions, mis management of sewage, drains, lights, and unplanned habitation resulting in floods and other difficulties. Although there is a lacking of tier two cities in the state Imphal East, Imphal West, Bishnupur and Thoubal have shown great potential in development. Sharp contrasts exist between the valley and the hill as far as urbanization is concerned, revealing even more sharply the development disparity between the physical regions of the state. Between 2001 and 2011, the state has experienced a phenomenal 69.04 percent increase in its urban population. The chapter discusses the land use patterns in the cities and the planning behind Imphal and how can it be improved to achieve the 2030 goals. Gradually there has been a shift for using agricultural land for commercial or infrastructure purposes. Some of the major challenges in this sector are lack of planning for land development, urban planning in terms of urban, peri and rural areas. There is lack of facilities in terms of drainage, sewage,

waste management, lack of coordination among service providers, lack of sensitisation, and inadequate planning. Adopting measures for climate change mitigation through a push on solarisation of households, converting to CNG, roadside plantations, protecting urban forests, protecting wet lands around the city among other steps. Proper transport linkages within the city and between towns/city such as Light Rail Transit (LRT) or trams are suggested for reducing traffic and creating sustained modes of transport.

Chapter sixteen on sustainable production and consumption highlights the major consumption patterns in the state. The highest food based consumption apart from rice is meat, fish and egg; vegetables, spices and beverages and non food consumption is miscellaneous goods and services followed by fuels and lighting and clothing, which is a relatively new demand. Another major consumption in the state is tobacco, pan and intoxicants and a major shift in consumption of miscellaneous goods and services. Reducing food wastage to zero, effectively using public distribution system, switching to cleaner forms of energy and light, improved public transport system, no wastage of water, promoting organic produce among other measures are imperative for ensuring sustainable consumption and production in the state.

Chapter seventeen on climate change states the current institutional structure, understanding of climate change, adaptation, migration and natural resource conservation. Manipur has two distinct geographical zones in terms of hills and valley and has two hotspots namely Himalayan Biodiversity Hotspot and Indo-Burma Biodiversity Hotspot characterized by eco-systems which are rich in biodiversity and possess rare and/or endangered species. Keeping this geographical uniqueness in mind it is imperative to design strategies which include mountain farming, inclusion of important resources, integrated pest management, conservation of native crops, medicinal plants and seeds, paddy cum pisciculture in hilly areas in the state. Due to high vulnerability of Manipur to water induced disasters it is important for the state to have effective water management systems, enhanced water sources, stricter policy and regulatory measures, and watershed management. Climate change is projected to impact agricultural production with reduction of crops and rice yields. Measures for enhancing rainfed agriculture, adopting modern scientific tools for agriculture and horticulture, encouraging climate resilient agricultural tools and techniques. There is also a high risk of vector borne diseases and hence an enhanced disease control programme with strengthened health policy. With high dependency on forests as a source of livelihood there is a need to reduce vulnerability, protect and enhance forest cover, promote social forestry, invest in research and development. Due to high dependency on hydro based energy sources, erratic rainfall could affect the current energy sector. Scope for investing and diversifying into grid interactive power generation systems, off grid intervention, small and medium hydro power project, promoting conservation and capacity building in energy sector are critical. A detailed Manipur State Action Plan To Combat Climate Change (SAPCC) is listed in the chapter which paves the 3 year action plan, 7 year strategy and 15 year vision for the state.

Chapter eighteen outlines the biodiversity in and under water for sustainable development in Manipur. The water bodies in Manipur consists of a number of lakes, rivers, marshes, low lying paddy fields, ponds, tanks, canals, reservoirs etc. The hydrographic network of

Manipur state belongs to two drainage systems viz, the Chindwin and the Barak river systems. The Manipur river has important tributaries like Imphal, Thoubal, Nambul, Khuga and Sekmai rivers. These rivers and Loktak Lake and other associated lakes constitute the main water resources of the central valley with the catchment area of 6,332 sq.km. constituting 28.4% of the valley. Reckless disposal of human and animal wastes contributes to surface water pollution leading to the spread of water borne diseases. There are also issues around encroachment and deforestation, a direct threat to bio-diversity conservation. Barrage, introduction of carp species of fish, and degradation of water quality are other major threats. There is a need for development of conservation areas with sufficient funds allocated for research and development. Studies on fresh water eco-systems, protection of indigenous varieties of fish along with ensuring measures for restricted fishing and sustainable aquaculture are all important measures which need to be undertaken. The chapter discusses the need for integrated natural resource management approach. There is also scope for using geospatial techniques for mapping resources and using GIS and remote sensing technologies.

Chapter nineteen is the final chapter which discusses the importance of means of implementation and partnerships for achieving the goals. Primarily 90 percent of the state's revenue comes from the central government largely in the form of share in central taxes and central grants with hardly 2 percent of the state tax revenue as percentage of the GSDP. With increased private-public partnerships, engagement of other stakeholders such as NGOs, technological assistance and foreign funding possibilities, revamping financing models through introduction of innovative means such as blended financing, and focus on science and technologies, and development of capacities the achievement of all the SDGs will be possible.

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ABBREVIATIONS

AB-PMJAY	Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana
AEP	Act East Policy
AMNMA	All Manipur Nupi Maanbi Association
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
APY	Atal Pension Yojana
ASEAN	Association of Southeast Asian Nations
ASER	Annual Status of Education Report
ATMA	Agricultural Technology Management Agency
AYUSH	Ayurvedic, Yoga and Naturopathy, Unani, Siddha and Homeopathy
CAD	Control of Animal Diseases
CAGR	Compound Annual Growth Rate
CALL	Coalition for Advocacy in Lifelong Learning
CHC	Community Health Centre
CMHT	Chief Minister Hakshelgi Tengbang (<i>Health Scheme</i>)
CSO	Central Statistics Office
CSSEIP	Centre for Study of Social Exclusion and Inclusion Policy
FAO	Food and Agriculture Organisation
GHI	Global Hunger Index
HWC	Health and Wellness Centre
IDSP	Integrated Disease Surveillance Programme
IMR	Infant Mortality Rate
ISFR	India State of Forest Report
MANIREDA	Manipur Renewable Energy Development Agency
MDG	Millennium Development Goals
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MMR	Maternal Mortality Rate
MOSPI	Ministry of Statistics and Programme Implementation
MPCE	Monthly Per Capita Expenditure
MPSR	Maternal Death Surveillance and Response
MSK	Mahila Shakti Kendra
MSME	Micro, Small and Medium Enterprise
NACO	National AIDS Control Organisation
NAPCC	National Action Plan on Climate Change

NCTE	National Council for Teacher Education
NIDDCP	National Iodine Deficiency Disorder Control Programme
NITI	National Institution for Transforming India
NFHS	National Family Health Survey
NNP	Net National Product
NMBS	National Maternity Benefit Scheme
NOAPS	National Old Age Pension Scheme
NPCDCS	National Program for Prevention and Control of Cancer, CVD and Stroke
NPHCE	National Program for Health Care of Elderly
NPPCD	National Program for Prevention and Control of Deafness
NRDWP	National Rural Drinking Water Programme
NRHM	National Rural Health Mission
NRLM	National Rural Livelihoods Mission
NRUM	National Urban Livelihoods Mission
NSAP	National Social Assistance Programme
NSDP	Net State Domestic Product
NSSO	National Sample Survey Organisation
NVBDCP	National Vector Borne Diseases Control Programme
PHC	Primary Health Centre
PMJDY	Pradhan Mantri Jan Dhan Yojana
PMJJBY	Pradhan Mantri Jeevan Jyoti Bima Yojana
PMMVY	Pradhan Mantri Matru Vandana Yojana
PMNDP	Pradhan Mantra National Dialysis Programme
PMUY	Pradhan Mantri Ujjwala Yojana
PPPP	Public-Private-Producer Partnership
RBSK	Rashtriya Bal Swasthya Karyakram
RKSK	Rashtriya Kishor Swasthya Karyakram
SAPCC	State Action Plan on Climate Change
SDG	Sustainable Development Goals
UDISE	Unified District Information on School Education
UHC	Universal Health Coverage
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNWTO	United Nations World Tourism Organisation

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Section I



1

Bringing Agriculture Centre Stage: Hunger, Nutrition and Food Security

"A Vision is not a project report or a plan target. It is an articulation of the desired end results in broader terms."

– A.P.J. Abdul Kalam

A vision document is a statement closely linked with the existing realities and the possibilities for the future based on our strengths and emerging opportunities while also taking into account the weaknesses and threats. It envisages an action plan to achieve those possibilities by spelling out the challenges and problems that inhibit our development along with the untapped potentials and unutilized opportunities. It must reflect our aspiration, determination and commitment. The vision document is a roadmap for transforming the State in sync with the United Nations (UN) resolution of 2030 Agenda for Sustainable Development Goals (SDGs).

The universality of our problems is reflected by overarching 17 SDGs detailed by the UN resolution, "Transforming our world: the 2030 Agenda for Sustainable Development", which emerged as the new development goals for the whole humanity. The SDGs comprehensively cover social, economic and environmental dimensions and build on the Millennium Development Goals (MDGs). The SDGs constitute a universal agreement to end hunger in all its forms and dimensions, including extreme poverty. The SDGs are as follows:

1. End of poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable, sustainable and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
10. Reduce inequality within and among countries
11. Make cities and human settlements inclusive, safe, resilient and sustainable
12. Ensure sustainable consumption and production patterns

13. Take urgent action to combat climate change and its impacts
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Protect, restore and promote sustainably use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation, halt biodiversity loss
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
17. Strengthened the means of implementation and revitalize the Global Partnership for Sustainable Development

The National Institution for Transforming India (NITI) Aayog has a 15-year vision document in line with global trends of economic growth. The 15-year vision document came into effect in 2017-18, along with a seven-year National Development Agenda. It lays down the schemes, programs and strategies to achieve the long-term vision. The National Development Agenda consists of the following: (i) poverty elimination – livelihoods, jobs and skill development; (ii) drinking water and Swachh Bharat mission; (iii) rural connectivity: electricity, access roads and communication; (iv) agriculture including animal husbandry, fisheries, integrated watershed management and irrigation; (v) education including mid-day meal; (vi) health, nutrition, women and child; (vii) housing for all: rural and urban; (viii) urban transformation; (ix) law and order, justice delivery system; and (x) others, which may include: wildlife conservation and greening.

India's National Development Agenda is mirrored in line with the SDGs. SDGs and targets fully resonate with India development strategy and action, which focuses on poverty alleviation, improved healthcare, gender equality, availability of clean drinking water, improved sanitation, affordable clean energy, acclimate change action plan, rapid industrialization, scope for innovation, infrastructure development and economic growth among others. The UN SDGs provide an opportunity to renew and integrate efforts to meet global, national and sub-national aspirations in a defined time frame. Such ambitious plans require equally ambitious plans for financing and implementation. The challenge demands coordination among governments, the private sector and civil society organisations.

2

Manipur Vision 2030

2.1. INTRODUCTION

The Vision that emerges for Manipur's aspirations epitomises is the perceptions of its social and economic needs as well as an assessment of its core strengths. Our vision gives top priority to goals like eradication of hunger, improvement of health outcome, provision of quality education, growth with decent employment and promotion of just, peaceful and inclusive societies. All the goals however are interrelated directly or indirectly. In the ultimate analysis it is eradication of poverty that counts' inclusive development cannot coexist with rampant poverty.

The State has developed its own Vision 2030 taking into account the Sustainable Development Goals and targets for implementation by the State. The task for preparing the preliminary draft vision document for Manipur was entrusted with the Centre for Study of Social Exclusion and Inclusive Policy (CSSEIP) under Manipur Central University. The work started with the appointment of Nodal Officers from relevant departments in the state. The Director, CSSEIP had a weeklong interface with the nodal officers explaining the nature of the work. Reports on the themes spelt out in SDGs were prepared by 30 experts in Manipur University. Each of the experts were assisted by 35 nodal officers from related departments. A four-day consultative state level workshop on Manipur Vision 2030 was held from 12-15 June 2017 in Manipur University. The workshop was organized in collaboration with CALL (Coalition for Advocacy in Lifelong Learning), Manipur an Imphal based NGO. Workshops were also organized in the ten districts during July-August 2017, where Local NGOs and district administration extended support to CSSEIP and CALL, Manipur in organizing these workshops in the districts. The Vision document is prepared by Manipur Central University and Planning Department by taking into account the SDGs, the working papers on each theme of the SDGs in the context of Manipur and opinions expressed in state level and district level workshops, the state level feedbacks from line departments and policy recommendations for realizing the vision.

KEY STAKEHOLDERS

Planning Department

Planning Department is the nodal department for implementation of SDGs in the state and for the implementation of the same three Committees have been constituted at state and district level.

- i. **State Level Committee on SDGs:** State Level Committee on SDGs is chaired by Chief Secretary with all the administrative Secretaries as member. The

- committee monitors targets and goals and achievements of the SDG bi-annually;
- ii. **Inter-Departmental Working Group:** Inter-departmental working group is chaired by Administrative Secretary (Planning) with all Administrative Secretaries as member. Function of the Inter-Departmental Working Group is to carry out state mapping and re-align targets of the various CSS in the line with goals and targets of SDGs and to develop a suitable state indicator in the line of National indicator;
 - iii. **District level Working Group:** District level Working Group is chaired by Deputy Commissioner of each district with all the district level officers as a member. Function of District Level Working Group is to set-re-align targets and monitor achievement of the targets and Goals set under SDGs at field level.

STEPS TAKEN

In the present exercise we continue the process of planning from the grassroots initiated in North Eastern Region (NER) Vision 2020, when for the first time, plans based on the desires of the people obtained through consultations were discussed. In line with that, several steps have been taken to develop a Vision Document for the State of Manipur.

In the past, a series of meetings across the Inter-department working groups, chaired by Administrative Secretary (Planning) have been organized for sensitization and awareness on SDGs. This led to mapping of targets and re-alignment of targets of the various centrally sponsored schemes (CSS) in line with the SDGs. Consultations were also held to develop a suitable State indicator in line with the National indicator. State Government also organized two days' regional level workshop with technical support from NITI Aayog from 26th Feb 2017- 27th 2019. Line department officials, Deputy Commissioners, and district level officials (among others) participated in the workshop. State Government officers from line departments and Planning Department also regularly attended several Consultative workshops organized by NITI Aayog, MoSPI and other State Governments.

For prioritization of the SDGs, public consultations were conducted in ten districts and participants were asked to rank the SDGs in order of priority. This ranking reveals the priority at the grassroots from the select consultations, though some goals may not have been explained to the point of being fully understood. This ranking demonstrates the importance of peace and social harmony, eradication of hunger and quality education from the select consultations. At the end of each consultation every district provided its ranking of the SDGs up to 10 (see Table 2.1).

SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) and SDG 4 (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all) were the top priority in four districts, followed by SDG 16 (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and

inclusive institutions at all levels) in two districts. During the public consultations, SDG 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development) and SDG 17 (Strengthened the means of implementation and revitalize the Global Partnership for Sustainable Development) did not receive any ranking.

TABLE 2.1: RANKING OF SDGS AT DISTRICT LEVEL

RANK	SDG WITH FREQUENCY
1	2(4), 4(4), 16(2)
2	2(3), 4(5), 8(2)
3	3(3), 4(1), 5(1), 6(2), 15(2)
4	3(3), 2(1), 6(1), 8(1), 9(1), 15(1), 16(2)
5	2(1), 5(1), 6(4), 9(1), 16(4)
6	1(1), 3(1), 5(2), 8(2), 13(1)
7	3(1), 6(2), 7(1), 8(2), 9(1), 15(2), 16(1)
8	1(1), 8(1), 10(1), 11(3), 12(1), 13(3), 15(2)
9	3(1), 7(2), 8(1), 11(2), 12(1), 13(1), 15(2)
10	7(1), 9(1), 10(1), 11(3), 12(1), 13(1), 15(1), 16(1)

On the basis of people's preferences registered during the district level consultations, the SDGs in terms of their rankings were regrouped as follows:

SDGs 2, 3, 4, 8, 16

SDGs 1, 5, 6, 9, 15

SDGs 7, 10, 11, 12, 13

SDGs 14, 17

2.2. PERFORMANCE OF MANIPUR VIZ-A-VIZ OTHER INDIAN STATES IN THE SDG INDEX

NITI Aayog (2018) SDG India Index, Baseline Report tracks the progress of all the States and Union Territories (UTs) on a set of 62 National Indicators, measuring their progress on the outcomes of interventions and schemes of the Government of India. The following table shows the relative ranking of Manipur among the UTs and states in attainment of SDGs.

TABLE 2.2: MANIPUR'S ATTAINMENT IN SDGS

SDG GOAL	SDG GOAL	SDG INDEX SCORE	RANK	MAX	MIN
1	No poverty	44	27	76	37
2	Zero hunger	74	2	80	35
3	Good health and well being	67	7	92	25
4	Quality education	65	13	87	36
5	Gender Equality	25	28	50	24
6	Clean water & sanitation	44	24	100	31
7	Affordable & clean energy	39	22	89	11
8	Decent work & Economic growth	33	29	90	33
9	Industry, Innovation & Infrastructure	72	1	72	0
10	Reduced Inequality	98	5	100	38
11	Sustainable cities and communities	31	25	71	23
15	Life on land	100	1	100	43
16	Peace, justice & strong institutions	70	17	91	53

Note: Achiever 100, Front runner 65-99, Performer 50-64, Aspirant 0-49

Source: NITI Aayog (2018) SDG India Index, Baseline Report, United Nations

According to the Niti Aayog (2018) report, Manipur's overall SDG score out of 100 (which is the target) is 59. rank Manipur is an achiever in goal 15, front runner in goals 2,3,4,9,10 and 16, aspirant in goals 1,5,6,7,8 and 11. Manipur is the lowest ranked state in goal 8, decent work and economic growth. Manipur's overall SDG index composite score of 59 jointly ranks 6th with Mizoram among 29 states. Himachal Pradesh and Kerala top with SDG index of 69. Manipur and Mizoram share overall top ranking among north eastern states of India. Manipur is better than any north eastern state vis-à-vis SDGs 2, 3 and 4. It tops all India vis-à-vis SDG 9 and 15.

Manipur's vision gives top priority to the eradication of hunger (SDG 2), improvement of health outcomes (SDG 3), provision of quality education (SDG 4), growth with decent employment (SDG 8) and the promotion of just, peaceful and inclusive societies (SDG 16). The following table shows where Manipur is vis-à-vis the SDGs and where it is heading to in terms of targets. It shows the sub-target scenario on 62 indicators for the 13 goals.

TABLE 2.3: COMPARATIVE PERFORMANCE OF MANIPUR AND INDIA IN SDG TARGETS

SDG	THEME	INDICATOR	MANIPUR	INDIA	TARGET	COMMENT OF MANIPUR
1	No Poverty	Percentage of population living below national poverty line	36.89	21.92	10.95	State target 18.44
		Percentage of hh with any usual member covered by any health scheme or health insurance	3.6	28.7	100	Lagging
		Persons provided employment as a percentage who demanded employment under MGNREGA	96.46	84.75	100	Better
		Proportion of the population (out of total eligible population) receiving social protection benefits under maternity benefit (%)	26.2	36.4	100	Lagging
		Number of homeless hh per 10,000 hh	2.95	10.39	0	Better
2	Zero hunger	Ratio of rural hh covered under PDS to rural hh where monthly income of highest earning member is less than Rs 5000	1.36	1.01	1.29	Better
		Percentage of children under age 5 years who are stunted	28.9	38.4	21.03	Better
		Percentage of pregnant women aged 15-49 yers who are anemic (11.0 g/dl)(%)	26	50.3	23.57	Better
		Rice, wheat and coarse cereals produced annually per unit area(kg/Ha)	1485.1	2509.22	5018.44	Lagging
3	Good health & Well being	Maternal mortality ratio	Null	130	70	39 (2015-16) as per State Health MIS
		Under five mortality rate per 1000 live births	26	50	11	Better

SDG	THEME	INDICATOR	MANIPUR	INDIA	TARGET	COMMENT OF MANIPUR
3	Good health & Well being	Percentage of children aged 12-23 months fully immunized (BCG, Measles and three doses of Pentavalent vaccine)	65.9	62	100	Better
		Annual notification of TB cases per 1 lakh population	94	138.33	0	Better
		No. of governmental physicians, nurses and mid wives per 1,00,000 population	344.39	220.96	549.96	Better
4	Quality Education	Adjusted net enrolment ratio at elementary (class 1-8) and secondary (class 9-10) school (%)	88.21	75.83	100	Better
		Percentage correct responses on learning outcomes in language, mathematics and EVS	58.67	54.89	67.89	Better
		Percentage correct responses on learning outcomes in language, mathematics, science and social science for class 8 students	44.75	44.53	57.17	Better
		Percentage of children in the age group of 6-13 who are out of school	1.72	2.97	0.28	Better
		Average annual dropout rate at secondary level (%)	14.38	17.06	10	Better
		Percentage of school teachers professionally qualified	43.27	61.15	100	Lagging
		Percentage of elementary and secondary schools with pupil teacher ratio less than/equal to 30	93.15	70.43	100	Better

SDG	THEME	INDICATOR	MANIPUR	INDIA	TARGET	COMMENT OF MANIPUR
5	Gender Equality	Sex ratio at birth (female per 1000 male)	null	898	954	
		Average female to male ratio of average wages/ salaries received by regular wage/ salaried employees of age 15-59 for rural and urban	0.93	0.7	1	Better
		Percentage of ever married women aged 15-49 who have ever experienced spousal violence	54.7	33.3	0	
		Percentage of seats won by women in the general elections to state legislative assembly	3.33	8.7	50	Lagging
		Ratio of Female labour force participation rate to male labour force participation rate	0.4	0.32	1	Better
		Percentage of women in the age group of 15-49 years using modern methods of family planning	23.6	53.5	100	Lagging
		Percentage of population having safe and adequate drinking water in rural areas	67.7	71.8	100	Lagging
		Percentage of rural hh with individual hh toilet	82.42	82.72	100	100 in 2018-19
6	Clean water & sanitation	Percentage of districts verified to be ODF	0	31.95	100	ODF state by 2nd Oct.2018.
		Installed sewage treatment capacity as a proportion of sewage created in urban areas %	0	37.58	68.7	29 as per state report 2018-19
		Percentage annual ground water withdrawal against net annual availability	0.94	61.53	70	Lagging 0.39 as per state PHED report.

SDG	THEME	INDICATOR	MANIPUR	INDIA	TARGET	COMMENT OF MANIPUR
7	Affordable and clean energy	Percentage of hh electrified	89.3	94.57	100	Lagging
		Percentage of hh using clean cooking fuel	42.1	43.8	100	
		Renewable share of installed generating capacity %	13.21	17.51	40	Lagging
8	Decent work & Eco growth	Annual growth rate of GDP per capita at constant price of 2011-12	3.52	6.5	10	National target
		Average Unemployment rate per 1000 persons for males and females	58	63.5	14.53	Better
		Percentage of hh with a bank account	99.76	99.99	100	
		No. of ATMs per 1,00,000 population	9.93	16.84	50.95	Lagging
9	Industry, Innovation & Infrastructure	Percentage of targeted habitations connected roads by all-weather under PMGSY	69.41	47.38	100	Better
		No. of mobile connections per 100 persons in rural and urban area (mobile tele density)	Null	82.97	100	
		No. of Internet Subscribers per 100 population	Null	33.47	100	
		Percentage of gram panchayats covered under Bharat Net	74.55	42.43	100	Better
10	Reduced Inequality	Palma ratio of hh expenditure in urban India	0.68	1.41	1	
		Palma ratio of hh expenditure in rural India	0.7	0.92	1	
		Ratio of Transgender labour force participation rate to male labour force participation rate	null	0.64	1	
		Percentage of SC sub plan fund utilized	102.92	77.67	100	Better
		Percentage of Tribal sub plan fund utilized	93.05	82.98	100	Better

SDG	THEME	INDICATOR	MANIPUR	INDIA	TARGET	COMMENT OF MANIPUR
11	Sustainable cities and communities	Houses completed under PMAY as a percentage of net demand assessment for houses	0.52	3.32	100	Lagging
		Percentage of urban hh living in slums	null	5.41	0	
		Percentage of wards with 100% door to door waste collection	42.48	73.58	100	Lagging
		Percentage of waste processed	50	24.8	100	Better
15	Life on land	Percentage of total land area covered under forest	77.69	21.54	33	Better.
		Decadal change in extent of water bodies within forests from 2005 to 2015(%)	81.25	18.24	0	
		Change in forest area from 2015 to 2017 (%)	1.18	0.21	0	
		Percentage change in estimated population of wild elephants over 5-year period	null	19.53	0	
16	Peace, justice & strong institutions	Reported murders per 1 lakh population	3	2.4	1.2	
		Reported cognizable crimes against children per1 lakh population	14	24	0	Better
		Estimated no. of courts per 10 lakh persons	6.94	12.83	33.76	
		Estimated reported corruption crimes per 1 crore population	0	34.01	17	Better.
		Percentage of births registered	100	88.3	100	Better.
		Percentage of population covered under Aadhar	80.7	89.5	100	Lagging

Source: NITI Aayog (2018) SDG India Index, Baseline Report, United Nations

Manipur is a front runner (50-64%) in six indicators; zero hunger, good health and well-being, quality education, industry, innovation and infra., reduced inequality, peace, justice & strong institutions. In six indicators, Manipur is aspirants (0-49%) in six indicators; no poverty, gender equality, clean water and sanitation, affordable &

clean energy, decent work & eco growth and sustainable cities and communities. Its performance is better than all India in 32 indicators. Data for six indicators; MMR, Sex ratio at Birth, No of mobile connections per 100 persons in rural and urban area, No of internet subscribers per 100 population, ratio of transgender labour force participation rate to male labour force participation rate, percentage of urban households living in slums, percentage change in estimated population of wild elephants over 5-year period is indicated as null (not available as per data source). One indicator associated with wild-life on land i.e. the percentage change in estimated population of wild elephants over a 5-year period is irrelevant for Manipur, Manipur lags behind the national figures in 23 indicators. Agricultural productivity is only about 50% of national productivity and it needs to be trebled to come at par with the national level productivity. Doubling the output of agriculture in Manipur will bring the productivity of Manipur at par with the current all India agricultural productivity.

Out of the four indicators of poverty Manipur lags in agricultural productivity only. This calls for serious rethink on our agricultural policy touching the many dimensions of food security. What we are eating is as important as how much we are eating. Equally important is how efficient we are in agricultural operations such as harvesting, storage and distribution. Our cultural practices involving food wastages need to be looked into. In respect of quality education, Manipur is lagging behind in proportion of trained teachers. With good health Manipur is better than all India in every indicator. With peace, justice and social institution Manipur lags behind in number of courts per 10 lakh population. The shortage of trained teachers in schools and judicial institutions is bound to have serious effects on delivery of quality education and justice. With the goal 'Promote inclusive and sustainable economic growth, employment and decent work for all' Manipur lags behind in economic growth with the growth rate half that of all India.

3

Bringing Agriculture Centre Stage: Hunger, Nutrition and Food Security

3.1 INTRODUCTION

Eradicating hunger and malnutrition is one of the greatest challenges of our time. Not only do the consequences of not enough – or the wrong – food cause suffering and poor health, they also hinder progress in many other areas of development such as education and employment.

Malnutrition results from deficiencies, excesses or imbalances in the consumption of macro and/ or micronutrients. It may be an outcome of food insecurity or it may relate to non-food factors such as inadequate care practices for children, insufficient health services and an unhealthy environment. Hunger and malnutrition can translate to less productive individuals who are more vulnerable to disease and thus often unable to earn more and improve their livelihoods. It magnifies the effect of every disease, including measles and malaria. Malnutrition can also be caused by diseases, such as diarrhea which reducing the body's ability to convert food into usable nutrients. Well-nourished children are more likely to survive, grow and learn; they are better placed to participate in and contribute to their communities and they are more resilient in the face of crisis. The right nutrition during the first 1,000 days of a child's life is very important and will improve her or his physical and cognitive development and ability to learn in the future. Good nutrition lays down the foundation for healthy, thriving and productive nations and remains one of the greatest investments to be made in improving global welfare. The benefits of good nutrition extend across generations.

The first and most important type of malnutrition is protein-energy malnutrition (PEM); a basic lack of calories and protein. Food is converted into energy by humans, and the energy contained in food is measured by calories. Protein is necessary for key body functions including provision of essential amino acids and development and maintenance of muscles. PEM is the more lethal form of malnutrition/hunger, as this leads to growth failure. The United Nations' Food and Agriculture Organization (FAO) estimates 795 million people of the 7.3 billion in the world, or one in nine, were suffering from chronic undernourishment in 2014-2016. The FAO estimates in its 2017 report 'The State of Food Security and Nutrition in the World 190.7 million people, or 14.5% of the population, are undernourished in India. Almost all people growing hungry live in developing countries, representing 12.9 percent or one in every eighth of the population of developing countries. A world with zero hunger can positively impact our economies, health, education, equality and social development.

The world produces enough food to feed everyone. For the world as a whole, per capita food availability has risen from about 2220 kcal/person/day in the early 1960s

to 2790 kcal/person/day in 2006-08, while developing countries even recorded a leap from 1850 kcal/person/day to over 2640 kcal/person/day. A principal problem is that many people in the world still do not have sufficient income to purchase (or land to grow) enough food or access to nutritious food. This is an element of “food access.”

The **Global Hunger Index (GHI)** is an annual multidimensional statistical tool used to describe the state of countries’ hunger situation. The GHI measures progress and failures in the global fight against hunger and ranks countries on a 100-point scale; 0 being the best score (no hunger) and 100 being the worst, although neither of these extremes is reached in practice. Values less than 10.0 reflect low hunger, values from 10.0 to 19.9 reflect moderate hunger, values from 20.0 to 34.9 indicate serious hunger, values from 35.0 to 49.9 reflect alarming hunger, and values of 50.0 or more reflect extremely alarming hunger levels. The GHI combines 4 component indicators: 1) the proportion of the undernourished as a percentage of the population; 2) the proportion of children under the age of five suffering from wasting; 3) the proportion of children under the age of five suffering from stunting; 4) the mortality rate of children under the age of five. Wasting happens when weight is less than expected for a child’s height and stunting happens when a child is shorter than expected for their age. Stunting and malnutrition prevent children from going to school depriving them of a better future. The Index is jointly prepared by the International Food Policy Research Institute (IFPRI), Welthungerhilfe, a German non-profit organization and Concern Worldwide, an Irish NGO. India improved its Global Human Index (GHI) score to 31.4 in 2017 from 46.2 in 1992, moving from alarming hunger to serious hunger. A lower number means fewer people are going hungry. In the GHI 2017, India came 100th out of 119 countries ranked from the least to the hungriest, ahead of Pakistan (106), but behind Bangladesh (88), North Korea (93) and Myanmar (77). The ranking measures the proportion of the population that consumes fewer than 1,800 kilocalories each a day—defined as undernourishment—as well as three indicators relating to childhood nutrition and life expectancy.

Strategies for eradicating hunger may consist of increasing agricultural productivity and accessing markets to investing in family farming, small scale fisheries and forestry, to fostering governance of land tenure and natural resources, to strengthening nutrition sensitive social protection mechanisms, addressing gender inequalities, to improving monitoring and coordinating mechanism for food security and nutrition, to investing in education, health, water and sanitation or a combination of the above.

Increasingly, hunger is related to how we use land, water and energy. The growing scarcity of these resources puts more and more pressure on food security. Sustainable agricultural and food systems can address the vicious cycle of hunger, food insecurity and malnutrition. The world can no longer manage food production and natural resources separately. The combined effort of Government, NGOs, companies and academia are needed for effective action. Food security and nutrition are to be mainstreamed in policy frameworks and investment programs.

Against this background, this chapter presents an overview of the state of hunger in Manipur and role of agriculture in addressing this particular SDG.

3.2 HUNGER IN MANIPUR

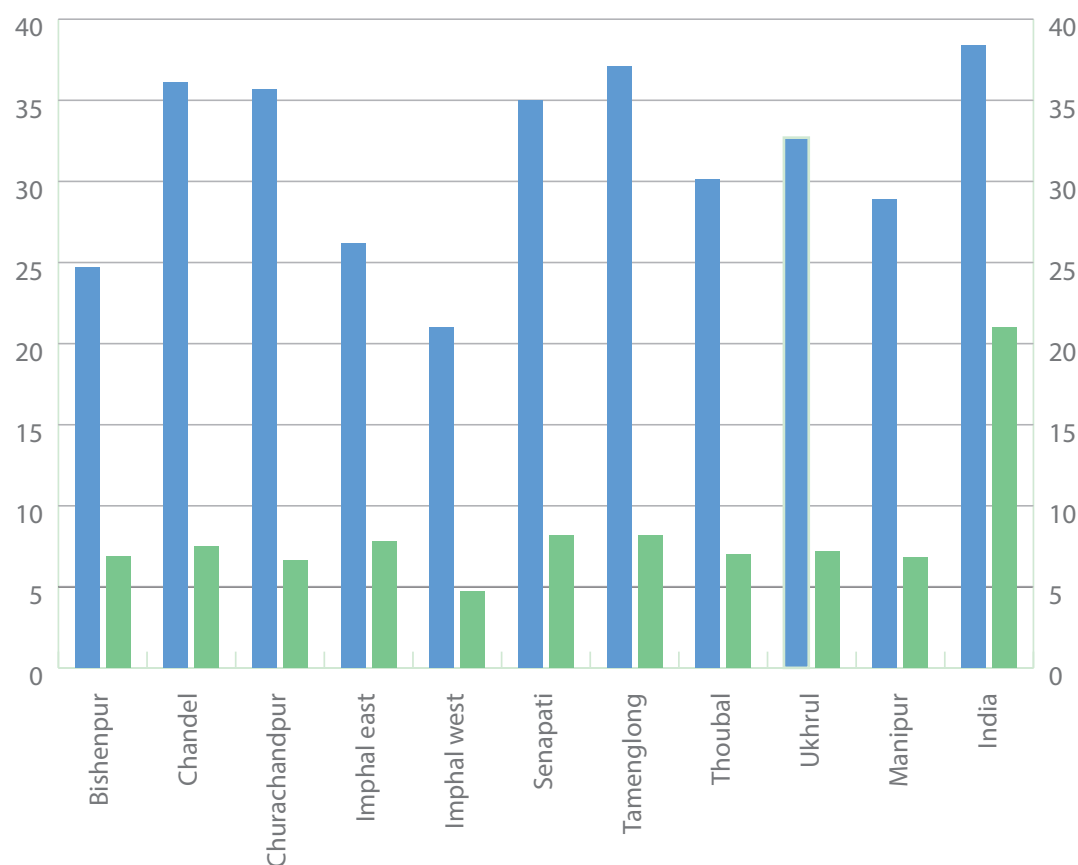
The National Family Health survey, the main data source for hunger, is a large scale, multi round survey conducted in a representative sample of households throughout India. The survey has been conducted four times since the first survey in 1992-93. The survey provides state and national information for India on fertility, infant and child mortality, the practice of family planning, maternal and child health, reproductive health, nutrition, anemia, utilization and quality of health and family planning services. The GHI is not available at sub national level. However, related data will be highlighted to give a comparative picture of some dimensions of hunger for children and adults separately.

TABLE 3.1: CHILDREN'S HEALTH INDICATOR-MANIPUR 2015-16: NFHS-4

DISTRICTS	CHILDREN UNDER 5 YEARS WHO ARE					
	STUNTED (%)			WASTED (%)		
	Urban	Rural	Total	Urban	Rural	Total
Bishnupur	24.9	24.5	24.7	6.4	7.4	6.9
Chandel		36.5	36.1		7.7	7.5
Churachandpur		36.8	35.7		6.5	6.6
Imphal East	25.8	26.5	26.2	6.5	8.7	7.8
Imphal West	20.2	22.2	21.0	5.3	3.7	4.7
Senapati		35.6	35.0		8.0	8.2
Tamenglong		39.5	37.1		7.9	8.2
Thoubal	29.3	30.6	30.1	8.5	6.1	7.0
Ukhrul		34.3	32.7		8.4	7.2
Manipur	24.1	31.4	28.9	6.4	7.1	6.8
India	31.1	41.2	38.4	20.0	21.5	21.0

Source: NFHS-4 (2015-16)

In terms of stunting and wasting of children below five years old, Manipur is far better than all India indicators, particularly in wasting of children. Stunting is more serious in the hills. Among the districts, number of stunted and wasted children is lowest in Imphal West. Tamenglong has the highest proportion of stunted and wasted children. For adults, the extent of malnutrition is relatively less from an all India level. Manipur is much better in 'under five mortality rates' also (Table 3.3).

FIGURE 3.1: MALNOURISHMENT IN MANIPUR

Source: NFHS-4 (2015-16)

TABLE 3.2: NUTRITIONAL STATUS OF ADULTS (AGE 15-49 YEARS)

DISTRICT	WOMEN WHOSE BODY MASS INDEX (BMI) IS BELOW NORMAL (BMI < 18.5 KG/M2) (%)			MEN WHOSE BODY MASS INDEX (BMI) IS BELOW NORMAL (BMI < 18.5 KG/M2) (%)		
	URBAN	RURAL	TOTAL	URBAN	RURAL	TOTAL
Bishenpur	11.8	10.1	11.0	11.8	13.6	12.7
Chandel		6.0	6.2		7.7	8.1
Churachandpur		8.1	7.8		5.6	5.0
Imphal east	8.9	10.5	9.7	11.9	15.9	14.3
Imphal west	7.2	8.3	7.6	10.8	8.6	9.9
Senapati		9.2	8.9		7.1	7.3
Tamenglong		7.2	8.1		3.9	4.0
Thoubal	9.6	9.8	9.7	13.2	15.2	14.4
Ukhrul		8.3	7.7		9.7	12.1
Manipur	8.5	9.0	8.8	11.5	10.9	11.1
India	15.5	26.7	22.9	15.3	23.0	20.2

Source: NFHS-4 (2015-16)

TABLE 3.3: UNDER-FIVE MORTALITY RATE

STATE	UNDER-FIVE MORTALITY RATE (U5MR) PER 1000 LIVE BIRTHS		
	Urban	Rural	Total
Manipur	18	30	26
India	34	56	50

Source: NFHS-4 (2015-16)

TABLE 3.4: VALUE OF CONSUMPTION (₹) OF BROAD GROUPS OF FOOD PER PERSON FOR A PERIOD OF 30 DAYS MPCE (MMRP) OVER BROAD CONSUMPTION, 2011-12

FOOD ITEMS	MANIPUR		PUNJAB		INDIA	
	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN
Cereal	297.37	269.96	121.14	139.85	152.91	173.82
Gram	0.71	0.98	6.87	7.79	2.07	2.90
Cereal substitute	0.18	0.31	0.00	0.03	0.91	1.23
Pulses & pulse products	19.56	20.22	42.41	48.17	39.51	50.76
Milk and milk products	20.53	30.20	333.62	347.33	114.90	184.31
Sugar	9.41	8.09	63.08	48.12	23.69	27.35
Salt	3.37	3.21	2.78	2.83	2.44	2.76
Edible oil	35.34	40.10	67.57	72.74	53.44	70.03
Egg, fish & meat	156.21	144.38	12.87	20.98	68.46	95.99
Vegetable	108.36	104.30	120.82	131.10	94.62	121.70
Fruit(fresh)	20.23	17.98	41.48	64.05	32.16	69.51
Fruit(dry)	2.36	3.22	8.41	11.15	8.36	20.61
Spices	43.04	37.46	53.62	57.42	50.08	63.73
Beverages, etc.	95.90	97.23	158	193.43	112.94	236.18
Food	812.78	777.64	1032.87	1145	756.49	1120.88

Source: NSSO

Table 3.4 compares the food consumption basket of Manipur with that of Punjab, a prosperous state and All India. Not only is less spent on food in Manipur, a few items dominate the food basket with possible nutritional implications. The food basket in Manipur is dominated by cereal, followed by egg, fish and meat. In the case of Punjab, it is dominated by milk and milk products followed by beverages.

Table 3.5 shows the overwhelming importance of rice in the cereal group. Among the states, Manipur has the highest consumption of rice for both urban and rural areas. 99% of cereal consumption in rural Manipur consists of rice only as against 55% for all India (rural). The lack of diversity in the cereal basket is bound to have implications for nutrition.

TABLE 3.5: QUANTITY OF PER CAPITA MONTHLY CONSUMPTION (KG) 2011-12

ITEMS	RURAL		URBAN	
	MANIPUR	ALL INDIA	MANIPUR	ALL INDIA
Rice	14.034	6.134	13.068	4.663
Wheat	0.084	4.426	0.195	4.321
Jowar	0.000	0.202	0.001	0.132
Bajra	0.000	0.235	0.00	0.081
Maize	0.003	0.130	0.00	0.014
Other cereals	0.002	0.007	0.002	0.007
Total cereals	14.147	11.217	13.282	9.280

Source: NSSO

3.3 ROLE OF AGRICULTURE IN ERADICATION OF HUNGER

Agriculture has been at the root of economic transformation and social change throughout human history. Underdeveloped economies and peoples have neglected agriculture at their own peril; that is why agriculture is back on the global agenda. Agriculture today is not only about producing crops and food; it is also about ending hunger and malnutrition. It is about addressing deprivation and inequity in the basic human entitlement of food, especially among children, women, the elderly and others. Food security, therefore, has a deeper and wider meaning and encompasses 'an integrated, equity-based approach that prioritizes vulnerable population and agriculture system, and also view them as agents of change.' Food production systems must be sustainable, productive and help sustain the ecosystems and genetic pools.

This section provides an overview of the farming and rearing practices across the sub-sectors including fruits and vegetables, livestock and fisheries.

3.3.1 AGRARIAN STRUCTURES

Manipur has been, and still is, a land of small holder farmers throughout its history, with a brief interlude during the colonial times when private property rights was introduced in the valley region. Non-emergence of landlordism in its economic and social sense as well as stunted growth of commercial agriculture has been the hallmark of the agrarian scene in Manipur. Historical dynamics have therefore given rise to an agrarian structure that is based on small family-based holdings or peasant farms and agrarian relations that are favorable to the cultivators of the soil. In a social context where the tiller of the soil still holds sway over vital decisions of production and exchange in agriculture, what happens to agriculture in the state in the near future would depend upon what the state does for small farmer development and how the state facilitates a productive linkage of these marginal and small farmers to the market, in an efficient and competitive manner.

There are some 1,49,000 cultivators in the state and over 50% of them are small peasant cultivators with average land holdings of 0.52 hectare of land. In fact, 83.53% of cultivators in the state have average farm sizes below 1.28 hectares of land. Any form of agricultural policy and strategy must take into account this reality. Medium land holders constitute only 16.54% of holders and large land holders are negligible (see table 3.10). There are two types of land systems in the state. In the hill region, the landholding system is based on common property rights where the chief of each village has control over annual distribution of use rights on jhum land. Terraced cultivation has however private property characteristics. Except in some small pockets, the hill region is yet to be cadastral surveyed. In the valley region, private property rights have been fully established.

TABLE 3.6: DISTRIBUTION OF OPERATIONAL HOLDINGS IN MANIPUR

SIZE CLASS	2000-01			2005-06			2010-11		
	NO. ('000)	AREA ('000 HECT.)	AVG. (HECT.)	NO. ('000)	AREA ('000 HECT.)	AVG. (HECT.)	NO. ('000)	AREA ('000 HECT.)	AVG. (HECT.)
Marginal	75 (50.33)	40 (23.25)	0.53	76.5 (50.86)	40 (23.25)	0.52	77 (50.99)	40 (23.25)	0.52
Small	49 (32.88)	63 (36.63)	1.29	48.8 (32.45)	62.8 (36.51)	1.29	49 (32.45)	63 (36.53)	1.28
Semi Medium	22 (14.77)	55 (31.98)	2.47	22.3 (14.82)	55.3 (32.15)	2.48	22 (14.56)	55 (32.17)	2.48
Medium	3 (2.01)	14 (8.14)	4.86	2.8 (1.86)	13.5 (7.84)	4.86	3 (1.98)	13 (7.82)	4.86
Large	Neg	Neg.	11.38	Neg	Neg	11.13	Neg	Neg.	11
All Size	149 (100)	172 (100)	1.15	150.4	172	1.14	151	172	1.14

Source: Government of Manipur (2017), Economic Survey Manipur 2016-17, Directorate of Economics & Statistics.

Note: Figure in the parentheses indicates percentage. Neg - Negligible

The land systems in the hills need to be reformed so that incentives to invest and develop land are inculcated in the tribal ethnos, besides availing of the many advantages, including formal credit that is associated with private property. The choice and formulation of a new land system has to be left to the tribal themselves and should be taken up with a sense of urgency. In the valley region, the problem is implementation of land use control and administrative structures that ensures an efficient use of land to meet the contradictory needs of human settlement, industrialization, agriculture and environmental balance. The extremely limited area of 2233 sq. km in the valley is under great strain and unless immediate control measures are made effective, the future fallout may adversely affect the growth and development of the state itself.

Given the small holding based agrarian structure in the state, agricultural development strategies must be focused on creating institutional and infrastructure requirements of small farms; however, also considering economies of scale, competition and production efficiency. The strategy must keep in mind the future rise in farm sizes as the tertiary and secondary sectors absorb larger proportions of the incremental labor force.

Manipur has two distinct farming structures in the valley and hills. Hill agriculture is based mostly on Jhum and Modified Jhum systems, and less on terraced systems. Valley based land systems are characterized by common property rights, existence of dual authorities in the form of traditional political and social institutions as well as modern institutions and mountainous topography. Agriculture in Manipur is the most advanced in the North Eastern Region in terms of modernization and productivity, especially in the valley region. Although the valley area is barely 10% of the geographical area but has about half of the net cultivated area most agricultural activities in the state are taking place in the valley region. Production structure will therefore exhibit a dualism of plain and mountain agriculture with differing crop composition, technological change, productivity and future needs and prospects. Out of the state's geographical area of 22,327 Sq. Km., net cultivated area accounts for 10.37%, of which 4.97% is in the valley and 5.55% in the hills. Gross cropped area is 3,65,520 hectares and net cropped area is 2,34,500 hectares. Cropping intensity is 155.87%. Gross irrigated area under food grains is 27.77%.

3.3.2 WATER MANAGEMENT AND IRRIGATION

Manipur has an abundance of rainfall, a dense network of streams, rivers, wetlands and lake systems and yet this vital natural resource has not yet been efficiently tapped and managed. In the hill region, terrace cultivation and horticulture have failed to take off because adaptive and innovative irrigation systems have not yet been put in place. In the valley region, though enough irrigation capacity has been created for one hundred percent canal irrigation, only about a fourth of the cultivated area actually receives irrigation. To compound the situation, flood control measure failures, especially in the valley, have led to frequent and annual floods that have increased the risks and uncertainties in agriculture as an economic activity. Lack of irrigation and frequent floods have become two major factors that have prevented the state's agriculture from accelerated growth and diversification into high value crops. As such, a state policy on water management is of paramount importance.

Cultivated areas in the hill and valley regions are 1,49,430 hectares and 1,94,190 hectares respectively. In the valley region, as three ongoing projects are soon completed, eight medium and large dams will have an irrigation capacity of 1,06,100 hectares. With capacities created by minor irrigation and indigenous irrigation systems, the valley region should be fully irrigated. However, the actual irrigation available in the valley is only 28,000 hectares. Therefore, the short-term target is to push towards capacity restoration and utilization rather than investment in new projects. In the hill regions, the push should be towards capacity creation and putting in place low unit cost and area specific micro and small irrigation systems.

Efficient use and efficient distribution systems are areas where new institutional mechanisms are necessary so that benefits are optimized, and capacity utilized. Delivery mechanisms must be efficient, and networks of canals and channels require modernization so that revenue returns are also optimized. Functional water users' associations that work in tandem with concerned departments are yet to emerge in Manipur, as a result of which efficient and equitable distribution and revenue collection have greatly suffered.

Environmental degradation, encroachment and absence of control and maintenance mechanisms in catchment areas have largely contributed to shrinking irrigation capacities of dams. Unless reversed, these factors are likely to cripple the output of irrigation projects. A holistic management of water resources has become urgent for the future of agriculture in Manipur.

Flood control and irrigation infrastructures need to be built within a conceptual plan and design that takes into account the natural stability of the river, lake and wetland system and the actual needs of crop irrigation and human consumption. Where necessary, alternatives to irrigation dams have to be put in place. Inadequate attention to environmental balance, sustainability and technological lags must be fully taken into account in a state water management policy.

3.3.3 FOOD GRAINS

Productivity of rice and food grains in the State is above the national average and well above Northeast averages. In the valley region, there is widespread use of modern inputs of High Yield Variety seeds, chemical fertilizers, pesticides and labor-saving machinery. Technological diffusion in valley agriculture in the state will therefore be comparable to most advanced states of India. Inadequate formal canal irrigation in the valley is widely supplemented by indigenous water management systems. In the hill region, however, technological diffusion has spread to limited terraced and river valley cultivation, whereas in the Jhum areas, the mainstay of hill agriculture, technological change and modernization of agriculture is yet to set in.

Rice paddy is the main agricultural crop of the state and accounts for approximately 67% of the cropped area. Pulses account for 5.55% of the cropped area and horticultural crops including fruits and vegetables account for 26.84% of the cropped area. Burdened by slash and burn low rice productivity systems of agriculture in the hills, surplus rice production in the valley is supplementing cereal demands of the hills. Crop cutting surveys reveal low rice yields of about 900 kg of rice per hectare of Jhum cultivation as compared around 4000 kg per hectare in the valley. The result has been a rice deficit in the state ranging from 41.97% deficit in 2009-10 to 19.48% deficit in 2014-15. This alarming deficit in the production of the primary cereal of rice is the defining moment of agricultural development in the state which has grave implications for ending hunger, malnutrition and enhancing food security.

**TABLE 3.7: SETTLED LAND VS JHUM LAND UNDER RICE IN THE HILL
DISTRICTS OF MANIPUR (IN '000 HA)**

YEAR	SETTLED	JHUM	RATIO OF SETTLED TO JHUM
2000-01	28.17	39.79	0.70
2001-02	29.15	42.47	0.68
2002-03	29.55	43.18	0.68
2003-04	35.26	41.79	0.84
2004-05	30.78	44.70	0.68
2005-06	37.07	45.60	0.81
2006-07	45.18	34.65	1.30
2007-08	34.18	38.19	0.85
2008-09	34.77	39.94	0.87
2009-10	27.95	44.87	0.62
2010-11	32.60	40.18	0.81
2011-12	25.23	50.93	0.49
2012-13	19.58	58.11	0.34
2013-14	19.66	58.77	0.33

Source: Government of Manipur (2014), Statistical Abstract Manipur 2013,
Directorate of Economics & Statistics.

Cropping pattern in the state shows that paddy cultivation accounts for 67%, fruits and vegetables 27% and others 7%. High yielding and improved varieties of seeds are widely used in the valley at 96.7% as against 14.19% in the hills. Per hectare consumption of fertilizers also show wide gaps at 212.31 kg per hectare in the valley and 17.45 kg per hectare in the hills. Besides the obvious technological backwardness of the hill region, there has been an alarming declining trend in settled rice cultivation and rise in area under jhum cultivation. During 2001 and 2014, area under jhum increased from 39.79 thousand hectares to 58.77 thousand hectares whereas settled cultivation fell from 28.17 thousand hectares to 19.66 thousand hectares (see Table 3.6). Tackling the challenges of progressive and environmentally friendly land use structures in the hill regions of the state must become the prime target for food security. Area under rice and maize has stabilized at around 170 thousand hectares and yield rates are also on the rise. The state produced 493 thousand tonnes of rice in 2014-15 being 19.48% short of demand. However, wide annual fluctuations in production occur due to an erratic monsoon, inadequate irrigation, decline in rabi crop and drought and flash floods. Rice deficits are met by imports from mainland India and Myanmar.

The alarming feature of rice production in the state has been the observed absolute decline in area under paddy in the valley region as limited paddy fields are being

increasingly converted into residential, commercial, industrial and other non-agricultural use. Further, as labor costs are rising, farmers have widely resorted to broadcasting rather than transplanting thereby reducing faster productivity gains. Inadequate supplies of quality seeds and farmers dependence on own product seeds have been also one of the prime factors for slow productivity growth. Similarly, in the hilly region, terrace cultivation is declining as labor scarcity has set in and a Jhum ecosystem as a viable composite food source with multiple cultigens is rapidly being reduced to paddy only, or fewer crops. Jhum cycles are reduced to five or seven years in most areas and the area under jhum has increased as a result.

3.3.4 FRUITS AND VEGETABLES

The state's efforts to transform from a cereal based agrarian economy to a high value fruits and vegetable-based economy have had mixed results. There has been a trend growth in overall output of vegetables, fruits and spices but the crop wise acreage and production show contrasting trends in terms of growth. This raises many questions of soil health, technological response to climate change and diseases, geographical and crop specific coverage of extension work and the viability and sustainability of existing marketing structures, chains and basic infrastructure.

TABLE 3.8: AREA UNDER SOME IMPORTANT HIGH VALUE (FRUIT & VEGETABLES) IN MANIPUR DURING 2004-05 TO 2014-15 (AREA IN '000 HECTARES)

NAME OF THE CROP	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15
PINEAPPLE	1.45	0.04	0.59	1.96	0.32	0.54	1.45	1.38	0.78	0.34	0.69
ORANGE	1.74	1.69	3.40	4.98	4.94	4.59	2.91	2.54	1.51	1.68	2.21
LEMON	0.31	0.34	0.10	0.03	0.54	0.73	0.63	0.13	0.30	0.42	0.42
PAPAYA	0.17	0.00	-	0.05	0.09	0.26	0.51	0.37	0.31	0.47	0.17
ARUM	9.33	9.94	9.48	9.47	6.72	8.80	8.33	7.74	7.10	9.29	8.08
BANANA	3.87	4.42	4.20	9.36	7.51	8.41	5.29	6.94	8.81	8.70	9.38
PASSION FRUIT	0.39	1.77	1.57	1.47	1.19	1.19	1.06	0.14	0.35		0.35
BEAN	3.29	3.62	5.01	4.97	5.54	6.03	6.61	6.42	6.34	4.77	5.52
CABBAGE	2.42	3.20	2.75	4.11	4.45	5.49	5.21	5.58	9.10	6.66	6.52
CAULIFLOWER	0.60	1.46	0.57	0.18	0.56	1.55	2.73	1.83	1.18	2.03	1.42
PEA	2.14	1.87	1.55	1.64	2.67	3.20	3.37	3.36	4.48	4.81	4.73
POTATO	2.96	4.87	2.87	1.95	3.34	5.87	6.37	5.52	4.51	4.17	2.97

Source: Government of Manipur (2017), Economic Survey Manipur 2016-17, Directorate of Economics & Statistics.

There has been a drastic decline in acreage under the two vital fruits of pineapple and oranges. Pineapple which had acreage of about 1.45 thousand hectares in 2004-05 has declined to barely 0.69 thousand hectares in 2014-15, a 52.41% decline. Area under oranges has declined to 2.22 thousand hectares from a peak of 4.98 thousand hectares in 2007-08. Passion fruit acreage has declined from 1.77 thousand hectares in 2007-08 to 0.35 acres in 2014-15 (see table 3.7). The state's objective of an agro-based industrialization will greatly suffer if the production of these fruits is not made sustainable. However, the acreage and production of banana has been on the rise, indicating high potentials of exports and linking agriculture to the Act East Policy.

Soil health, disease, plant senility and climate change have been at the root of drastic decline in the production of potential industrial fruits like orange lemon and pineapple, besides market bottlenecks. In the orange district of Tamenglong, thousands of orange plants are dying of pests and diseases and senile plants are not getting replaced as private progeny orchards themselves are being attacked by pests and diseases. Highly successful commercial orchards are beginning to shut down. As orange supplies for rising table and fruit processing demands are increasing and supplies are being met by small homestead-based orchards in the hills, the orange market is being flooded by imports. One of the highly successful fruit processing industries in the state now imports semi-processed orange pulp from Nagpur. On the other hand, a highly prospective medium sized passion fruit factory in Senapati district closed down because of managerial, logistic, and supply problems. This is against the fact that Manipur, Meghalaya and Mizoram belong to the government of India identified agricultural zone for passion fruit and that there is a high level of industrial demand for the fruit, nationally and internationally. Pineapple, one of the major fruit products of the state is also fast disappearing from the market.

The industrial cash crop and plantation sector is perhaps the most neglected agricultural sector in the state which has high potential for large scale agro-based industry. Tea, rubber, bamboo, cotton and coffee are plantation crops to which state plans have given lukewarm attention and failed to tap an agricultural source for medium and large-scale industries. Nascent tea and rubber plantations in Jiribam are languishing under scant attention. Cotton plantation efforts started along with the Spinning Mills factory are in limbo and the tea processing factory and bamboo splitting plant are also non-functional. These plantations are exactly the agro-based industries that the state should be looking for and planning for if large scale income and employment are to be generated in an industry-agricultural model of development in the state. In the higher value niche market sector of vegetables like mushroom and medicinal and aromatic plants and floriculture, the state has to go far in exploiting production and market advantages, internal and external.

With respect to cultivation of vegetables, there is a progressive change and agrarian vitality. Vegetables like cauliflower, cabbage, beans, peas, potato and a host of high value crops have seen high levels of growth in acreage as well as production. The result has been seasonal market gluts, wastage, and high volatility of prices resulting in distress of farmers and instability in production. However, there is a large shortage of potato production in the state; besides shortages for consumption, a

single potato chip producing firm has to import 25,000 MT annually. The state is yet to formulate a marketing policy and infrastructure, domestic or cross-border, which can create a vent for the surplus to the state's vegetable production boom.

There is also an expansion of area and production of spices like ginger, chilies and turmeric whereas production of forest-based spices/cash crops like cinnamon and bay leaves have been declining. The sporadic production booms in high value vegetable, spices and other crops, can be explained by way of crop diversification among the farmers in the state and positive impulses on which regeneration of the state's agriculture has to be founded upon.

3.3.4 FRUITS AND VEGETABLES

The livestock and poultry sectors are in a transitory flux. While the changing food habits and consumption basket is rapidly diversifying with an increasing demand for high-protein foods and fish, matching supply is falling short. The highest jump in demand is that for pork meat. On the supply side, poultry population has declined from 2,941,000 to 2,480,000 numbers during the same period (see Table 3.8). Total livestock has drastically declined 37% from 1,103,000 heads to 693,000 heads. More specifically, there has been a fall of around 22% in cattle and buffalo heads between 2003 and 2007.

TABLE 3.9: LIVESTOCK AND POULTRY POPULATION OF MANIPUR

CATEGORY	CENSUS YEAR							
	2003		2007		2012		PC VARIATION	
	NO. (IN '000)	PC TO TOTAL LIVESTOCK	NO. (IN '000)	PC TO TOTAL LIVESTOCK	NO. (IN '000)	PC TO TOTAL LIVESTOCK	2007 OVER 2003	2012 OVER 2007
Cattle	418	37.90	342	43.46	264	38.09	-18.18	-22.81
Buffalo	77	6.98	62	7.88	66	9.52	-19.48	6.45
Sheep	6	0.55	8	1.01	11	1.59	33.33	37.50
Goat	33	2.99	51	6.48	65	9.38	54.55	27.45
Horse/Pony	2	0.18	-	-	-	-	-	-
Pig	415	37.62	314	39.90	277	39.97	-24.34	-11.78
Mithun	-	-	10	1.27	10	1.44	-	0.00
Other Livestock	152	13.78	-	-	-	-	-	-
Total Livestock	1103	100.00	787	100.00	693	100.00	-28.65	-11.94
Total Poultry	2941	-	2289	-	2480	-	-22.17	8.34

Source: Government of Manipur (2017), Economic Survey Manipur 2016-17, Directorate of Economics & Statistics.

The livestock sector in the state is characterized by household-level rudimentary rearing practices. Majority of the rural households in Manipur are engaged in animal husbandry practices, where pig rearing is one of the most common activities. Women play an important role in production, aggregation, primary processing and local sales in the livestock sector.

It has largely remained under traditional system of rearing with the weaker sections of the society, both as a source of income and a choice of meat for consumption. Majority of the farmers in the sector own marginal (below 1 hectare area) landholding size and own around 2-3 animals each. Level of commercialization is low. As a result, there is huge dependence on imports of livestock products from neighboring states. The state depends on powdered milk from outside for their milk needs. Egg needs are also mostly met with outside supplies. The state-run farms for ducks, poultry, buffalo, and pigs are either sick or non-functional for various reasons though the state-run dairy is functioning profitably. These farms have failed to serve the original objective of spread and development of livestock farming through production and breeding, and thus the issue of divesting these farms to the private sector is now squarely before the government.

Majority of the farmers feed their animals on locally available feed resources (rice, weeds, etc.), irrespective of their nutritional value required for optimum growth and quality production. Hence, the feed is imbalanced and quite often leads to reduction in quality production and productivity. There is a shortage of veterinary doctors and vaccines. Disease identification, isolation of sick animal and taking necessary precaution for elimination of disease is an issue. Cost of vaccine and access to vaccine has been a risk that small farmers face on a regular basis.

In some areas, the scope for commercial piggery has expanded through some forms of cooperative or contract farming. However, in most cases, these women do not get the right technology support and the resources for taking up commercial pig farming as a sustainable venture. In terms of availability of proper infrastructure facilities, animals are bred and slaughtered in domestic unorganized housing, shelters and slaughterhouses largely on a non-commercial scale. Although there are a number of such government owned farms in the state, the quality of infrastructure is not good, breed management is not efficient, and these farms are scattered across the state.

3.3.5 FISHERIES

Though consumption of meat is increasing, fish is predominantly eaten in Manipur. One of the major factors contributing towards high livestock and fish production in the state is the ideal agro-climatic conditions of the Barack plains, the Brahmaputra valley and the hilly regions. The vast networks of wetlands, lakes and rivers in the valley have been the source of cheap fish supplies in the valley region. In the hills, numerous streams and rivers that drain into the valley have been the source of exotic and tasty 'hill fish' that was briskly traded by the hills people in the valley markets. Population growth, environmental damage, deforestation and high levels

of siltation are leading to situations of fast depletion of natural fish stocks, both in the hills and the valley. Dependence on new ventures in fish farming and massive supplies from mainland India are the order of the day.

According to official estimates, total fish production in the state was 30.5 thousand tons leaving a supply deficit of over 7 thousand tons (see Table 3.9). The growth of fish farming in the state has been at the cost of paddy farm land and colonization of drying up wetlands and natural fisheries which are essentially public. In forming a sustainable fisheries policy, the right balance between needs for natural water bodies, crop production and ecological equilibrium have to be factored in. Innovative models of mountain fisheries also need to be adopted. Manipur has to plan not only for self-sufficiency but for exports on the basis of its rich water resources.

TABLE 3.10: PRODUCTION OF FISH AND FISH SEED OF MANIPUR

YEAR	FISH PRODUCTION (IN '000 TONNES)		FISH SEED PRODUCTION (IN MILLIONS)		EST. REQUIREMENT OF FISH (IN '000 TONNES)
	TARGET	ACHIEVEMENT	TARGET	ACHIEVEMENT	
2003-04	17.5	17.6	117.5	117	23.83
2004-05	18	17.8	118	118	23
2005-06	21.5	18.22	119	123	-
2006-07	22	18.5	120	120	27.5
2007-08	19	18.6	119	120	27.5
2008-09	19.5	18.8	125	125	27.5
2009-10	19.7	19.2	134	127	27.5
2010-11	20.20	20	134	128	35.73
2011-12	22.20	22.2	134	134	37.03
2012-13	25	24.5	139	139	35.73
2013-14	28	28.5	200	200	37.03
2014-15	32	30.50	200	212	NA

Source: Government of Manipur (2017), Economic Survey Manipur 2016-17, Directorate of Economics & Statistics.

The current demand for fish is 52000 MT and the production at present has been arrived at 32000 MT as per report from Fishery Department. The department of fishery has come with an action plan to bridge the gap and policy measures have been modified.

3.4 BARRIERS

Some of the challenges the agriculture sector faces include low level of skill development and dependency on traditional agricultural practices. Further, as the

farmers are predominantly small and marginal with small-size land holdings, their productivity remains low and are often not able to sell in bulk quantities maintaining uniformity in quality. There are instances of lack of will, finance and knowledge to commercialize. The low level of income creates a vicious cycle for the farmers who seldom want to and are able to shift from subsistence farming to commercial agriculture practices.

One of the barriers identified is the lack of an integrated vision plan or document on the part of the State government for developing the agro-value chain in the region, that can support cluster-based development, enhance the growth of the food processing sector, provide fillip to the small and medium enterprises, sector-specific development of agro-processing or business units in select areas, among others.

Another challenge is that the level of education and skill amongst the small and marginal farmers is low and there is limited use of technology and innovation among the farmers. As a result, the level of productivity, value and volume of output is low, demand for their output is weak and non-commercial in nature, and the level of their income is low.

In terms of provision of government support for skill development in the agriculture and allied sector, there are a number of schemes, policies and development initiatives. Some of the schemes are not applicable to the state or the sectors under consideration.

For implementation of the schemes, initiatives and policy objectives, the government from time to time partner with various public sector enterprises (PSEs) and private entities through their CSR programs. Further, there is hardly any example of successful collaboration between government and private entities in using technology to develop sophisticated state-of-the-art agro-value chain which can help to reduce wastage and enhance the socio-economic status of the farmers through greater price realization and better income.

3.5 RECOMMENDATIONS FOR THE RIGHT POLICY MIX IN FARMING STRUCTURES TO ACHIEVE SDG 2

Need based interventions, sustainable change and participatory decision making should be the three principles of Agricultural Development and Food Security. This calls for regular consultation and evidence-based policy making. Hence, policy interventions and development strategy in the sector should be customised to address the needs and challenges that hilly terrains present. A sustainable agricultural policy that optimally utilizes water and land resources, links agriculture to industry and generates surplus tradable goods has to be put in place. This needs to be done to achieve the following objectives:

1. To raise agricultural production and productivity to optimum levels that ensures food security, production of tradable goods for exports and growth of agro-based industries.

2. To ensure sustainable use of land and water resources for environmentally friendly sustainable agriculture.
3. To implement programmes that promotes water use efficiency and soil health management.
4. To ensure judicious utilization of common property resources.
5. To make agriculture a viable livelihood activity that generates income and employment for a dignified living.
6. To develop Hill agriculture on a rain-fed area development mission mode.
7. To end hunger, malnutrition and deprivation.
8. To put in place food productive systems that are sustainable, productive and help sustain ecosystems and genetic pools.

Recommended Strategy

1. Adopt an area-based approach for farming systems.
2. Conserve and develop land and water resources through a participatory approach.
3. Put in place integrated farming systems based on a cluster approach in line with the guidelines provided in the National Mission for Sustainable Agriculture.
4. Promote Farmer's Producer Organizations, Co-operatives and Companies as nodal agencies through which small-holder farmers are more efficiently organized for developmental State interventions, aggregation and market participation.
5. Co-ordination, convergence and leveraging of investment from other related schemes/missions.
6. Adopt a State Land Use Policy that judiciously balances the demands of agricultural and non-agricultural use.
7. Evolve a Land Reforms Measure that is socially acceptable and economically viable.
8. Constitute a State Advisory Committee on Agricultural Production responsible for fine-tuned inter-departmental co-ordination and for formulating Policy Documents.
9. Irrigation and flood control schemes and projects shall be within the framework of a Retained Natural System of water resources that least disturbs the river, lake and wetland eco-system.
10. Strict control, maintenance and development of catchment areas of irrigation projects with the highest levels of people's participation.
11. Irrigation, flood control and water use shall become, in letter and spirit, a people's project rather than a departmental project, in terms of stakeholder's participation.
12. Conservation and maintenance of natural water bodies, creation of new water bodies in wetland and marshy land along with neighborhood reservoir networks, combined with rainwater harvesting, shall be the basis of retaining scarce water resources to supplement dam reservoirs.

13. Micro irrigation schemes that judiciously and sustainably taps the natural water resources and least disturbs the hill-forest eco-system shall be taken up in the hill regions.
14. A Water Resource Management Department shall look after and coordinate irrigation, flood control, water use and water conservation in the state.

3.5.1 FOOD GRAINS

The following core actions can be taken:

1. A balanced and futuristic land use policy has to be immediately put in place and strictly enforced.
2. Intensive extension services backed by cost of cultivation reduction measures and diffusion of state-of-the-art productivity raising technology backed by adequate organized credit has to be taken up.
3. There should be a thrust towards a second crop of paddy in identified areas where double cropping is most feasible in the short run.
4. Micro low-cost gravity-based irrigation systems tapping mountain streams and other sources should become the basis for increasing terrace cultivation in the hills.
5. Cold resistant improved and HYV seeds for the hill regions have to be developed and reach the hill regions for higher and stable yields that can incentivize terrace farming.
6. Irrigation and flood control measures that take into account the wetlands and river systems in the valley in an integrated manner have become urgent. In the hill regions, adaptive change in jhum agriculture and reversing the declining trend in wet rice cultivation has to become a strategic intervention. The overall objective should be to stabilize food grains production and search for new avenues of growth.

3.5.2 HORTICULTURAL SECTOR

Following strategic and policy measures are required for rejuvenating the horticultural sector:

1. Baseline horticulture survey and mapping to identify location and crop specific zones for focused intervention for production and productivity growth.
2. Soil health, pest and disease mapping for major vegetable and fruits for appropriate managerial and prevention intervention.
3. Restructuring of progeny orchards and farms for supply of quality seeds and planting material, in terms of physical production and supplies and in terms of appropriate scientific manpower and technology.
4. Dissemination of good agricultural practices and efficient post-harvest management.

5. Incentives for secondary horticulture including bee keeping, honey processing, mushrooms, besides secondary nutrient production like vermin compost.
6. Establishment of cold storage/chain and intermediate mini processing units.
7. Popularization of protected cultivation for high value crops wherever economically viable.

3.5.3 LIVESTOCK, DAIRY AND FISHERY SECTORS

The Department of Veterinary and Animal Husbandry Manipur envisions Sustainable growth of Livestock, Poultry for nutritional security and economic livelihood with a mission on preserving, protecting, strengthening and improving livestock for create employment opportunities, increase production and productivity of Livestock and Poultry products.

Objectives:

- Prevention and control of animal disease
- Development of fodder and feed.
- Increase Milk production and provide assistance to farmers.
- Development of Poultry

The State Veterinary Department shall be the Chief Agency for matters pertaining to livestock production, preservation, protection and improvement of stocks, dairy development etc.

The main focus will be to reverse the trends of livestock, poultry, milk and egg shortages the following steps are needed and should form a core part of the forthcoming strategic programs for the state:

1. A breeding infrastructure plan has to be put in place that takes care of biosecurity and breed stock requirements based on high end technology.
2. A three-tier breeding program for pigs will be set in place where specialized breeding farms supply breeding material, the State Breeding Farms produce and supply breeding stocks for farmers and farmers supply the piglets.
3. Farms with high potential in poultry, piggery and bovine shall be selected and funded as Model Farms for biosecurity and disease-free stock.
4. Micro level identification and mapping of cultivable area for hill stream, riverine, lake and wetland fisheries.
5. Legal protection of wetlands, lakes and peripheral lake areas for establishment of fishery estates in an organized and sustainable manner and prevent unplanned private encroachment for fisheries or other purposes.
6. Sustainable plans for river valley and riverine fisheries in the hill regions that integrate
7. terrace cultivation, pastoral activities and pisciculture.
8. Development and conservation of indigenous fish varieties.
9. Planned development of fish feeds and cold chains.

10. Feed and fodder production in non-forest wasteland and degraded forest land is to be taken up in coordination with the Agriculture Department based on contract farming models with pre and post-harvest support.
11. Increase production of high yielding variety of fodder.
12. Enrich wasteland/grassland for increasing fodder production per unit area.
13. Increase utilization of coarse grains and fodder.
14. Explore utilization of non-conventional feed and fodder.
15. Create specialized technical manpower for feed and fodder.
16. Extension services based on skill development and technology transfer will target suitable production systems, production and livestock business.
17. A State Level Livestock Mission Committee shall be constituted in line with the guidelines of the National Livestock Mission. Measure to be taken for protection of livestock through provision of health care
18. Conduct livestock census, maintain livestock statistics, establish animal quarantine centers, issue certification and health protocols
19. There is a need for developing more exhaustive training programs focused on developing skills required across the value chain. Further, the areas of training needs to be expanded to include more training programs related to food processing, regulatory understanding, veterinary and other specialty training, among others
20. Attention needs to be paid on ensuring adequate availability of vaccines and veterinary staff for prevention of all livestock diseases.
21. Infrastructure for diagnosis and treatment of animal disease prevalent in the State including emergent and exotic diseases should be upgraded;
22. Well-developed quarantine facilities to prevent entry of any exotic diseases through import of livestock and livestock products needs to be developed.
23. To increase good quality milk production, improve quality of milk through improvement of chilling infrastructure / cold storage facilities to meet standards and provide hygienic and wholesome milk to consumers.
24. Increase the share of organized sector, especially share of co-operatives in Dairy Sector.
25. Motivate the dairy farmers through training by introducing them to balanced feed/nutrition, breed improvement, hygienic production and processing of milk.
26. Provide incentives to entrepreneurs to attract increased investment in the dairy sector.
27. Provide technical and financial assistance to farmers to encourage them to rear high yielding cattle and produce clean milk through emphasis on hygiene and quality.
28. Give greater emphasis with focused attention to increasing milk production in areas with potential for greater milk production.

29. Develop village level infrastructure for clean milk production, to test milk to ensure purity and prevent adulteration.

Other forms of pisciculture:

- i. **Cattle Fish Culture:** Mannering of fish pond by using cow dung is one of the common practices all over the world. A healthy cow excretes over 4,000-5,000 kg dung, 3,500-4,000. Mannering with cow dung, which is rich in nutrients results in increase of natural food organism and bacteria in fishpond. A unit of 5-6 cows can provide adequate manure for 1 ha of pond. In addition to 9,000 kg of milk, about 3,000-4,000 kg fish/ha/year can also be harvested with such integration.
- ii. **Pig Fish System:** The waste produced by 30-40 pigs is equivalent to 1 tons of ammonium sulphate. Exotic breeds like white Yorkshire, Landrace and Hampshire are reared in pig-sty near the fish pond. Depending on the size of the fishponds and their manure requirements, such a system can either be built on the bund dividing two fishponds or on the dry side of the bund.
- iii. **Poultry Fish Culture:** Poultry raising for meat (broilers) or eggs (layers) can be integrated with fish culture to reduce costs on fertilizers and feeds in fish culture and maximized benefits. Poultry can be raised over or adjacent to the ponds and the poultry excreta recycled to fertilize the fishponds. Poultry housing, when constructed above the water level using bamboo poles would fertilize fishponds directly. In fish poultry integration, birds housed under intensive system are considered best.
- iv. **Duck Fish Culture:** A fish pond being a semi closed biological system with several aquatic animals and plants, provides excellent disease free environment for ducks. In return ducks consume juvenile frogs, tadpoles and dragonfly, thus making a safe environment for fish. Duck dropping goes directly in pond, which in turn provides essential nutrients to stimulate growth of natural food. This has two advantages, there is no loss of energy and fertilization is homogeneous.

3.6 LINKING AGRICULTURE TO INDUSTRY

Agricultural growth in Manipur has been stunted because of two fundamental reasons. Firstly, surplus productions above the requirements of the local population have not been able to find a market outside the state and food processing industries have not developed sufficiently to absorb the non-consumed surplus. Secondly, agriculture in Manipur is not sufficiently or consistently producing the industrial crops that are in high demand by existing or prospective industrial entrepreneurs. For instance, high volume demand of oranges is not forthcoming as orange orchards are drying up. High volume demand of potatoes for home and industries are not met by farmers due to irrigation shortages and inadequate diffusion of good farming practices among farmers. The high volume of passion fruit production is not

finding its way to the passion fruit factory. If sufficient maize is produced, Manipur's livestock and poultry industries are likely to boom. There seems to be an absolute mismatch between demand and supply forces and level of commercialization is low. In addition, the state's industrial policy and its implementation on the ground is underutilized. For instance, plantation crops like tea, rubber, coffee and banana that have high employment potential, but have not received the interventions they deserve.

Manipur requires a crop production plan or policy and a matching industrial promotion and policy if the full potential of the state's agricultural resources are to be more productively utilized. However, the absence of inadequate marketing infrastructure and the absence of an institutionalized marketing policy are at the root of the supply-demand gaps in agriculture as well as industry. A coordinated growth of the state's economy through agriculture and industrial linkages that successfully produces tradable goods for export would require the following measures:

Identification of crop zones and crop lists with comparative advantages by concerned agricultural departments and promotion of matching agro-based industries by the industry department.

Investment in adequate agricultural infrastructures for post-harvest requirements like warehousing and storage, primary grading and processing and transport and communication networks.

Creation of integrated value chains of agriculture, industry and services that efficiently link production, distribution and consumption.

Implementation of the Agricultural Produce Marketing Committee Act, with relevant modification, for a more organized and directed marketing of agricultural products.

Generation of sufficient data and information for periodic publication of Information Education Communication material to facilitate farmers and industrialists.

Markets are central to agriculture and rural development. Making markets, value chains and the systems that support them work better for the poor have therefore become a central aim of many donors, governments and non-governmental organizations. The state has been playing an important role in agriculture, through agricultural extension, research and development, infrastructure and finance. However, because of the immense size of responsibilities, governments seek to leverage private sector resources – both technical and financial – and to work with the private sector to secure access to markets for smallholder producers. Public-private-producer partnerships (PPPPs) in agricultural value chains can be designed and implemented to achieve more sustained increases in income for smallholder farmers and broader rural development. PPPPs involve cooperation between government and private business agents, working together to carry out a specific task, while jointly assuming risks and responsibilities, and sharing resources and competences. They also explicitly involve farmers (or producers). PPPPs in agriculture have been developed to build required infrastructure; to collaborate on agricultural research and development (R&D) or crop markets; to deliver (normally public) services, such as extension services; or to create value chain linkages either bringing smallholders

into new value chains or improving existing chain linkages through overcoming high costs or risks associated with sourcing from smallholders. Since this last form of partnership explicitly involves farmers (or producers) as a key component of the arrangements being created, they can be considered PPPPs.

3.6.1 THE RATIONALE FOR PUBLIC PRIVATE-PRODUCER PARTNERSHIPS

In Manipur trading of agricultural produce, whether through local markets or across international trade networks, resides largely in the hands of private individuals and enterprises. Public intervention in markets is usually justified because constraints are preventing an 'efficient' outcome from occurring – a market exchange that would raise overall social welfare. Public intervention may also be justified on equity grounds – that markets are not delivering equitable outcomes or reducing poverty. Constraints arise in markets due to market failures, such as: 1) missing markets for credit or inputs; 2) institutional barriers, such as poor contract enforcement norms; and 3) systemic weaknesses in market exchange, including the inability of agents to learn about each other, identify areas of complementarity, and build and sustain trust. Market constraints related to smallholder farmers are particularly acute because of asymmetric information (e.g. between companies and farmers), high transaction costs leading to coordination failure, scale diseconomies, missing or underdeveloped markets, undeveloped infrastructure, and monopoly or near monopoly power often held by other actors in the value chain. The common constraints faced by smallholder farmers in agricultural value chains in developing countries are:

Access to technology: technological and managerial innovations required to engage informal value chains, which may not be met by government extension services.

Access to finance: smallholder farmers are often not considered credit-worthy because they lack collateral, an assured income and/or have poor reputations for contract compliance.

Access to markets: the absence of sufficient market demand for crops produced, collapsing local market prices or inaccessibility of markets with high distribution costs.

Scale diseconomies: small-scale farmers face scale diseconomies leading to high transaction costs in accessing inputs and output markets, obtaining access to information, technology and finance, and weak bargaining power.

PPPPs do not only entail public sector intervention in markets. They also involve companies in public sector activities, such as extension services. The rationale for a private sector role is generally on quality or efficiency grounds. Organizing and providing training to small-scale producers and improving their access to services and inputs, without a clear market demand, does not ensure sustainable livelihoods. Value chain PPPPs offer the opportunity to overcome this gap by connecting smallholder farmers directly with markets.

Risk is an inherent part of agriculture and connecting farmers to more formal value chains can expose them to a system that is more sensitive to shocks. Unless risk is managed, normally the weakest value chain actors – farmers - are likely to bear a disproportionate share of the risk thereby raising costs and undermining the sustainability of the PPPP as a whole. It is not possible to design a PPPP that anticipates every aspect of risk, but PPPPs need the flexibility to respond and adapt to the unexpected. Enabling poor producers to be included in formal value chains is a complex task with constraints related to lack of infrastructure, low levels of skills and knowledge, and high transaction costs which create significant practical difficulties.

3.7 INTEGRATING HUNGER, NUTRITION AND FOOD SECURITY GOALS

While the vision for agricultural development in Manipur must emphasize output and productivity growth in its transformation process, it must be built on the foundations of inclusion and sustainability. Longer term issues of hunger, nutrition and food security goals must be addressed within the larger framework of inclusion, efficiency and global competitiveness. As the agrarian structure is small holder based, both in the valley and hill regions, future development requires a strategy based on farming systems of small holders with a focus on economies of scale, competition, and production efficiency. Integrated farming models comprising of multi and multiple crops for risk hedging, agricultural diversification and sustainable livelihoods need to be introduced. Suitable location specifically Cluster Development Models can be pursued for aggregation efficiency, economies of scale and efficient policy interventions.

Small holder based integrated farming systems must have a Core Value Chain that links the four core functions of production, aggregation, processing and distribution. The actors in this value chain are producing farmers, buyers/aggregators, processors, ultimate sellers to the end consumers and a host of support providers including physical input providers, financial providers and non-financial providers like storage, transport and processing. Linking the core value chain efficiently and putting in place a governance structure for the value chain is the critical element for a sustainable integrated farming system based on smallholder cluster-based farming.

For the system to work, value chain actors and support providers need an enabling environment of favorable socio-cultural, institutional, organizational and infrastructural elements. The sustainability of the value chain will depend on commercial viability, social and cultural acceptability of outcome and environmental viability. The success of the system also depends on how efficiently producers and other organizations at various links in the chain function.

Integrated farming can ensure sustainable livelihoods within the farm for small holder farmers and at the same time achieve the overall goals of output and

productivity growth combined with accelerated removal of hunger, malnutrition and food insecurity. A systems change would require the following measures:

Phased introduction of location specific integrated farming systems in the hills as well as valley regions.

Adopting the cluster approach along the guidelines of the National Mission for Sustainable Agricultural.

Adopting a value chain approach where horizontal and vertical governance of the chain is facilitated or directly intervened by the State Government.

Setting ultimate targets for production of surplus tradable goods from agriculture and agro-based industries.

Food Banks can also be used as a means of reducing wastage and increasing food security. A network can be created to distribute food products and meals through community based organizations or NGOs that run institutional feeding programs. These include feeding programs at schools for underprivileged children, homeless shelters, old age homes, after-school programs, orphanages, charitable hospitals and other programs for the needy.

The health sector is a key economic sector and a major driver of decent job creation, inclusive economic growth, human security and sustainable development. Health and well-being constitute both outcomes and foundations of social inclusion, poverty reduction and environmental protection. From a health perspective development can be said to be sustainable when resources – natural and manufactured- are managed in ways which support the health and well-being of present and future generations. Health is a result of a continuous, complex interplay among individuals, social systems and environments. The social system and health system should be seen as a whole. Health constitutes human capital in sustainable development and is also a desirable goal for sustainable development. It creates resilience to shocks. Average population health levels and inequalities in health are good indicators of societal functioning. Health outcomes are closely related with social factors. Health of the population is largely determined by lifestyle, biological and environmental factors. Health was the most prominent issue that the Millennium Development Goals (2000-15) had sought to address.

The Sustainable Development Goals (SDGs) approach the issue of health in a holistic fashion. Health is centrally positioned within the 2030 Agenda, with one comprehensive and ambitious goal – SDG 3: “Ensure healthy lives and promote wellbeing for all at all ages”. The SDGs envisage a future where health is aligned to a lifestyle that is empowering for the individual and sustainable for the society. The 2030 Agenda has major implications for the health sector, and its realization will entail the development of coherent, integrated approaches, and an emphasis on equity and multi-sectoral actions.

SDG 3 includes 13 targets covering all major health priorities, including four targets on the unfinished and expanded Millennium Development Goal (MDG) agenda, four targets to address non-communicable diseases (NCDs), mental health, injuries

and environmental issues, and four “means of-implementation” targets. The target for universal health coverage (UHC) is key to the achievement of all the other targets and the development of strong resilient health systems. Achieving the UHC target will require an integrated approach to the provision of health services that minimizes fragmentation and the competing agenda. The 2030 Agenda places considerable emphasis on the systematic follow-up and review of SDG-related implementation at country, regional and global levels. Health-related monitoring will occur in the context of overall assessment of progress towards the SDGs, and will need to be comprehensive and comprising the monitoring of:

- a. overall progress towards SDG 3;
- b. the Universal Health Coverage target;
- c. other health targets; and
- d. health - related targets in other goals – all of which will be undertaken with a strong emphasis on equity.

The SDG 3 targets cover virtually all major health topics, including reproductive, maternal, newborn and child health, infectious diseases, NCDs, mental health, road traffic injuries, UHC, environmental health consequences and health systems strengthening. In addition, many other SDGs include health related targets and indicators such as targets for nutrition, water, sanitation, air quality and violence, as well as for the key determinants of health such as education and poverty. Each target has one or two proposed indicators, with the exception of SDG Target 3.3 with five indicators which states “By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, waterborne diseases and other communicable disease” and SDG Target 3.9 with three indicators which states “By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination”. With a total of 26 indicators, the health goal has the largest number of proposed indicators of all the 17 SDGs.

Health is related to every other aspect of development either as an input or as a consequence of activity in other goals. SDGs with direct link with health are SDGs 1, 2, 4, 5, 6, 7, 8, 11, 12 and 16. Poverty (SDG1), food security (SDG2), Water and sanitation (SDG6) Access to gainful employment (SDG8) and decent working conditions, Housing, transport and access to green space (SDG 11) are major determinants of health and well-being. Education (SDG4) and Socio-economic inequalities can help reduce health inequalities. Gender based social exclusion (SDG5) in low- and middle-income settings put women’s health at a disadvantage. Climate change (SDG7) and unsustainable energy use are major threats to human welfare. Sustainable environments (SDG 9) minimize disasters and promote healthy living. Inappropriate consumption patterns (SDG12) can have adverse effects on health through its impact on climate and modern epidemics such as obesity. Climate related (SDG13) disasters are threats to health and well-being, unsustainable fishing practices and land management (SDG15) threaten food supply and livelihoods. Poor governance and organized crime (SDG16) can disempower ordinary citizens leading unhealthy

lives. Good governance (SDG17) creates the societal structures necessary for people to thrive and lead healthy lives.

The National Health Policy 2017 seeks universal health coverage and enhanced secondary and tertiary healthcare services. Instead of strengthening the public health care system to ensure this, it proposes purchasing healthcare services from private hospitals and nonprofit health care facilities. Under the new policy, “trusts or registered societies” will be created at the central and state levels. These agencies will ensure that purchasing is strategic. For the secondary and tertiary levels, it refers to patients purchasing health care services using insurance schemes while for primary it refers to the government operationalizing Health and Wellness centers with the help of the private sector. There would be public financed insurance schemes which the poor can use to avail healthcare. Health and Wellness centers (HWC) will be set up to provide comprehensive primary healthcare services which include geriatric healthcare, palliative care and rehabilitative care. Every family would have a health card linked to these centers and the family would be eligible for a defined package of services anywhere in the country. The new policy is focused on micronutrients whose deficiencies can be addressed immediately with short term dividends.

India is passing through a rapid health transition facing challenges of Infectious diseases, nutritional deficiencies, escalating epidemic of NCDs, accidents/ injuries and safe motherhood. Food system, the environment and socioeconomic factors such as education and working conditions, occupational health are important determinants of disease burden. Communicable diseases (28% of the entire disease burden), while non communicable diseases (60%) and injuries (12%) constitute the bulk of the country’s disease burden.

4

Health for All

4.1 STATE OF HEALTH CARE IN MANIPUR

The health service in the state is primarily under the government sector. The health system under the State Health Department is organized at three levels, each level supported by a referral center. The levels are:-

Primary care level comprising of Primary Health Sub-Centers (PHSC), Primary Health Centers (PHC) and Community Health Centers (CHC). Essential basic health care is provided at this level.

Secondary care level comprising of CHCs and District Hospital, which act as referral centers and where comparatively better services are provided with basic specialist facilities.

Tertiary care level where specialist and super specialist care are provided. The State Level Hospital (JNIMS) is providing the service.

Medical facilities in the state were mainly provided by the State Government. It is the basic social input for healthy and efficient human resources. The Health and Family Welfare Department is providing services such as public health, control of communicable diseases, health education, family welfare, maternal and child health care. Special attention was also given from time to time to eradicate diseases like malaria, leprosy, T.B., Iodine Deficiency and Aids. The number of health institutions in the state along with bed strength is as in Table 4.1.

TABLE 4.1: NUMBER OF HOSPITALS/DISPENSARIES AND BEDS AVAILABLE IN MANIPUR

S. NO.	CATEGORY OF INSTITUTION	NUMBER	SANCTIONED BED STRENGTH	ACTUAL BED IN POSITION	HOSPITAL BEDS
A.	Under the State Health Department				
Hospitals	State				
1.1	State General Hospital (tertiary)	1	600	600	600
1.2	State TB Hospital	1	100	20	20
1.3	State Leprosy Hospital	1	30	6	6
1.4	State AYUSH hospital	1	50	14	14
Hospitals	Sub-total State Hospitals		780	640	640
5.	District Hospitals				
5.1	Churachandpur		200	171	171

S. NO.	CATEGORY OF INSTITUTION	NUMBER	SANCTIONED BED STRENGTH	ACTUAL BED IN POSITION	HOSPITAL BEDS
5.2	Thoubal		100	100	100
5.3	Chandel		100	50	50
5.4	Bishnupur		50	50	50
5.5	Senapati		100	50	50
5.6	Tamenglong		100	50	50
5.7	Ukhrul		100	50	50
	Sub total DH	7	750	521	521
6.	Sub-district Hospital				
6.1	Moreh		100	50	50
6.2	Jiribam		50	50	50
	Subtotal SDH	2	150	100	100
7.	CHC	17	510	344	344
	Sub-total Secondary and Tertiary		2190	1605	1605
8.	PHC	85	432	370	0
9.	PHSC	421	0	0	0
10.	Allopathic Dispensary	20	0	0	0
11.	AYUSH Wings attached to Hospitals	9	0		
12.	AYUSH Dispensary	1			
	Total:A	536	2622	1975	1605
B.	Under Ministry of Health Gol				
1.	RIMS Hospital(tertiary)	1	1074	1074	1074
C.	Under Private Sector				
1.	Regd. Hospital& Nursing Home with bed	30	1074	1366	1366
2.	Regd. clinic/lab without bed	51			
	Grand Total(A+B+C)	81	5062	4415	4045

Medical health care facilities are available through a network of 646 hospitals/ dispensaries with bed population ratio of 1:1775.

As on October 2015 there were 1068 medical doctors serving under the State Health Department (excluding JNIMS) of which 197 are specialists. The number of medical doctors in the State Health Department combined together with those employed in RIMS and JNIMS is 1673. NRHM is employing 66 medical doctors and

173 AYUSH doctors under contract. Further, there are 471 medical doctors and 10 AYUSH doctors employed in the “Private Hospitals and Nursing Homes” in the State and another about 185 young unemployed medical doctors in the State. If we account all the medical doctors within 70 years of age (numbering about 2600 in total) rendering service in the State (Public+ Private) the doctor population ratio of the State is quite good at around 1 medical doctor per 1135 population. This ratio is without accounting for 743 AYUSH doctors in the State. The nurses are trained at various institutions outside and inside the State. Many nurses are employed outside the State. The State has 6508 registered Nurses (GNM & above) and 3385 ANMs. Further, the State has about 3300 Pharmacists.

4.2 HEALTH SCHEMES/ PROGRAMS IMPLEMENTED IN THE STATE

4.2.1 CHIEF MINISTER HAKSHELGI TENGBANG (CMHT)

CMHT was launched by Hon’ble Chief Minister of Manipur, Shri N. Biren Singh on 21st January, 2018. It aims to provide cashless hospitalization of up to Rs. 2 lakhs per family per year. The target is to provide CMHT card to all the eligible families who are AAY Card Holder, Disabled, Widow, Local Media persons, Newspaper Hawkers and Poor Families not included under Socio Economic Caste Census (SECC) - 2011. This programme envisions ensuring maximum utilization of the free hospitalization benefits by the beneficiaries, avoiding out of pocket expenditure of families and empanelling all the hospitals under CMHT so that beneficiaries avail treatment at the most feasible location. The policy period of CMHT is similar to the financial year. As on 3rd October 2019, 76,703 (Seventy six thousand seven hundred and three) families have enrolled under CMHT. Total 15916 individuals have received free hospitalization benefits under CMHT.

4.2.2 AYUSHMAN BHARAT-PRADHAN MANTRI JAN AROGYA YOJANA (AB-PMJAY), STATE HEALTH AGENCY

AB-PMJAY is launched on 23rd September, 2018 aiming to provide cashless hospitalization benefit of up to Rs. 5 lakhs per family per year for secondary and tertiary care. Only those families which are included in the SECC - 2011 are eligible under AB-PMJAY. The state has 14,08,348 eligible beneficiaries from 2,77,000 eligible families under AB-PMJAY. As on 3rd October, 2019, 1,73,571 individual beneficiaries have received and enrolled under PMJAY. A total of 6,633 individuals have received free hospitalization benefits under yojna as on date.

The State envisions:

- i. To cover all the eligible beneficiaries under AB-PMJAY.
- ii. To ensure maximum utilization of the free hospitalization benefits by the beneficiaries and avoiding out of pocket expenditure of families.

- iii. If health expenditure of the family is reduced, the objective of the scheme would be fulfilled hence uplifting the economy of the State
- iv. To empanel all the hospitals under AB-PMJAY so that beneficiaries avail treatment at the most feasible location

4.2.3 RASHTRIYA BAL SWASTHYA KARYAKRAM (RBSK)

The National Health Mission under the Ministry of Health & Family Welfare has launched the Rashtriya Bal Swasthya Karyakram (RBSK), which envisages Child Health Screening and Early Intervention Services, a systemic approach of early identification and link to care, support and treatment. This programme subsumes the existing school health programme.

In the context of Manipur, prevalence of malnutrition under 5 years is 48%, dental caries is 50% to 60% among the school children and development delays is 20% of the babies discharge from Sick New Born Care Unit (SNCU). Prevalence of birth defect is from 6 to 7 per 1000 live birth. MHT and DEIC Team are continuously screening all the children for early detection and early treatment, by referring to the health facilities (in the state/outside the state).

The State envisions:

- i. reducing the incidence and prevalence of birth defect
- ii. reducing the prevalence of malnutrition under 5 years
- iii. reducing prevalence of underweight children under 5 years
- iv. reducing prevalence of developmental delays

4.2.4 RASHTRYA KISHOR SWASTHYA KARYAKRAM (RKSK)/ ADOLESCENT HEALTH (AH)

RKSK is a centrally sponsored health programme for adolescents, in the age group of 10-19 years, which would target their nutrition, reproductive health and substance abuse, among other issues. Manipur has covered 7 districts as RKSK districts. Main activities under this programme includes peer education training, observance of Adolescent Health Day (AHD), Weekly Iron Folic Acids Supplementation (WIFS) and Menstrual Hygiene Scheme (MHS). The state has 69 Adolescent Friendly Health Clinics (AFHCs) with client load per clinic is 30 per month.

The State envisions:

- i. making all districts RKSK districts i.e. 16 Districts
- ii. increasing awareness on adolescent health for adolescents and stakeholders through schools, clubs and other community avenues
- iii. covering maximum school drop-out girls (ICDS) under WIFS
- iv. training more health workers on Adolescent Health
- v. increasing the client load per clinic per month by 3 digits

4.2.5 IMMUNIZATION PROGRAMME

Immunization programme is one of the key interventions for protection of children from life threatening conditions by providing vaccination. Achievement for Manipur during current year 2019-20 (as on August 2019) is 15438 (37%) against the target of 42263 (Source: Health department, Government of Manipur).

The State envisions:

- i. Cent percent full immunization and Complete Immunization of all children.
- ii. Cent percent full doses of Tetanus diphtheria (Td) vaccine for pregnant Women.
- iii. Cent percent Tetanus diphtheria (Td) vaccination for 10 years and 16 years.
- iv. Cent percent Hepatitis B vaccination for birth dose.
- v. Eradication of Polio.
- vi. Elimination of Measles cases and control of Rubella cases.
- vii. Eradication of Neonatal and Maternal Tetanus.

4.2.6 FAMILY PLANNING

The current status of Total Fertility Rate (TFR) in Manipur is 2.6. As per NFHS 4 report, Manipuri Women with Unmet Need is 30.1 and modern contraceptive use is 15.3. The State envisions reducing the unmet need which is one of the highest in the country, thereby reducing the TFR upto the replacement level 2.1.

4.2.7 NATIONAL VECTOR BORNE DISEASES CONTROL PROGRAMME (NVBDPC)

NVBDPC is launched in 2003-04 by merging National anti -malaria control programme, National Filarial Control Programme and Kala Azar Control programs. Japanese B Encephalitis and Dengue/DHF have also been included in this Program.

TABLE 4.2 CURRENT CASES OF VECTOR BORNE DISEASE IN MANIPUR

DISEASE	NUMBER OF CASES	NUMBER OF MORTALITY
Malaria	13	0
Dengue	13	0
JE	343	6

Source: Health Department, Government of Manipur

The State envisions:

- i. Maintenance of zero indigenous malaria cases and prevention from recurrence of malaria case.
- ii. Reduction in JE and prevention of death from Dengue cases.

4.2.8 NATIONAL LEPROSY ERADICATION PROGRAMME (NLEP)

Manipur has achieved the goal of elimination of leprosy i.e. less than 1 (one) case per 10,000 populations back in 2001. But Manipur is still detecting/reporting New Leprosy Cases around 20-30 annually with sporadically 3 or 4 Grade II (G2D) cases since the last 5-6 years. In this current year 2019-20 (up to September, 2019), 16 New Leprosy Cases detected (2 PB + 14 MB) and 3 G2D cases.

The State envisions achieving the goal of total eradication by cutting down the chain of transmission by encouraging or detecting new leprosy cases as early as possible to prevent any deformity due to leprosy.

4.2.9 REVISED NATIONAL TUBERCULOSIS CONTROL PROGRAMME (RNTCP)

For Manipur, total notified TB cases are 1839 wherein 1442 cases are in public hospital and 397 cases are in private hospital. Diagnosis on TB cases is 2368. There are 1508 patients who are put on treatment (Treatment completed - 860). The State has established one State level TB Cell and 16 District TB Center. No. of designated Microscopic Centre (DMC) is 52 wherein five center are Nonfunctional due lack of Laboratory Technician of RNTCP. The State has one State TB Hospital with 1 Intermediate Reference Laboratory (IRL) covering three state viz. Manipur, Nagaland and Mizoram

1. Nodal DRTB Centers – 3 (JNIMS, RIMS and Churachandpur Hospital)
2. No. of CBNAAT Machines -9
3. Mobile CBNAAT Van – 1
4. Nikshay Poshan Yojana

a. Nos. Of Eligible patients	–	1839 cases
b. Validated PFMS Bank Account	–	1140 cases
c. Beneficiaries	–	504 cases
5. Other Activities
 - a. Internal Evaluation of Chandel District
 - b. Formation of State TB Forum
 - c. Formation of All District TB forum
 - d. Formation of State & District TB-Co morbidity co ordination committee
 - e. OSE (on site Evaluation) by IRL Manipur
 - i. Mizoram – Aijawl
 - ii. Nagaland – Kohima and Dimapur
 - iii. Manipur – All the District of Manipur

4.2.10 MENTAL HEALTH

In October 2014, the government has launched its first National Mental Health Policy, which aims to provide universal access to mental healthcare. State does not have State Mental Hospital however 9 District Mental Health Programme (DMHP) centers are functional out of 16 districts. 244 Medical Officers and 302 Nurses have undergone training in this field. Mental Health Services are available in 37 Health and Wellness Centers. Few preventive and Promotion Services are initiated such as suicide prevention programme, stress management programme, targeted intervention at school etc. despite of inadequate Human Resource.

The State envisions:

- i. Making DMHP functional in all 16 districts.
- ii. Training all the Medical Officers.
- iii. Training all nurses and para medicals
- iv. Mental Health Services to be made available in all the HWCS
- v. Mental Hospital to be made available.
- vi. School Mental Health programme, college counselling services, workplace stress management to be made available.
- vii. Recruitment of Human Resources.

4.2.11 INTEGRATED DISEASE SURVEILLANCE PROGRAMME (IDSP)

Integrated Disease Surveillance Programme (IDSP) is a major National Health Programme under National Health Mission for all States & UTs. The key objective of the programme is to strengthen/maintain decentralized laboratory based IT enabled disease surveillance system for epidemic prone diseases to monitor disease trends and to detect and respond to outbreaks in early rising phase through trained Rapid Response Team (RRTs).

IHIP (Integrated Health Information Platform) to be implemented in selected districts of Manipur. District Public health Labs established at Thoubal & Senapati are nonfunctional. Lab confirmation of outbreaks is only 50-60%. IDSP Manipur ranks in the 2nd position among smaller states in incremental reporting for P & L forms. Absence of adequate human resources hinders the implementation of the programme.

The State envisions:

- i. Rolling out IHIP in all the districts.
- ii. Making the district public health labs functional in Thoubal, Senapati and other districts having district hospitals.
- iii. Increasing lab confirmation of outbreaks to 90%.

- iv. Filling up of key posts of IDSP at all districts (Epidemiologists, Microbiologists, Data Managers and Data Entry Operators).
- v. Improving the reporting for P & L forms to 100%.

4.2.12 NATIONAL PROGRAM FOR PREVENTION AND CONTROL OF DEAFNESS (NPPCD)

Under NPPCD programme, the state has organized a total of 54 awareness camps and 49 Mega Hearing Screening camps. Guinness Book of World Record has included the distribution of 6564 hearing aids for fitting 3911 hearing aids in 8 hours during 2016-17. However, lack of equipment at District Hospitals becomes an issue for treatment of hearing loss.

TABLE 4.3: TRAINING OF MANPOWER UNDER NPPCD

	ENT SPECIALIST	AUDIOLOGIST	PEDIATRICIAN/O & G	MEDICAL OFFICERS	ANM/PHN	ASHA
Manpower trained	30	40	20	287	331	839

Source: Health Directorate, Govt. of Manipur

The state envisions on reducing avoidable hearing impairment to 90% (from the existing prevalence of Hearing loss of 5.5% of Population) by the year 2030 by raising awareness at all levels of Community and proper treatment at District Hospitals.

4.2.13 NATIONAL VIRAL HEPATITIS CONTROL PROGRAMME

Under this programme, 2 Model Treatment Centre (MTC) are operational from 28th July 2019 onwards. 29 Medical Officers have been trained at State level and 8 at National Level. 14 lab technicians have undergone training at State level and 6 personnel on MIS of NVHCP. The state has started vaccination of HCW and Injection HBIg (Immunoglobulin for hep B). A total of 77 patients are on treatment and another 130 are waiting for treatment.

The State envisions:

- i. Elimination of viral hepatitis by 2030
- ii. Hep B & C could be eliminated as a public health threat if 90 % reduction in new chronic infection, 65 % reduction in mortality is achieved.
- iii. Immunization for Hepatitis B
- iv. Birth Dose of Hepatitis B (all deliveries) 90 % by 2020
- v. Three Doses of Hepatitis B vaccine infants (B3) 95 % by 2020
- vi. 80 % of blood donations that are voluntary by 2020,
- vii. 100 % donated blood units screened for Hep C & B by 2018

4.2.14 NATIONAL IODINE DEFICIENCY DISORDER CONTROL PROGRAM (NIDDCP)

IDD Monitoring Laboratory has established at Medical Directorate, Lamphel. Regular Monitoring of Iodine Nutritional status is carried out in all 16 districts by way of Salt testing by ASHAs (using Salt Testing Kit) and Urinary Iodine Excretion (UIE) at the IDD Monitoring Laboratory. It is found that Household Iodized Salt Consumption level is 99.5% (Urban-99.7% & Rural-99.4%); Urinary Iodine Excretion Estimation which equal Optimally Iodine Nutrient (100 mcg) is 99.1% and Inadequately Iodine Nutrient (100mcg) is 0.09%. District Iodine Deficiency Disorder Survey is going on in 3 districts and results are waiting.

The State envisions:

All people in the state including those in rural, urban, hills and valley areas consume adequately iodized salt in the right way so that everyone attain optimal Iodine Nutrition and ensuring all children reach their full cognitive & physical potential.

To ensure proper implementation of NIDDCP in all the districts of the state.

To enhance the IEC activities and promote Iodize salt consumption in the proper way through the Health and Wellness Centers by integration in the Comprehensive Primary Health Care (CPHC)

4.2.15 NON-COMMUNICABLE DISTRICTS (NCD)

A. National Program for Prevention and Control of Cancer, Diabetes, CVD and Stroke (NPCDCS)

Non-Communicable Disease clinics are opened at all 16 District Hospital/CHC for treatment of Diabetes, hypertension and screening of other NCDs. Management of Heart Diseases, COPD and chronic kidney diseases have been started at district hospital where specialist physicians are available. Diagnosis facility of common cancers like oral, breast and cervical cancer are available in limited form in only 4 District Hospitals of Thoubal, Churachandpur, Bishnupur, Senapati. ICCU - 4 bedded cardiac unit is opened in district hospital of Churachandpur. Treatment of cancer patients in Day chemotherapy is available in 9 districts. Population based screening of NCD are started at available Health and wellness centers in all 16 districts. Free NCD drugs are available at all NCD clinics.

The State envisions:

- i. Establishment of State NCD Hospital where specialized facilities for diagnosis and treatment of heart diseases, cancers, diabetes, chronic kidney disease etc are available
- ii. Special Skill based training of Medical officers and paramedical workers of DG,CHC and PHC in the field of NCD management
- iii. Development of State cancer Registry
- iv. Establishment of State Cancer Institute

- v. Referral and linkage mechanism from sub center to PHC and from PHC to CHC/ DH are electronically done and monitored. These patients are needed to be linked with medical college
- vi. Electronic health records through NCD app are maintained for all patients above 30 years of age
- vii. Research for finding out the risk factors of NCD in the state and preventive measures
- viii. Establishment of Cancer Diagnosis center at all districts
- ix. Establishment of ICCU and stroke centers in at least 7 district hospital
- x. Establishing Spoke and hub model in MI (Heart attack and Stroke management with good ambulance system
- xi. Population based screening in all 421 HWC –PHSC and 85 PHC with treatment facility of Diabetes and Hypertension

B. National programme for Health Care of Elderly (NPHCE)

Geriatric Ward is established in District Hospital of Thoubal and Churachandpur. Geriatric OPD services are started in all 16 Districts hospitals/CHCs along with Reservations of Beds for elderly patients. Physiotherapy and Rehabilitative services are available in 4 districts (Thoubal, Churachandpur, CHC Wangoi, Imphal West and JNIMS, Imphal East). Free medicines and diagnosis are available for elderly patient. Home based elderly care are started in HWCs of Imphal West, Imphal East, Thoubal and Bishnupur districts. Work on progress for Geriatric Ward in seven other districts.

The State envisions:

- i. Fully functional 10 bedded geriatric ward in all 16 districts
- ii. Elderly OPD in all CHC, PHC and DH
- iii. Home based Elderly care in all Health and Wellness centres in all districts
- iv. Fully functional physiotherapy and rehabilitative services in all districts

C. Pradhan Mantra National Dialysis Programme (PMNDP)

Under this programme in Manipur, number of patient who have availed dialysis session till August 2019 is 5290 at RIMS and JNIMS together. Dialysis units are going to be opened within Nov-Dec in District Hospital of Churachandpur, Bishnupur, Thoubal, Senapati and Chandel. Trainings are completed for Doctors and technicians.

The State envisions:

- i. Establishment of DIALYSIS unit in all districts
- ii. Free drugs and medicines of CKD and Dialysis
- iii. Home based Peritoneal Dialysis support

4.2.16 HEALTH AND WELLNESS CENTERS (HWC)

Currently, the State has established HWC in all 16 districts. 85 PHC, 220 PHSC and 7 UPHC are approved for HWC. As of now 81 HWC are operational wherein 151 Community Health Officer (CHO) are posted. Facility in these centers includes free drugs and diagnostic service. The State also started population based screening of NCD and Home based Palliative & elderly care in 48 HWCs.

The State envisions:

- i. HWC operational in all PHSC and PHC
- ii. PHC –HWC fully functional for diagnosis, treatment of 12 Comprehensive primary health care services including extended services
- iii. Primary Health Care strengthened by revamping all primary health institutions
- iv. Separate Division of Primary Health Care with additional sanctioned post of Grade I and Grade II MHS officers and supporting staffs
- v. Electronic Health Records,
- vi. Drug and Diagnostics available in all center and online system
- vii. Tele consultation in all PHC and selected HWC for every district
- viii. Hub and Spoke model of cancer diagnosis at PHC
- ix. Prescription rights of some selected medicines by Community health officers
- x. Community participation in effective primary health care
- xi. Independent monitoring of HWC for effective streamlining of the 12 packages under CPHC
- xii. Integration of NHM and health department at the primary care level
- xiii. Medical officers and CHO perform clinical , public health and managerial functions
- xiv. Wellness activities and centre for yoga and open gym for every HWC

4.2.17 PALLIATIVE CARE

The State has established Palliative Ward in district hospital of Thoubal and Churachandpur, Senapati, Bisnupur, Chandel, Tamenglong, Ukhrul, Imp East (Sawombung CHC & Heingang PHC), Imp West (Wangoi CHC & Sekmai CHC). Palliative OPD services are available in Churachandpur Districts Hospital, Chandel District Hospital and Thoubal District Hospital. Facility given under palliative care are free drugs, OPD facility, IPD facility and Home visit. The palliative care is also available at 48 HWC with service including Home visit to palliative patients, Counselling, Free medicine including Tab Morphine, Physiotherapy services, training of Family member and Volunteers. 90 Doctor, 26 CHO (1st batch), 26 ANM (1st batch HWC), 30 Nurses, 30 Paramedical workers including Program managers have undergone training.

The State envisions:

- i. Fully functional 10 bedded Palliative ward in all 16 districts
- ii. Palliative OPD in all district Hospital, CHC,PHC and HWC
- iii. Home based Palliative care in all Health and Wellness centres in all districts
- iv. Fully functional physiotherapy and rehabilitative services in all districts
- v. Trained all the Doctors, CHO, Nurses, Paramedical staffs (Counselors, Physiotherapists), Volunteers.
- vi. Established Advanced pain management clinic in all the District Hospital.

4.2.18 NATIONAL BLINDNESS CONTROL PROGRAMME

Current Status:

- i. Cataract surgeries with iol = 1414 out of 3000 target,
- ii. Spectacles provided to school students = 1200
- iii. Training conducted for PMOAs.

The State envisions:

- i. To increase target for cat surgeries with more participation by ppp model
- ii. To strengthen government setup and outreach setup.
- iii. Establishment for posterior surgeries and facilities for corneal transplant.

4.2.19 ASHA

Status of Certification to Accredited Social Health Activist (**ASHA**) in Manipur is 1.5%. The state envisions 100% certification.

4.2.20 MATERNAL HEALTH

Manipur has been successful in bringing down the maternal mortality ratio (MMR). The current Maternal Mortality Ratio is 39. It further aims to reduce the MMR to single digit.

TABLE 4.4: CARE FOR THE MOTHER - NFHS 4 (2015-16)

	URBAN	RURAL	TOTAL
Mothers who had antenatal check up in the first trimester (%)	84.9 (69.1)	72.6 (54.2)	77.0 (58.6)
Mothers who had at least 4 antenatal care visits(%)	81.7 (66.4)	62.0 (44.8)	69.0 (51.2)
Mothers whose last birth was protected against neonatal tetanus(%)	92.0 (89.9)	87.1 (88.6)	88.8 (89.0)
Mothers who consumed iron folic acid for 100 days or more when they were pregnant. (%)	51.0 (40.8)	32.7 (25.9)	39.2 (30.3)

	URBAN	RURAL	TOTAL
Mothers who had full neonatal care (%)	45.1 (31.1)	27.8 (16.7)	33.9 (21.0)
Registered pregnancies for which the mother received Mother and child protection card (%)	30.4 (87.7)	34.2 (90.0)	32.8 (89.3)
Mothers who received postnatal care from a doctor/nurse/ LHV/ANM/midwife/ other health personnel within 2 days of delivery	77.7 (71.7)	57.4 (58.5)	64.6 (62.4)
Institutional births (%)	86.3 (88.7)	60.5 (75.1)	69.1 (78.9)
Home delivery conducted by skilled health personnel (out of total deliveries) %	5.9 (3.0)	9.1 (4.9)	8.0 (4.3)
Births assisted by a doctor/nurse/ LHV/ANM/other health personnel (%)	92.4 (90.0)	69.5 (78.0)	77.2 (81.4)

Source: NSSO (2016) Health in India NSS 71st Round

4.2.21 MATERNAL DEATH SURVEILLANCE & RESPONSE (MDSR)

MDSR is a mechanism to collect and ascertain on how many women died, where they died and why they died and also to take action on the findings of the review. MDSR system is a continuous cycle of identification, notification, and review of maternal deaths followed by actions to improve quality of care and prevent future death.

TABLE 4.5: MATERNAL DEATH SURVEILLANCE & RESPONSE (MDSR) IN MANIPUR

MATERNAL DEATH	2016-17	2017-18	2018-19
Home	4	2	2
Transit	3	0	2
Institution	16	8	10
Total Deaths reported	23	10	13
Total reported delivery	40,732	38,577	37,936

Source: Health Department, Government of Manipur

Manipur Maternal Mortality Ratio (MMR) = Number of Maternal Deaths/No of live births X 1,00,000 = $46/117245 \times 100000 = 39$

4.2.22 CHILD HEALTH IN MANIPUR

Both infant mortality and under five mortality rates in Manipur are much lower than the all India levels. Manipur has consistently had relatively low infant mortality rates. IMR and Under 5 MR is 12 and 26 respectively. One factor for this is that more than half of the children age 12-23 months have been fully immunized and most of the vaccinations have been done in public health facilities. The proportion of children receiving an adequate diet in Manipur is almost double the all India level. The table below is the status of child health in Manipur.

TABLE 4.6: CHILD HEALTH IN MANIPUR

SL. NO.	INDICATOR/ACTIVITY	CURRENT STATUS	VISION 2030	REMARKS
1	IMR (Infant mortality rate)	12 per 1000 live births	8 per 1000 live births	Strengthen the activities related to reduce child deaths
2	Under 5 mortality rate	26	15	
3	SNCU	5 SNCUs. 1 each in RIMS, JNIMS, Churachandpur, Ukhrul and Thoubal	To establish SNCUs in all districts	To propose to MOHFW.
4	Anaemia (6-59 months)	23.9 (NFHS-4)	Anaemia free	Strengthen capacity building and awareness under Anaemia Mukht Bharat programme.
5	Prevention of STH infection in 1-19 yrs	46% STH prevalence	Below 20%	Scale up coverage of NDD to 100 %
6	Diarrhoea	5.8 (NFHS-4)	2	Scale up IDCF coverage to 100%
7	Breastfeeding – (Exclusive breastfeeding)	73.6 (NFHS-4)	100%	Strengthen awareness and implementation of MAA programme
8	Children 6-23 months receiving adequate diet	18.8 (NFHS-4)	100%	Strengthen awareness and implementation of IYCF programme

4.2.23 NATIONAL AMBULANCE SERVICE 102

The state uses 40 vehicles under National Ambulance Service. Average monthly performance of 102 National Ambulance Service for 2018-19 is 489 trips and 13390 kms. Performance has increased during 1st Quarter of 2019-20 which is illustrated as follows:

MONTH YEAR	VALLEY AREA PERFORMANCE	HILL AREA PERFORMANCE	STATE PERFORMANCE
April 2019	852 trips & 12713 Kms.	302 trips & 6132 Kms.	1154 trips & 18845 Kms.
May 2019	1485 trips & 17748 Kms.	505 trips & 8359 Kms.	1990 trips & 26107 Kms.
June 2019	2147 trips & 19348 Kms.	632 trips & 11106 Kms.	2779 trips & 30454 Kms.
July 2019	2978 trips & 19745 Kms.	780 trips & 12839 Kms.	3758 trips & 32584 Kms.

MONTH YEAR	VALLEY AREA PERFORMANCE	HILL AREA PERFORMANCE	STATE PERFORMANCE
August 2019	2650 trips & 19052 Kms.	1194 trips & 13096 Kms.	3844 trips & 32148 Kms.

The State envisions reducing Infant Mortality Rate & Maternal Mortality Ratio further by way of stationing at least one 102 Ambulance in every District Hospital, CHC & PHC to ferry pregnant women and sick infants from home to facilities, facilities to facilities and facilities to home.

4.2.24 PLANNING OF MEDICAL COLLEGES AND HOSPITALS IN MANIPUR

The state has established one State Government Medical College JNIMS at Porompat and plan for establishment of 2 (two) more Government Medical Colleges at (i) Churachandpur District and (ii) Thoubal District. It is also envisage to establish one Cancer Hospital.

4.3 AIDS/HIV

AIDS (Acquired Immune Deficiency Syndrome) has become a major public health problem in the state since 1990. It is affecting a number of youths in Manipur. According to the National AIDS Control Organization (NACO), Manipur ranks third highest as regarding the total number of HIV positive cases next to Maharashtra and Tamil Nadu. The State Government with the help of NACO took up various activities in order to avert this looming catastrophe. The following measures were taken up:

- 100 percent blood safety in all the blood banks in Manipur.
- Introduction of AIDS education in school for class VI, VII, VIII and X.
- Impart training to more than 81 percent of doctors and 80 percent of nurses/paramedical in AIDS and related problems.
- Implementation of the Manipur state AIDS policy.
- Increase in the number of NGOs financially supported by the National AIDS Control Program.
- Broaden partnership with NGOs.

During the year 2014-15, out of 8,39,650 blood samples screened, 45,072 (5.37 %) were reported as HIV positive and 2,163 died due to AIDS in Manipur. During the year 2016-17, out of 1,17,171 blood samples screened 1078 (0.92 %) were reported to be of HIV positive cases. Among the districts, Chandel had the highest Seropositive rate (HIV positive cases) followed by Churachandpur and Ukhrul in 2007-8. It is observed that the maximum number of HIV positive cases are found in the age group of 34-49 (both in the case of male and female) and followed by age group of 25 - 34 years.

Some HIV positive cases are also found in the age group of less than 14. What is disturbing is the implied wastage of a highly productive age group 25-49. The State envisages the following:

- i. To reduce the transmission of HIV/AIDS to general population and the highly risk group by 100%.
- ii. To reduce the transmission of parents to child transmission of HIV/AIDS by 100%

4.4 CONCLUSION

- All major equipment in a public hospital should be kept functional at all times and maintained properly.
- Provide access to health facilities and services – 24X7.
- ASHAs and other health volunteers should be engaged in teaching personal hygiene in remote areas.
- School curriculum also should have lessons in personal hygiene.
- Encourage doctors to work in rural areas, proper health infrastructure and accommodation should be provided along with a transparent transfer policy.
- Awareness on Adolescents health and production of local context related IEC materials and creating avenues to address the issue with all stakeholders.
- Contain the outbreaks and health events in time, strengthened all district needs Public Health laboratory and trained manpower equipped with technology for direct reporting of in time.
- 20% of the health establishment have solar installation. Being an eco-friendly and non-conventional source of energy, all health establishment should have solar installation.
- To reduce the transmission of HIV/AIDS to general population and the highly risk group by 100%.
- To reduce the transmission of parents to child transmission of HIV/AIDS by 100%

5

Empowerment through Education: Quality Education

5.1 THE ROLE OF EDUCATION

Education is not only a key component of human development; it is also a great liberating force. 'Sa Vidyaya Vimuktayä' (Education liberates) says the Vishnu Purana. In the present day context, education is not only for enlightenment but also for empowerment of human beings. Education is the single most important means for individual to improve personal endowments, enhance capability levels, overcome constraints and, in the process enlarge their available set of opportunities and choices for a sustained improvement in well-being. It is not only a means to enhance human capital, productivity and hence, the compensation to labor, but it is equally important for enabling the process of acquisition, assimilation and communication for information and knowledge, all of which augment a person's quality of life. More importantly, it is a critical invasive instrument for ushering in social, economic and political inclusion and a durable integration of people, particularly those 'excluded' from the mainstream of any society.

The process of education and attainment thereof has an impact on all aspects of life. It captures capability of acquiring knowledge, skill and values and participation in community life. The level and spread of education have been important preconditions for sustained economic growth and also for sustainable development. It has also played a critical facilitative role in the demographic, social and political and democratic transition and also making the society vibrant. Educational attainment is inter-linked with several other goals like creation, application and adaptation of new technologies; lower fertility, infant and child mortality rates, better nutritional, health and hygiene status of children, reproductive health and empowerment of women; social mobility and political participation, all have visible linkages with educational attainment of the people. It is undoubtedly, a basic component of human development.

To realize this enormous potential of education, all nations have committed themselves to the universalization of elementary education with an explicit aim of providing 'Quality education for all'. They have also recognized the significance of expansion of secondary education, gradually reaching to a near universalization level, and simultaneously improving its quality for effective empowerment of as many more learners as possible in order to achieve advancement in socio-economic and other domains of life.

Education inculcates self-discipline and self-discipline gives strength. The aim of education is to emancipate the mind from the tyranny of prejudice – personal, social, religious, linguistics, racial, ideological – "to clear mental cobwebs" and "put the mind in order" (Radhakrishnan, S), "The culture of the soul" is sadly missing in the system. A

human being must imbibe the qualities of dama (self-restraint), dana (sacrifice), and daya (compassion) which are spiritual dimensions of human personality. This spiritual dimension will have to be given central place in our educational thinking. Education of the future should be driven by values- personal values, community values and universal values – values of self-knowledge, self-esteem, self-actualization, work ethic, humility, equity, justice, co-operation, tolerance, non-violence and peace; respect for human rights, environmental protection for sustainable development, gender equality, values which are eternal, permanent and universal – which unite all mankind, values which prepare the mind are certain universal ethical attitudes. These values are to permeate all levels of curricula-formal, informal and hidden pervading across all subjects. Value based education would help fight against all kinds of fanaticism, ill-will, violence, fatalism, dishonesty, avarice, corruption, exploitation, drug abuse and HIV/AIDS.

5.2 SCHOOL EDUCATION

Education in school must include components of training and skill development with emphasis on employability, increasing productivity and work ethics. It will make lives of our children more meaningful as this would enable them to be economically independent and self-reliant. It would be an important step towards their social and economic empowerment. Education must ideally prepare our children to face the present and future challenges of life. For this, it needs to be intimately linked with different life-skills, the abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life, by developing in them generic skills related to a wide variety of areas such as health and psycho-social needs, it is through these skills that students can fight the challenges of drug addiction, sexual violence, teenage pregnancy, AIDS and many other health related problems (NCFSE:2000).

The curriculum, learning content, and teaching in schools needs to be structured to combine scholastic and co-scholastic achievement, life skills and language competence. The teaching of mathematics and science need to be strengthened. Proficiency in writing and spoken English should be emphasized. The twenty-first century is a century of information and communication technology (ICT), computers, internet, E-learning, etc. In the info-tech age, the teaching-learning programme in the school should be designed as to provide an interactive platform for technology – enabled learning, the learning endeavor in the school and its outcome should be to spot talents, kindle the spark within and empower each student to strive for excellence.

The education system should contribute to children's cognitive abilities. Students should be inquisitive seekers of knowledge and skills possessing valuable habits of mind as well as sound and practical information. Learning is a process of the construction of knowledge in the constructivist perspective. Learners actively construct their own knowledge by connecting new ideas to existing ideas on the

basis of materials/activities presented to them. Thus in the 'Child-centered' pedagogy learning means giving primacy to children's experiences, their voices and their active participation. The place of the teacher is co-constructer of knowledge by facilitating the learners. Contrary to this, in our system, we have bartered away understanding and application for memory-based short term information accumulation. This must be reversed because "the mass of what could be memorized has begun to explode". We need to give our children some taste of understanding, following which they would be able to learn and create their own versions of knowledge (Yash Pal in NCF: 2005). These statements underline the importance of paradigm shifts in education in the teaching-learning process. In other words, "pedagogy of thinking" should replace the present pedagogy of memorization by rote method and regurgitate at the time of test or examination.

Education is an investment in our children and through education we prepare them for the world of tomorrow. Our vision of education encompasses the "Four Pillars of Education" for the 21st century (UNESCO: 1996) – Learning to know, Learning to do, Learning to live together and Learning to be. This conceptualization of education provided an integrated and comprehensive view of learning and, therefore of what constitutes education quality (Delors et al., 1996). 'Learning to know' acknowledges that learners build their own knowledge combining prior knowledge and 'external' elements. Learning to do focuses on the practical application of what is learned. 'Learning to live together' addresses the critical skills for a life free from discrimination where all have equal opportunity to develop themselves, their families and their communities. The contemporary world is too often a world of violence that belies the hope of human progress. Up to now education has not been able to do much to alleviate that state of affairs. We are now, to see whether it is possible to devise a form of education which might make it possible to avoid conflicts or resolve them peacefully by developing respect for other people, other cultures and other spiritual values by gradual discovery of others, and experience of shared purposes throughout life which seems to be an effective way of avoiding or resolving latent conflicts. 'Learning to be' emphasizes education to contribute to the all-round development of each individual – mind and body, intelligence, sensitivity, aesthetic sense, personal responsibility and spiritual values, the complete fulfillment of man in all richness of personality. Thus, education of the future should aim at integrated and balanced development of cognition (IQ), emotion (EQ) and spiritual (SQ) dimensions of human personality.

Education of the future should provide suitable emphasis on skill development, skill-upgradation, development of work ethics; positive attitude of mind towards physical work and dignity of labour. Skill development is considered critical not only for achieving faster sustainable and inclusive growth but also for providing decent employment opportunities to the growing young population in the face of unemployment problem in the state. Our young population must develop skills that are relevant to employment needs in order to ensure employability and prevent labour demand-supply mismatches. The means for enabling the young population to develop skills that are relevant to employment should include

vocational education and specialized skills training under National Skill Development Policy (NSDP). For strengthening the skill development and vocational education system and also implementing the National Skills Qualification Framework (NSQF) for access and improvement in the apprenticeship programme PPP model should be encouraged in order to attract private investment. Students should be encouraged to offer vocational courses either as combination subjects or additional subjects. Credit accumulation and transfer of credit on the pattern of CBSE-NIOS collaboration should be allowed. Vocational education should be supplemented by a strong base of vocational guidance and career counselling. Vocational education should be introduced from Class IX onwards and vocational education cell should be made functional in the Directorate of Education (schools). The main responsibility of the cell would be to offer proper guidance in career counseling and vocational guidance.

Early Childhood Care Education (ECCE) is a support to primary education. Since enrolment starts at class I the school going habit can be formed by providing pre-school education before the child is enrolled in school, through play way activities. Formal teaching of subjects and reading, writing and test must be clearly prohibited at this stage (NCTSE, 2000). Schooling is definitely detrimental to both physical and mental health of children if it is done too early. Many of the health and behavior problems of childhood are associated with too early formal schooling. The pre-school components of Balwadis/Anganwadis must be strengthened with nutritional support under ICDS schemes as an adjunct to all primary schools with a view of providing good quality early childhood education to all children until 6 years of age. This would help in developing school going habit and provide necessary support to enhance enrolment and retention in the schools. Suitable training modules may be devised, and need based developmentally appropriate curriculum may be developed for pre-school educations with suitable training facilities. As there is not a single NCTE recognized pre-school teacher education institution in the state, it can be suggested that a good number of pre-school teacher education institutions should be established under the norms and standards of NCTE under PPP models. It will reduce the erroneous practice of imparting of formal instruction in pre-school education in the state. A state policy on pre-school education should be evolved at the earliest. The quality of school education to a large extent depends on quality of teachers. "A sound programme of professional education of teachers is essential for the qualitative improvement of education (Kothari Commission: 1964-66). Thirty years later NPE reiterates it as follows

"Teacher performance is the most crucial input in the field of education. Whatever policies may be laid down, in the ultimate analysis, these have to be interpreted and implemented by teachers, as much through their personal examples as through teaching learning processes. Teacher selection and training competence, motivation and conditions of work impinge directly on teacher performance" (POA, 1992 NPE). The state policies and programs for teacher education should take into account the following aspects – first, the quality of candidates who seek admission in teacher education institutions, secondly the quality, relevance and rigor of the pre-service preparatory training, third, the breadth and depth of in-service training programs for practicing teachers, and fourth, the self-propelled motivation of teachers, both prospective and practicing for professional development.

5.3 STATUS OF SCHOOL EDUCATION IN MANIPUR

Schools managed by the state government need closer monitoring for improving their quality. Although a vast majority of the parents in the state send their children to private schools which are relatively expensive English medium Schools. Excepting a few missionary schools, most of the private schools are run as business enterprises and parents are resorting to private tuitions incurring high expenditure. In most cases they are beyond the means of the poorer sections of the society. Thus the state run schools serve the children of the economically poorer sections of the society only. There is a need to improve infrastructure, improve classrooms and furniture, create better work environment, monitor teacher absenteeism, overloaded curriculum, upgrade textbooks, use new and innovative teaching methods, increase monitoring and accountability etc.

According to ASER¹ 2018, 70.4% of children (age 6-14) in Manipur were enrolled in private schools as against 30.9% for All India. Only 28% of the students in this age group study in government schools. Manipur thus has the maximum proportion of children (age 6-14) in private schools. West Bengal has the lowest percent in 7.9% (ASER 2018:55). With pre-school system also private schools dominate. It shows how complex is the implementation of school education policy in Manipur where most of the educational institutes catering to school level are privately run.

TABLE 5.1: COMPARATIVE PROFILE OF SCHOOLS OF MANIPUR WITH SELECTED FACILITIES

FACILITIES	% SCHOOLS WITH THE FOLLOWING	MANIPUR	INDIA	*UDISE (STATE GOVERNMENT)	MAXIMUM/ MINIMUM
Mid-day meal	Kitchen shed for cooking mid-day meal	61.6 (2 nd from bottom)	91.0	Data is not collected under UDISE	99.3 Himachal Pradesh
	Mid-day meal served in school on day of visit	46.4	87.1	Data is not collected under UDISE	98.7 Odissa
Drinking water	No facility for drinking water	88.9	13.9	41.81	10.6 Himachal Pradesh
	Facility but no drinking water available	4.6	11.3	12.72	
	Drinking water available	6.5 (lowest)	74.8	45.47	89.7 Bihar
	Total	100	100	100	
Toilet	No toilet facility	14.7	3.0	0.47	

1 Annual Status of Education Report (ASER) is a nationwide survey that provides a snapshot of children's schooling and learning in rural India. Children in the age group 3 to 16 are examined from various angles.

FACILITIES	% SCHOOLS WITH THE FOLLOWING	MANIPUR	INDIA	*UDISE (STATE GOVERNMENT)	MAXIMUM/ MINIMUM
	Facility but toilet not usable	40.4	22.8	19.11	
	Toilet usable	44.9	74.2	80.43	94.2 Himachal Pradesh
	Total	100	100	100	
Girls' toilet	No separate provision for girls' toilet	64.0	11.5	2.66	
	Separate provision but locked	15.4	10.5	Data is not collected under UDISE	
	Separate provision,unlocked but not usable	5.2	11.7	21.17	
	Separate provision,unlocked and usable	15.4	66.4	76.17	87.4 Gujarat
	Total	100	100	100	
Library	No library	91.0	25.8	86.88	2.7 Himachal Pradesh
	Library but no books being used by children on day of visit	5.8	37.3	Data is not collected under UDISE	
	Library books being used by children on day of visit	3.2	36.9	Data is not collected under UDISE	55.7 Telangana
	Total	100	100	86.88	
Electricity	Electricity connection	55.6	75.0	38.91	
	Of schools with electricity connection, % schools with electricity available on day of visit	74.7	78.5	Data is not collected under UDISE	
Computer	No computer available for children to use	91.0	78.7	83.19	24.6 Kerala
	Available but not being used by children on day of visit	5.8	14.8	Data is not collected under UDISE	
	Computer being used by children on day of visit	3.2	6.5	Data is not collected under UDISE	29.3 Tamil Nadu
	Total	100	100	83.19	

Source: ASER 2018

The learning levels of students indicate the effectiveness or productivity of the education system. The following table shows that productivity has been largely stagnant both for reading and arithmetic.

TABLE 5.2: READING AND ARITHMETIC SKILLS OF STUDENTS

YEAR	PERCENTAGE OF CHILDREN* IN				
	STD III WHO CAN DO AT LEAST SUBTRACTION	STD V WHO CAN READ STD II TEXT	STD VIII WHO CAN READ STD II TEXT	STD V WHO CAN DO DIVISION	STD VIII WHO CAN DO DIVISION
2012	53.3	63.6	85.3	44.7	73.9
2014	59.4	66.6	88.3	54.7	72.5
2016	59.7	70.7	91.4	52.5	78.6
2018	58.6	67.6	86.5	50.6	72.5

Note: * Weighted average for children in government and private schools only

Source: ASER 2018

However, private school students perform much better than government school students in every test; this suggests higher productivity of the private school system. In 2018, 27.5% of Std VIII students in government schools cannot read Std II text. It is desirable to ensure that 100% children are reading fluently by the time they reach Std V as against only 9.1% in private schools. The poor reading ability affects the relevance of increasingly ambitious curriculum.

TABLE 5.3: READING AND ARITHMETIC SKILLS OF STUDENTS BY SCHOOL TYPE

YEAR	PERCENTAGE OF CHILDREN IN									
	STD III WHO CAN DO AT LEAST SUBTRACTION		STD V WHO CAN READ STD II TEXT		STD VIII WHO CAN READ STD II TEXT		STD V WHO CAN DO DIVISION		STD VIII WHO CAN DO DIVISION	
	GOVT	PVT	GOVT	PVT	GOVT	PVT	GOVT	PVT	GOVT	PVT
2012	21.1	36.4	46.9	71.0	68.1	92.6	26.5	52.9	58.1	80.5
2014	17.3	40.2	43.1	74.7	72.2	92.9	43.1	58.7	48.3	79.2
2016	21.9	37.5	64.7	73.5	82.4	94.2	46.9	55.1	67.3	82.1
2018	24.5	42.2	50.6	74.0	72.5	90.9	38.4	55.2	62.3	75.7

Source: ASER 2018

Table 5.4 shows how we are faring at all India level. Manipur is better than All India average. However except for arithmetic operations for Std III and VIII where we are either close to the top or at the top, the state lags behind the best performers.

TABLE 5.4: COMPARATIVE LEARNING LEVEL IN 2018

PERCENTAGE OF	MANIPUR	INDIA	HIGHEST
Std III who can read Std II level text	35.8	27.2	52.5 Kerala
Std III who can do at least subtraction	58.5	28.1	58.9 Mizoram
Std V who can read Std II text	67.5	50.3	77.2 Kerala
Std V who can do division	50.5	27.8	56.6 Himachal Pradesh
Std VIII who can read Std II text	86.5	72.8	89.9 Himachal Pradesh
Std VIII who can do division	72.5	44.0	72.5 Manipur

Source: ASER 2018:55

National Achievement Survey is another source of information on learning outcomes of the curricula. It provides a health check to the education system. This provides a picture of what stakeholders find in the system. NAS 2017 conducted a survey in government and government aided schools on November 13, 2017 for classes 3, 5 and 8.

TABLE 5.5: PERCEPTION OF STUDENTS

PERCENTAGE	CLASS 3	CLASS 5	CLASS 8
of students who like to come to school	97	97	96
of students who find it difficult to travel to school	23	26	31
of students who could understand what the teachers say in the classroom	79	78	74
Of students for whom the language used at home and by the teachers is the same	51	51	52
Of students who go out and play during the games period	88	86	78

Source: NAS 2017

TABLE 5.6: PERCEPTION OF TEACHERS

QUERY	PERCENTAGE OF TEACHERS WHO AGREED
They understand the curricular goals	34
There is lack of adequate toilet facilities	46
There is lack of drinking water facilities	37
The school buildings need significant repair	61
There is lack of electricity	40
They are overloaded with work	19

QUERY	PERCENTAGE OF TEACHERS WHO AGREED
They are highly satisfied with their job	33
They have adequate instructional material	72
They have adequate work space	77

Source: NAS 2017

It is encouraging to find that one third of the teachers are satisfied with their job and only 19 % felt that they were overloaded with work. However, the proportion of teachers who understand the curricular goals is a challenge. This has to be taken care of through trainings.

The system of private tuition has been in existence in India for a long time but in recent times it has grown manifold affecting the very core of educational system. How effective private tuition is in realizing the goals of education is yet to be studied rigorously. Though private tutoring is prevalent at all levels of education it is preponderant in secondary education mainly because performance in public examinations is an important aspect to meet increased competition for entering into desired academic streams and thereby to higher, technical, and professional education, etc. Private tuition is a result of poor teaching, low monitoring at the formal workplace, and conscious efforts to create a market for private tutoring or coaching. It is in secondary education that a maximum number of students seek private tuition. The experience of Andhra Pradesh shows that both the demand as well as the supply of private tuition can be reduced by policy. The declining demand has come about as the indirect effect of administrative intervention through disincentives to teachers for poor performance of students. At the supply side the transformation of most private tutorial and coaching centers into private unaided schools, and keen competition among private schools to meet the demand for quality of education, has led to combining tutoring into extra coaching in the school schedule before and after school hours.

The reasons behind the higher prevalence of private tuition in urban areas compared to rural areas in most states are:

- i. Parents in urban areas are relatively better off educationally and economically and are in a position to afford the cost of private tuition.
- ii. There is more competition in urban areas. There are tremendous peer-group pressures and a sense of guilt among middle-class parents in terms of neglecting their children, besides issues of social obsession and prestige. The phenomenon of the nuclear family and double incomes has given couples the requisite money to spare in sending their children to tuition centers.
- iii. Further, in urban areas there is a greater supply of private tuition. In rural areas lack of economic ability, low levels of parental education and aspirations, and limited supply of private tuition can be some of the reasons for the low proportion of private tuition in such areas.

Peer pressure and parental decision play an important role in students' attending private tuition. Another reason why students go for private tuition is that they cannot understand classroom teaching. Crowded classrooms, lack of subject specialists, teachers teaching more than one subject, loss of school working days, authorized and unauthorized teacher absenteeism, not completing syllabus in time, and lack of school monitoring characterize government schools, as education departments fail to implement policies.

As in many developing countries, public examinations occupy center stage in school education in India. A large percentage of students who join private tuition find it useful to prepare for examinations. They help the students by providing the required materials, conducting frequent tests, giving feedback and suggesting suitable ways of study to optimize performance in different subjects. Above all, students receive individual attention, which is rare in general, particularly in government schools. The gap between the examination system and curricular load, teaching conditions and pedagogical aspects in schools has been a major factor behind the growth of private tuition. On perusal of the High School Leaving Certificate (HSLC) Examination result for several years from 2001 to 2016, it is found that pass percentages varied from 21.19 to 72 percent (2013). This may be due to change in evaluation procedure/method or some other factors like awarding grace marks.

The following table shows the trend in tuition among school students in Manipur. Most of the students were in private schools and tuition was rampant in private schools reflecting the parent's ability and willingness to invest in children's education.

TABLE 5.7: PERCENT OF CHILDREN IN MANIPUR BY SCHOOL TYPE AND TUITION - ASER 2018

STANDARD	CATEGORY	2010	2011	2014	2016	2018
I-V	Government + No tuition	30.1	25.3	19.9	21.5	20.6
	Government + tuition	4.7	6.4	7.7	7.9	10.5
	Private +no tuition	35.1	35.7	36.9	35.5	32.2
	Private + tuition	30.2	32.6	35.5	35.2	36.7
	Total	100	100	100	100	100
VI-VIII	Government + No tuition	23.0	20.2	14.5	19.0	17.8
	Government + tuition	5.6	7.8	7.1	5.3	7.6
	Private +no tuition	30.1	37.2	44.2	43.5	41.6
	Private + tuition	41.3	34.8	44	32.3	33.0
	Total	100	100	100	100	100

Source: ASER 2018

According to ASER (rural) 2018 data collected from households across nine districts in Manipur, 70.4 percent of the enrolled children in the age group 6 to 14 years covered

by RTE Act 2009 are in the private schools and 29.6 percent are in government schools. In the higher age group age 15 to 16 which is under secondary stage, 67.9 percent are in private schools, while 24.2 are in government schools. The situation is more acute in the urban schools.

Besides other reasons, one important reason for the unpopularity of government schools is medium of instruction. Medium of instruction in government schools is mainly Manipuri in the valley though English is the second language under the three language policy besides mother tongue, home language. One of the key features of the demand of private schools is related to learning English. It is not just the parents but also the children who want to learn English. The parents may want their children to learn English because it is felt that English can get them good jobs and a secure future. The children may want it for other reasons, such as identity and a sense of dignity. National Knowledge Commission (NKC: 2006) recommended teaching of English as a language right from class I in school along with first language of the child. Various state governments have responded to the demand of starting English learning from the first year in school even if there is no qualified teacher. If this suggestion is accepted it would create multi-medium schools. When this system is introduced in the government schools by deploying competent and effective teachers with good communication skills in English language many parents may rethink for bringing back their children to the government RTE covered schools. Simultaneously, the physical infrastructure of the schools is also to be improved.

One heartening feature of school education in Manipur is that the GER (Gross Enrolment Ratio) in elementary education in the age group from 6 to 14 in classes I-VIII is highest in the country, with 137.0 percent in 2013-2014 (NUEPA: 2014). This indicates that there is high accessibility of pupils in the primary classes in schools. Reason for exceeding 100 percent is due to the inclusion of over age, under age, as well as repeat students for concerned classes.

As far as training facilities of elementary and secondary teachers are concerned, the state has nine DIETs under SCERT for elementary teacher preparation; for secondary teacher preparation, there is one CTE under state management and other eleven self-financing B.Ed. private colleges. The teacher education department was opened from the 2014-15 academic session in Manipur University. A study center of IGNOU is conducting B.Ed. programme under ODL mode for the in-service teachers. M.Ed. programme is conducted in two institutions. One Hindi Teachers' Training College also exists for preparing Hindi teachers. These existing teacher training institutions have confined themselves to their conventional roles of awarding degrees and diplomas. Stronger monitoring mechanism are required on the part of the NCTE, for affiliating universities and upgrading existing skills of teachers with current needs and trends.

Teacher education being a professional course must be linked with manpower requirement of the state. The mismatch between demand and supply of teacher creates problems. In order to ensure balance between them, short term and long term manpower requirements need to be worked out. Requirement of teachers for

specific subjects-Science, Mathematics, English Language and so on need special consideration. The percentage of trained teachers in different stages of education in 1996 were primary (lower) 46 percent, upper primary 28 percent, secondary 30 percent and higher secondary 41 percent. The number of untrained teachers is increasing every year due to unabated appointment of untrained teachers to meet the expansion of school education. In 2006-07 there were 5049 untrained teachers in lower primary stage, 5846 in upper primary stage, 4929 at secondary stage and 1804 in higher secondary stage in the schools of Manipur as per Report of the Demand and Supply Estimates of School Teachers and Teacher Educators (2007-08 to 2016-17) NCTE:2010.

A state policy on skill level, development and training of teachers is needed to deal with the problem of untrained teachers and other related issues. Depending upon their age and number of years in service, it might not be necessary to train in regular institutions all the untrained teachers who are presently in schools. Augmentation of training capacity of existing institutions, distance mode of teacher education, introduction of teacher education (B.Ed.) programmes in the existing first degree colleges as composite course, as now permitted by NCTE are some of the strategies that can be thought of. In order to bring professionalism in teacher education, an integrated teacher education programme may be introduced both at elementary and secondary levels of teacher preparation. These courses will cover 4 to 5 years of training which is the existing pattern of teacher education in many developed countries. Teacher recruitment process should be made more stringent, based on a set of criteria such as academic career, aptitude, attitudes and competence especially in communication skills. The practice of selection of teachers on the basis of marks basis only should be done away with.

A cadre of teacher educators separately for elementary and secondary teacher education may be formed. In order to develop professionalism among teachers, the quality of the pre-service training programme may be substantially improved. Due emphasis should be given to in-service training in Science, Mathematics, Computer Education and English language competency. It is necessary to provide suitable orientation and training of functionaries who discharge the responsibilities of implementing SSA mission and RMSA-ZEOs, DIs, MES cadres, etc. An institute of Advanced Study in Education (ASE) should be established under the centrally sponsored scheme which is due in the state to discharge these functions and networking of teacher education institutions. Strengthening of SCERT for research in innovative practices and experiments for school education is urgently needed. State Board of Teacher Education (POA: 1992NPE) for effective role in maintaining standard of teacher training institutions and teacher recruitment should be set up in the State.

5.4 SCHOOL EDUCATION VISION 2030

Manipur will

- By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcome.
- By 2030, ensure that all girls and boys have access to quality Early Childhood Care and Education (ECCE) so that they are ready for primary education.
- By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.
- By 2030, ensure substantial increase in the number of youth and adults who have relevant skills including technical and vocational skills, for employment, decent jobs and entrepreneurship.
- Introduce vocational education from class IX onwards by setting up Vocational Education Cell by 2020 for skill development.
- By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including differently able persons and children in low socio-economic situations.
- By 2030, ensure that all youth and a substantial proportion of adults both men and women, achieve total literacy and numeracy.
- By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development through education and sustainable lifestyles, human rights, gender equality, promotion for a culture of peace and non-violence and appreciation of cultural diversity.
- By 2025, build and upgrade education facilities that are child, disability and gender sensitive and provide safe environment, inclusive and effective learning environment for all.
- By 2020, substantially increase the supply of qualified teachers by improving quality of teachers as assessed by the State Board of Teacher Education.
- Improve, upgrade or reconstruct the existing infrastructure of all aged school buildings by 2025.
- Introduce accreditation systems for schools by 2020 by introducing learning outcome survey.
- By 2025, incorporate modern technologies for teaching and learning in schools by digitalization of class rooms: e-classroom and related ICT infrastructure for all schools.
- By 2025, achieve cent percent trained teachers in the state.
- Introduce State Learning Outcome Survey 2020 for benchmarking state education standard and accountability for teachers.

5.5 HIGHER EDUCATION IN MANIPUR

It is known that higher education in India has significantly contributed to economic development, social progress and political democracy by creating a strong knowledge base. Teaching-learning is emerging as an important area of reform in the global higher education arena due to the changing nature of students, improvement of modern information communication tools, and newer demands from higher education focusing on employability and entrepreneurship. In spite of the focus on excellence (along with equity and expansion) as a national agenda for higher educational reform, teaching-learning has experienced an overall limited improvement. At the time of independence the number of universities in India was no more than 20 with 500 colleges and enrolment less than one lakh. As per All India survey of Higher Education (AISHE) 2017-18, there are 903 universities, 39050 colleges and 9090 stand Alone Institutions in India. Total enrolment has been estimated to be 36.6 million. GER in Higher education in India is 25.8 % for the age group 18-23 years. GER in 1960-61 was 1.5%. Our long term goal is to make Higher education accessible to all who aspire quality higher education irrespective of their paying capacity. Despite such phenomenal expansion the system is under stress to produce adequate volume of skilled manpower.

Manipur has 2 Central Universities (Manipur University and Central Agricultural University), 2 institutions of national importance, 3 state universities (Dhanamanjuri University, Manipur Technical University and Manipur University of Culture) and one private university (Sangai University). There is also a regional center of Indira Gandhi National Tribal University. Indira Gandhi National Open University also contributes significantly to higher education in the state. A national Sports University is also coming up. There are 101 colleges both government and private with the following breakup.

i.	Undergraduate	–	72
ii.	Undergraduate & PG level	–	06
iii.	B.Ed. Course	–	10
iv.	B.Sc. Nursing	–	06
v.	LLB	–	03
vi.	MBBS	–	02
vii.	BDS	–	02

AISHE² covers all institutions where higher education is imparted. The following tables from AISHE 2017-18 give a broad picture of higher education in Manipur.

2 *AISHE defines higher education as the education which is obtained after completing 12 years of schooling or equivalent and is of the duration of at least nine months (full time) or after completing 10 years of schooling and is of the duration of at least 3 years.*

TABLE 5.8: ENROLMENT IN HIGHER EDUCATION 2018

	ENROLMENT (REGULAR AND DISTANCE MODE)			ENROLMENT THROUGH DISTANCE MODE		
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Ph.D.	332	314	646			
M.Phil.		7	7			
PG	4467	3668	8135	2472	1457	3929
UG	45381	48526	93907	1809	769	2578
PG dip	127	54	181	31	14	45
Dip	964	810	1774	15	16	31
Certificate		30	30			
Total	51271	53409	104680	4327	2256	6583

Source: AISHE 2017-18

TABLE 5.9: ENROLLMENT IN VARIOUS SOCIAL CATEGORIES

	MALE	FEMALE	TOTAL
All	51271	53409	104680
SC	3523	3115	6638
ST	17636	16100	33736
OBC	16747	19740	36487
PWD	67	32	99
Muslim	2548	2336	4884
Other minorities	3046	3126	6172

Source: AISHE 2017-18

TABLE 5.10: GER OF MANIPUR

	ALL			SC			ST		
	BOTH	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH	MALE	FEMALE
2010-11	35.9	38.5	33.3	100	100	100	39.5	44.6	34.4
2011-12	30.2	30.4	29.9	54.8	55.0	54.6	19.4	20.5	18.2
2012-13	29.9	30.9	29.0	45.3	45.2	45.3	19.8	20.8	18.7

	ALL			SC			ST		
	BOTH	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH	MALE	FEMALE
2013-14	37.7	37.9	37.6	61.9	67.9	56.0	24.8	24.6	25.0
2014-15	35.9	37.1	34.8	53.5	60.4	46.8	20.9	22.2	19.6
2015-16	34.2	35.3	33.1	52.8	57.8	47.8	19.7	20.9	18.5
2016-17	35.0	35.3	34.7	57.5	60.9	54.1	20.2	21.0	19.4
2017-18	31.8	31.3	32.2	67.4	72.2	62.7	22.0	23.0	21.0

Source: AISHE 2017-18

**TABLE 5.11: GROSS ENROLLMENT RATIO IN HIGHER EDUCATION (18-23 YEARS):
A COMPARATIVE PROFILE**

		GER			COMMENT
		MALE	FEMALE	TOTAL	
All	Manipur	31.3	32.2	31.8	Highest Tamilnadu 48.8%
	All India	26.3	25.4	25.8	
SC	Manipur	72.2	62.7	67.4	Mizoram 113.7 followed by Manipur
	All India	22.2	21.4	21.8	
ST	Manipur	23	21	22	Uttarakhand 42.3
	All India	17	14.9	15.9	

Source: AISHE 2017-18

TABLE 5.12: GENDER PARITY INDEX – MANIPUR

	ALL	SC	ST
2010-11	0.86	1.00	0.77
2011-12	0.98	0.99	0.89
2012-13	0.94	1.00	0.90
2013-14	0.99	0.83	1.02
2014-15	0.94	0.78	0.88
2015-16	0.94	0.83	0.88

	ALL	SC	ST
2016-17	0.98	0.89	0.92
2017-18	1.03	0.87	0.91

Source: AISHE 2017-18

TABLE 5.13: GENDER PARITY INDEX –A COMPARATIVE PROFILE

	MANIPUR	ALL INDIA	COMMENT
All categories	1.03	0.97	1.24 Himachal Pradesh Highest
SC	0.87	0.96	1.81 Kerala Highest
ST	0.91	0.87	1.45 Kerala Highest

Source: AISHE 2017-18

TABLE 5.14: PUPIL TEACHER RATIO IN HIGHER EDUCATION

	REGULAR AND DISTANCE MODE		REGULAR MODE	
	MANIPUR	ALL INDIA	MANIPUR	ALL INDIA
All Institutions	31	29	29	25
Univ & College	38	34	35	30
University & its constituent units	24	46	12	20

Source: AISHE 2017-18

TABLE 5.15: AVERAGE ENROLMENT AND COLLEGES PER; LAKH POPULATION

	AVERAGE ENROLMENT PER COLLEGE		COLLEGES PER LAKH POPULATION	
	MANIPUR	INDIA	MANIPUR	INDIA
2010-11	1796	700	23	23
2011-12	1117	703	26	25
2012-13	1069	715	27	25
2013-14	1194	742	28	26
2014-15	1105	731	29	27
2015-16	1070	721	30	28
2016-17	1002	659	30	28
2017-18	1156	698	26	28

Source: AISHE 2017-18

5.6 HIGHER EDUCATION VISION 2030

- 100 percent accreditation of colleges/universities in the state by NAAC and participation in NIRF process by 2030. The State Quality Assurance Cell coordinating the activities of IQACs of colleges should be made operational on priority basis.
- Keeping in place a system of mandatory refresher courses every three years for all college/state university teachers and a mandatory orientation course for every newly appointed teacher by 2030
- All teaching to be done with modern teaching aids, ICT should be mastered to enable all stakeholders to use ICT optimally.

5.7 CONCLUSION

The scope of education has been expanding as real-life challenges become more and more complex. In addition to the compelling importance of primary education, the growing importance of secondary and tertiary education cannot be brushed aside. Higher education is going to be the source of knowledge economy. After SSA and RMSA, RUSA has been initiated since November, 2012 with the objective of achieving equity, access and excellence in higher education in the states. States will have access to RUSA funds only after initiating several institutional governance reforms and academic and examination reforms which include accreditation and research & innovation efforts. This opportunity should not be missed. Recently 'School Fagathansi Mission'(Let us improve schools) has been launched in 60 government schools with a view to improve government schools both in terms of physical and manpower infrastructure and performance of students towards learning outcomes. It is conceptualized as a holistic approach for improving school education sector in the state.

In the fast changing scenario of education, if higher educational institutes are to keep pace with developments, they have to enlarge their resource base and make efforts to enlarge their internal resources by involving all stakeholders of higher education. It is increasingly realized that higher education cannot depend only on resources made available by the government. The private sector also should chip in.

The opening of Manipur University of Culture, Manipur Technical University and National Sports University are going to be game changers as these institutions are going to formalize the learning of skills in which our youth are highly talented. The traditional knowledge has to be documented. These institutions will provide the necessary infrastructure for development of our artistic talent, technical skills and sports.

Our vision of education can only be actualized and its goals delivered by a firm commitment of all those who are involved in the system: Students, teachers, government, the local community, the Panchayati Raj Institutions, local self-

governance, institutions in the urban and rural areas, district councils in the hills. It calls for the participatory management structure from the grass-root level upwards. Expeditions and informed decision making, planning and execution of the reform initiative in the schools, quick decision making and speedy implementation are essential to engender a culture for facilitating the development of the school education system in the State. This would necessitate decentralized management structure and devolution of authority and trends to the Panchayati Raj and local self-governance institutions. The essence of the good governance lies in bringing ownership of the schools to the community for their effective functioning and keeping a watchful eye by the administration. Government provisioning and community management, in fact should be the essence of the reform initiative in the School System, ensuring the spread of education and its development with quality in the coming year.

6

Ushering in Economic Growth with Decent Jobs

6.1 INTRODUCTION

We increasingly believe that development can be managed despite the differences in experiences across the world. Success stories have been based on state intervention as much as on market competition. All the SDGs are in some way or the other related with economic growth. To what extent the SDGs can be realized largely depends on how the economy has been growing along in the recent past with complementary factors. Inclusive growth means economic growth that creates employment opportunities and helps in reducing poverty. It means having access to essential services in health and education by the poor. It includes providing equality of opportunity, empowering people through education and skill development. It is about ensuring that the benefits of development reach the entire population including the most vulnerable sections.

Rapid and sustained poverty reduction requires inclusive growth that allows people to contribute to and benefit from economic growth optimally. Rapid economic growth is necessary for sustained poverty reduction but for this growth to be sustainable in the long run it should be broad based across sectors and inclusive of the country's labour force. Inclusiveness- a concept that encompasses equity, equality of opportunity and protection in market and employment transitions is an essential ingredient of any successful growth strategy¹ Systematic unequal access to opportunity will derail the growth process through political channels or conflicts.

The inclusive growth approach takes a long term perspective as the focus is on productive employment rather than on direct income redistribution, as a means of increasing incomes for excluded groups. The main instrument for sustainable and inclusive growth is assumed to be productive employment. Employment growth generates new jobs and income for the individual while productivity growth can lift the wages of those employed and returns to the self-employed. The chances of the individuals to be productively employed depend on the opportunities to make full use of available resources as the economy evolves over time. We have to identify ways to strengthen the productive resources and capacity of the individual on the labour supply side as well as ways to open up new opportunities for productive employment on the labour demand side.

6.2 GROWTH SCENARIO IN MANIPUR

Manipur's NSDP at 2004-5 prices during 1960-61 to 2013-14 and further deconstruct the data into agriculture, industry and services. Bai-Perron tests show that no single

¹ Commission on Growth and Development (2008) *Growth report: Strategies for Sustained Growth and Inclusive Development*, World Bank

growth regime can be fitted to the data. It also indicates the changes in the economic structure of the state with different sectors becoming the drivers of growth from time to time.

TABLE 6.1: STRUCTURAL BREAKS IN GROWTH REGIMES (1960-61 TO 2013-14)

VARIABLE	BREAK YEARS	REGIME	GROWTH RATES IN PERCENT
AGRI	1971,1979	1961-70	8.58
		1971-78	10.33
		1979-2014	3.03
IND	1971,1994,2007	1961-70	4.21
		1971-93	7.29
		1994-2006	8.92
		2007-14	Insignificant
SERV	1972,1984,2007	1961-71	5.75
		1972-83	4.77
		1984-2006	5.91
		2007-14	10.69
NSDP	1974,1994	1961-73	5.47
		1974-93	4.79
		1994-2014	5.72

Note: AGR real NSDP originating in agriculture & allied activities, IND real NSDP originating in industry SERV real NSDP originating in services

Table 6.1 shows that no single growth regime can be fitted over the entire period for any of the variables under consideration. The presence of structural breaks also questions the use of a single growth regime. For example, in the case of agriculture three growth regimes have to be fitted with different growth rates. While the growth rates of agriculture and industry have declined that of services has risen vindicating the growth in share of services.

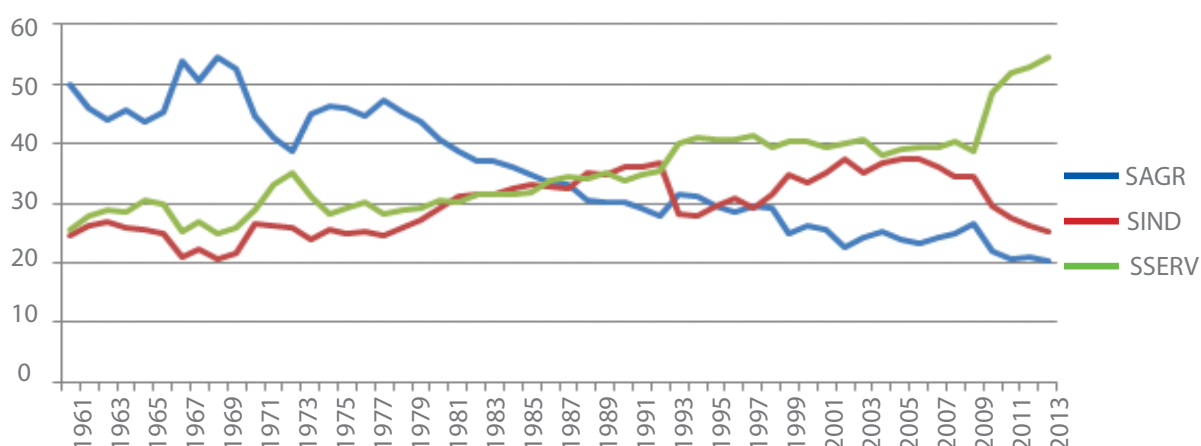
The structure of the economy has undergone significant changes. If we divide the economy broadly into agriculture, industry and services, a decline in the importance of agriculture and an increase in the importance of services over the years, both at 2004-5 prices, are clearly visible. The share of agriculture in state income has been declining since the late 70s. By mid 80's, the share of services exceeded the share of agriculture. The dynamics of industry is closely associated with the construction sector, much more than its association with manufacturing, the traditional core of

industry. The share of agriculture in NSDP declined from 50% in 1960-61 to 20.3% in 2013-14. The share of industry stagnated and rose from 24.5% to 25.15%. The share of services rose from 25.53% to 54.56% during the same period.

TABLE 6.2: CHANGES IN SECTORAL SHARE (IN PER CENT)

YEAR	AGR	IND	SERV
1960-1	49.96	24.5	25.53
1970-1	44.63	26.45	28.91
1980-1	40.62	29.04	30.35
1990-1	30.15	36.04	33.8
2000-1	26.1	33.48	40.42
2010-1	22.06	29.45	48.49
2013-4	20.3	25.15	54.56

FIG 6.1: EVOLUTION OF THE SECTORAL SHARES (TO NSDP IN MANIPUR): (1961-2014)



Per capita income can be expressed as the product of per worker output, employment rate and share of labor force in population. An analysis for the period 1993-4 to 2011-12 – using shapely decomposition – shows that during the post reforms era the entire growth in PCY can be attributed to growth in output per worker (101.87%). Employment rate is found to have a negative contribution (-3.35%) and share of labor force in population makes a marginal contribution (1.48%). Growth in output per worker can rise due to growth in sectoral output per worker and also a shift of workers from low productivity sector to high productivity sector as indicated by sectoral shifts. Analysis for the same period shows that agriculture (22.4%) and services (69.1%) contributed positively while industry's contribution (-13.1%) was negative. The contribution of inter-sectoral shifts is 21.6% which means that 21.6% of the growth in output per worker, the main driver behind growth of per

capita income, comes from shift of workers from low productivity sector to high productivity sector. A similar analysis of the decomposition of inter-sectoral shifts shows that the contributions of agriculture and industry are 58.4% and 48.80% respectively with the service sector registering a contribution of (-)7.19%. The shift is from agriculture and industry to services.

Catching up with the standard of living of the rest of the country depicted by real per capita income has always been one of our cherished dreams. Real per capita income is no doubt not a comprehensive indicator of standard of living but there is a broad agreement that its growth is a necessary condition. Two projections of population in 2030 have been used. The estimate based on state specific demographic parameters is 37 lakhs. The estimate based on UN projection of India's population in 2030 assuming that the population share of Manipur will remain at 0.23% is 39 lakhs.

Two growth scenarios have been selected for the growth rate of real GDP- scenario A: national economy grows at 7%; scenario B: national economy grows at 8%. The per capita GDP in 2030 is calculated by letting the real GDP in 2015-16 grow with a CAGR of 7% and 8% and dividing them by UN population estimates in 2030.

TABLE 6.3: ALTERNATIVE GROWTH SCENARIO – ALL INDIA

	GROWTH SCENARIO	
	A	B
Real GDP in 2015-16 in ₹ cr	11381002	11381002
CAGR	7%	8%
Real GDP in 2029-30 in ₹ cr	29346302	33428206
Pop in 2030 in million (UN)	1513	1513
Per capita GDP at constant prices in 2030 in ₹	193961	220940

To become at least as well off as the rest of the country, a highly laudable goal indeed, Manipur's per capita GSDP also should rise to these levels, the level depending on the growth scenario. Per capita real GSDP of Manipur in 2015-16 was Rs. 50259. To reach the national real per capita target of ₹193961 the GSDP of Manipur has to grow to ₹71766 cr if population is 37 lakhs and to ₹75645 cr if population is 39 lakh. It has to be even higher associated with the target of 8% rate of growth. Even the lower growth rates are high given the fact that the CAGR of real GSDP of Manipur between 2000-1 and 2015-16 was 5.60 %.

TABLE 6.4: ALTERNATIVE GROWTH SCENARIO – MANIPUR

SCENARIO	GROWTH SCENARIO OF REAL GSDP					
	7%			8%		
	TARGET PER CAPITA GSDP IN 2029-30 AT CONSTANT PRICES IN ₹	PROJECTED REAL GSDP IN ₹ CR IN 2029-30	CAGR	TARGET PER CAPITA GSDP IN 2029-30 AT CONSTANT PRICES IN ₹	PROJECTED REAL GSDP IN ₹ CR IN 2029-30	CAGR
Pop scenario A: 37 lakhs	193961	71766	11.39	220940	81748	12.43
Pop scenario B: 39 lakhs		75645	11.81		86167	12.85

**TABLE 6.5: ADDITIONAL INVESTMENT REQUIREMENTS UNDER TWO GROWTH SCENARIOS
IN ₹ CRORE IN 2011-12 PRICES**

YEAR	CAGR OF 11.39 %		CAGR OF 5.60% BUSINESS AS USUAL	
	INCREMENTAL OUTPUT IN ₹ CRORE	INCREMENTAL INVESTMENT REQUIREMENT IN ₹ CRORE	INCREMENTAL OUTPUT IN ₹ CRORE	INCREMENTAL INVESTMENT REQUIREMENT IN ₹ CRORE
2017	1806	7224	888	3552
2018	2012	8047	938	3751
2019	2241	8963	990	3961
2020	2496	9984	1046	4182
2021	2780	11121	1104	4417
2022	3097	10840	1166	4081
2023	3450	12074	1231	4310
2024	3843	13450	1300	4551
2025	4280	14981	1373	4806
2026	4768	16688	1450	5075
2027	5311	15933	1531	4593
2028	5916	17748	1617	4851
2029	6590	19769	1707	5122
2030	7340	22021	1803	5409

Taking the regime 2000-2001 to 2015-16, GSDP of Manipur grew at a CAGR of 5.60%. A target of doubling the growth rate in one year is not a simple task. If

GSDP continues to grow at 5.60%, per capita income in 2029-30 will be Rs. 91,894 as against the all India per capita income of ₹ 1,93,961. The target can be attained by having initial lower growth rates which gradually increase. Such a trajectory is consistent with cumulative improvement in the environment of growth. Broadly speaking, the additional investment requirement can be worked out by using the incremental GSDP and ICOR. In the following table, a comparison is made between the additional investment required the state grows at the usual CAGR of 5.6% and when it grows at 11.39% to catch up with India. Instead of assuming a constant ICOR it is assumed that ICOR in the first five years (2016-17 to 2020-21) ICOR is 4. In the next five years (2021-2 to 2025-6) it is 3.5 and in the next four years (2026-7 to 2029-30) it is 3. As physical infrastructure and institutions improve ICOR is expected to fall gradually.

This gives an idea of the additional investment needed. However, if redistributive measures are also strategically utilized, related goals like poverty eradication can be achieved with substantially lower investment.

6.3 DECENT JOBS

Jobs play an important role in poverty eradication. By decent work we mean opportunities for everyone to get work that is productive and delivers a fair income, security in the workplace and protection for families, better prospects for personal development and social integration. All women and men should be given equal opportunities in the workplace. In the absence of adequate social protection, the poor is compelled to work and they with 30% Productive employment and decent work are key elements to achieving fair globalization and poverty reduction. Employment growth also depends on labor use associated with economic growth. Has economic growth been jobless, a haunting scenario for any country? What is the occupational distribution associated with this growth? Some activities are more remunerative than others. Employment as such cannot be the end-equally important is the remuneration. That is the problem of the working poor. Employment in poorly paid jobs cannot eradicate poverty. In India, the period since 1990s has been marked by stagnation in formal employment growth because of the lower intensity of employment in manufacturing and services sub sectors. India's high economic growth rates have not been matched by equal advances in decent work and employment. Most of the workers are in low productivity informal activities. Much of the growth in employment happens in the informal sector with relatively lower wages and poor conditions of work. The organized sector also faces competition from the low cost informal sector accentuating the poor quality of jobs. The deficit of decent work in India has been a widely discussed issue.

Assuming 66% of the population to be in the age group 15-64 years and a labour force participation rate of 50%, in 2030 jobs will need to be provided for 12.21 to 12.87 lakhs of job seekers.

TABLE 6.6: JOB REQUIREMENT SCENARIO IN 2029-30 – MANIPUR

POPULATION IN 2030 IN LAKHS	15-64 YEARS AGE GROUP		LABOUR FORCE PARTICIPATION RATE	NO. OF PERSONS IN THE LABOUR FORCE IN LAKHS
	PERCENT OF POPULATION	ABSOLUTE VALUE IN LAKHS		
39	66	25.74	50	12.87
37	66	24.42	50	12.21

Children and aged people can be adequately provided for by ensuring decent jobs for the working age group who seek work. Government to create an environment for active participation of the private sector so that as many as possible of the job seekers find decent work. Besides regular salaried employment there should be a proper place for self-employment. Every job should be remunerative enough enabling every worker to lead a decent life.

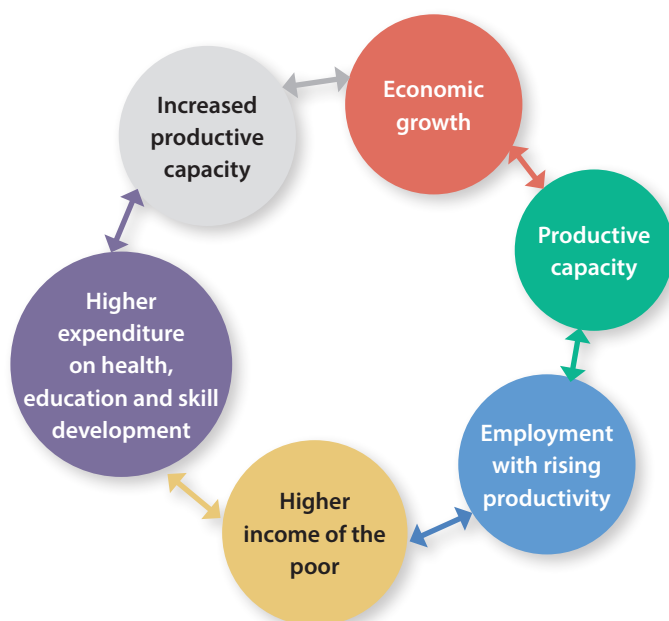
The definition of employment used by NSSO includes all kinds of informal, irregular, insecure and part time work. Until the 22nd round (1967-8) the term work was defined as any activity resulting in the production of goods and services. From the 32nd (1977-78) to the 49th (Jan.-June 1993) round gainful activity which replaced work included any activity pursued for pay, profit or family gain or any activity which added value to national income. It also included all the agricultural activities in which a part or the whole of the agricultural production was not sold but used for family consumption. In 50th round of NSS (1993-4) economic activity is any activity that results in production of goods and services that results in production of goods and services that adds value to national product. Such activities include production of all goods and services for market. In 2011-12 the term economic activity included all the market activities performed for pay or profit which result in production of goods and services for exchange, all the activities relating to agriculture, forestry, fishing, mining and quarrying sector which result in production of primary goods for own consumption and activities relating to the own account production of fixed assets. The employed are further classified into self-employed, regular wage/salaried employee and casual labour.

The “World of Work 2014: Developing with Jobs” report, an ILO publication shows, based on an analysis of 140 developing and emerging nations, that investing in quality jobs, reducing vulnerable employment and tackling working poverty leads to higher economic growth. Investment in high quality jobs is also found to be associated with lower income inequalities. According to Guy Ryder, Director-General of the ILO “development doesn’t happen through such things as exports, open trade and foreign direct investment on their own. Social protection, respect for core labor standards and policies that promote formal employment are also crucial for creating quality jobs that raise living standards, increase domestic consumption and drive overall growth. Decent work opportunities for women and men help trigger development and reduce poverty.” The report cites the example of countries such as Senegal, Peru and Vietnam where the rise in share of wage and salaried workers is associated with fall in share of working poor and rise in productivity.

‘The World Employment and Social Outlook 2016: “Transforming Jobs to End Poverty”’ also argues it will not be possible to reduce poverty in a lasting manner without decent work. The report emphasizes the role of decent work in poverty reduction. Almost one third of the extreme and moderate poor in emerging and developing countries are working, yet poor. It argues that promoting the transition to the formal economy and formal employment arrangements is the sine qua non for ending poverty. This transition will ensure that individuals have access to social protection, minimum wages and other employment and income support. Policies related with poverty eradication should be broad based and no other sector is as broad based as agriculture whose importance has declined. Key to such policy is raising the productivity of smallholder farmers through research and development, the supply of agricultural inputs and improved access to credit services. This should be accompanied by policies for boosting development of the rural non-farm economy to take care of those who lack resources to take advantage of opportunities for agricultural productivity growth. The report stresses that to be effective in ending poverty decent work policies need to be well designed and adapted to country circumstances.

Going by the income elasticity of employment, during 1993-4 to 1999-2000 it was 0.24. it means that one percent growth in NSDP would generate additional employment of 0.24%. During 1999-2000 to 2004-05 it rose to 0.83, only to decline to (-)0.2 during 2004-5 to 2009-10. It rebounded to 1.92 during 2009-10 to 2011-12 which incidentally also was high economic growth phase. What it shows is that job content of growth overall has been growing in some phases. It cannot be dismissed as jobless growth over the entire period. The issue of jobs is no longer quantity alone, the quality also counts.

**FIGURE 6.2: VIRTUOUS CIRCLE OF LINKS –
GROWTH, EMPLOYMENT AND POVERTY REDUCTION**



Source: Islam, R. (2004) p-4

There are two sources of unemployment data- national sample survey and employment exchange. Because of institutional factors these sources show widely different pictures. While the employment exchange data, the favorite of politicians, show around 7 lakh i.e. around 20% of the population as unemployed, NSS data using a more consistent and refined way of periodic data collection present a radically different scenario. The overall unemployment rate cannot be described as high. The unemployment rate of youth and educated youth, however, are found to be persistently high. The ability to generate an adequate number of productive employment opportunities will be a major factor on which the inclusiveness of growth will be judged (XI FYP Vol 1:3). The following figure shows how growth, employment and poverty reduction are related in a cyclical manner each impacting on and being impacted by each other.

The table 6.7 shows the comparative unemployment rates between Manipur and all India in 2011-12. Urban female unemployment rate in Manipur is substantially higher than the all India rates. Usual status unemployment rates of Manipur exceed all India rates however CWS and CDS unemployment rates for rural Manipur are less than that of all India.

**TABLE 6.7: UNEMPLOYMENT RATES IN MANIPUR AND ALL INDIA (IN PARENTHESES)
PER 1000 IN LABOUR FORCE (2011-12)**

	MALE				FEMALE			
	US	US*	CWS	CDS	US	US*	CWS	CDS
Rural	35 (21)	24 (17)	26 (33)	31 (55)	50 (29)	30 (17)	35 (35)	44 (62)
Urban	58 (32)	56 (30)	58 (38)	58 (49)	129(66)	108(52)	108(67)	119(80)

Source: NSSO

6.4 IMPLICATIONS OF ECONOMIC GROWTH

The success or otherwise of any economic policy has to be examined using the yardstick of its impact on the wellbeing of the marginalized and vulnerable people. Poverty ratio is an indicator of economic welfare and inclusive nature of change.

TABLE 6.8: POVERTY RATIO IN MANIPUR: TENDULKAR METHODOLOGY

YEAR	RURAL	URBAN	COMBINED	COMMENT
1993-4	64.4	67.2	65.1	Poorest state
2004-5	39.3	34.5	38.0	8.7 lakh
2009-10	47.4	46.4	47.1	12.5 lakh
2011-12	38.8	32.6	36.9	10.2 lakh

In 2011-12 as many as 10.2 lakh people in Manipur were below the poverty line as defined by Tendulkar methodology. Though the poverty ratio has declined from 65.1% in 1993-4 to 36.9% in 2011-12, the absolute number of poor people has not declined much. In 1993-4 Manipur had the highest poverty ratio among

the states in India and in 2011-12 Manipur continues to have the highest urban poverty ratio. Going by the state specific poverty lines for 2011-12, 38.8% of rural population spends less than ₹ 37 per day per person on food, health and education and the figure for urban Manipur is ₹ 39 per day per person. After nearly 70 years of independence, this cannot be an acceptable outcome despite the state sponsored social safety nets in the form of MGNREGA and the Food Security Act.

TABLE 6.9: UNEMPLOYMENT RATES IN MANIPUR (1977-8 TO 2011-12) PER 1000 IN LABOUR FORCE: RURAL

NSS ROUND	MALE				FEMALE			
	US	US*	CWS	CDS	US	US*	CWS	CDS
32(1977-8)	8.65	8.6	23.6	29.4	1.3		1.55	1.8
38(1983)	6.5		7.4	9.6				5.3
43(1987-88)	9	9	12	12	18	15	12	12
50(1993-94)	19	12	17	22	11	7	7	11
55(1999-2000)	24	21	25	24	25	15	27	26
61(2004-05)	20	14	19	19	12	7	9	11
66(2009-10)	42	38	39	40	44	37	40	44
68(2011-12)	35	24	26	31	50	30	35	44

Source: NSSO

Unemployment rates follow separate patterns across gender. In the case of rural males long term unemployment rates gradually increased while intermittent unemployment rates declined over 1977-8 to 2011-12. In the case of females, it has increased for every category. During 1993-94 to 2011-12 unemployment rates increased marginally for males and females. It can be inferred that the momentum of unemployment creating forces unleashed in the aftermath of economic reforms seems to have weakened.

Table 6.10 further shows the increase in urban unemployment rates from any angle upto 1999-2000 till the trend is reversed in 2004-05. In 2004-5 urban female unemployment far exceeded urban male unemployment rates.

TABLE 6.10: UNEMPLOYMENT RATES IN MANIPUR (1977-8 TO 2011-12) PER 1000 IN LABOR FORCE: URBAN

NSS ROUND	MALE				FEMALE			
	US	US*	CWS	CDS	US	US*	CWS	CDS
32(1977-8)	11.98	12	15.7	16.1	27.1	29.1	23.5	24.7
38(1983)	4.7		4.7	4.8	1.5		1.5	1.6
43(1987-88)	44	41	41	44	67	61	58	59

NSS ROUND	MALE				FEMALE			
	US	US*	CWS	CDS	US	US*	CWS	CDS
50(1993-94)	53	48	48	50	44	32	27	31
55(1999-2000)	74	69	66	66	103	62	68	76
61(2004-05)	53	52	54	55	82	63	79	81
66(2009-10)	52	50	52	53	46	41	41	44
68(2011-12)	58	56	58	58	129	108	108	119

Source: NSSO

Literacy rate has increased from 12.57% in 1951 to 79.85% in 2011 - rate for males rising from 22.93% to 86.49% and females rising from 2.73% to 73.17%. Though the rate of educated unemployment and youth unemployment are significantly high there is also the issue of their suitability for those jobs generated by growth and subsequent structural change, a mismatch between their skills and job requirements. This issue of employability of our labor force in jobs generated by development should not be glossed over. Equipping them with appropriate skills in the broadest sense is going to be a challenge which we have to tackle. It is more so as human resources are expected to be the major constraint to growth in the near future. Table 6.11 shows the incremental requirement for additional labor in the job market during 2011-21.

TABLE 6.11: INCREMENTAL HUMAN RESOURCES REQUIREMENT (2011-2021)

SERIAL NO.	DISTRICT	INCREMENTAL REQUIREMENT	PERCENT OF STATE TOTAL	COMMENT
1	Bishenpur	37081	15.88	
2	Chandel	11284	4.83	Border trade:10292
3	Churachandpur	13334	5.71	
4	Imphal (E/W)	62999	26.99	
5	Senapati	7919	3.39	
6	Tamenglong	12136	5.2	
7	Thoubal	87049	37.29	Handicrafts:79212
8	Ukhrul	1644	0.7	
	Manipur	233446	100.0	

Source: NSDC (n.d.) Skill Gap Study of the North East-Manipur p-100

In Chandel 91.2% of the jobs will be related with border trade. In Thoubal where 37.29% of the incremental jobs will be generated, 91% will be coming from handicrafts. Table 6.12 shows the gap between incremental supply and incremental demand.

TABLE 6.12: SKILL GAP IN MANIPUR

CATEGORY	INCREMENTAL SUPPLY(2011-21)	INCREMENTAL DEMAND(2011-21)	EXCESS SUPPLY	PERCENT OF CATEGORY SUPPLY
Specialised skills	37473	2334	35139	93.77
Skill category level 2	6.15 lakh	32929	5.82 lakh	94.6
Skill category level 1	26966	49920	(-)22954	
Basic skills	3.72 lakh	1.48 lakh	2.24 lakh	60.2
Total	10.51 lakh	2.33 lakh	8.18 lakh	

Source: NSDC (n.d.) Skill Gap Study of the North East-Manipur

The incremental supply of workers during 2011-21 has been estimated at 10.51 lakh whereas the incremental demand for jobs will be only 2.33 lakh showing a surplus of 8.18 lakh. Except for skill category level 1, there will be excess supply in every category.

The salient features of the problem of employment and unemployment in Manipur are

- The size of the informal economy - as measured by the proportion of self-employed and casual laborer - is high indicating the dominance of low productivity work.
- Occupational distribution of the workers has not kept pace with the structural change in the economy.
- The NSS definition of employment is based on time. If a criterion reflecting income is used the unemployment rate will be substantially higher.
- The problem of urban youth unemployment is serious and needs immediate attention.
- The problem of educated unemployment is more serious in urban areas.
- The unemployment rate of urban educated females has been rising.
- Urban unemployment is a bigger issue than rural unemployment.
- Mismatch between skills and job requirement is a serious issue.

These aspects need to be considered at the time of policy formulations. There need not be any complacency in the low unemployment rates provided by NSS. The low quality of employment as reflected by the preponderance of self-employment and the low productivity of agriculture- the dominant source of livelihood - puts a big question mark on the low level of unemployment rate. Low unemployment rates coexist with high poverty rate. If the additional labour cannot be absorbed in more productive work outside the farm sector, there is an urgent need to raise the productivity of agriculture through higher public capital formation in agriculture and improved marketing infrastructure of the produce. Quality jobs can ensure sustained decline in poverty or sustained increase.

Opening the North East: Act East Policy – An opportunity for pursuing a new developmental paradigm

Opening up of the region has given the opportunity to trade with less restriction across 5488 km. Openness of an economy is indicated by the proportion of export and import in national income. The purchase of goods and services from abroad (imports) and the sale of home-produced output (exports) influence the level of output in the economy in the short run. Holding all else constant, imports of goods depress domestic output because demand for home production goes down and conversely, exports raise domestic output as foreign orders boost demand for home production. Both have profound implications for the welfare of people. Our Act East Policy (AEP) envisages a wider market access with some of the fastest growing markets and also as a gateway. When one talks about the Act East Policy, considered to be a potential game changer, the presumption is that we will have access to a big and dynamic market which will enable us to exploit the economies of scale bringing down the unit cost of production and thus make our products more competitive. Trade would thus serve as a driver of rapid economic development of the region. However, physical connectivity is needed to reap the benefits of trade and associated opportunities. It should accompany ICT connectivity by integrating road, railways, air and water. In fact one major critique of AEP is that the NER is not yet ready for the opportunities. Now we are in a situation where opportunities may come knocking on our doors and we are not in a position to reap the benefits. Another way of looking at the possibilities of Act East Policy is to visualize the North east as the hub of economic activity where ASEAN countries will produce for the Indian market. In one perspective NER will produce for the ASEAN market and in the other, NER will produce for the Indian market. In both scenarios manpower planning will enable us to avail of the opportunities provided by the new markets.

7

Peace, Justice and Strong Institutions

7.1 INTRODUCTION

A society in order to prosper and progress must march ahead unitedly, keeping in view a clear vision, goals, and objectives to be achieved within a stipulated time. Without a clear vision, there won't be any worthwhile result. Hence, the state Vision 2030 with its clear aims and objectives will surely inspire the Manipuris of today and the next generations and make them think about how they can contribute to achieve the goals set in the document.

Mainly because of age-old problem of insurgency and lack of development, the people have been deprived of better livelihoods. Time has come for us to plan and work for a future that is all-encompassing, modern, global and yet rooted in the best of traditional values of Manipur. Realization of the objectives will ensure a bright and glorious future for the state and the people. And most importantly, each individual member of our society will feel that he is not only 'in' the society but 'of' the society as well. There could be ethnic cooperation based upon mutual trust and dignified living. The need for the armed forces will disappear once the various communities start living together without being afraid of each other.

7.2 AN OVERVIEW OF THE PRESENT SOCIO-POLITICAL DEVELOPMENT OF MANIPUR

Manipur, a multi-ethnic state, sometimes called a miniature India for its ethnic diversity, has a population of 28,55,794 in 2011. Out of this, 11,67,422 are Scheduled Tribes (STs), which constitutes 40.87 per cent of the total population of the state (Census of India 2011). Most of the non-Tribal population which constitute 57.20% of the state's population lives in the valley and occupies about 10 percent of the total land area of the State. The valley shows a high degree of urbanization, with nearly 40 percent of the people living in urban areas. In contrast, the hill areas of the State, comprising nearly 90 percent of its area, is almost entirely rural; and people live in scattered groups of isolated communities. The tribal population mainly consists of two ethnic groups, the Nagas and the Kuki-Chins, who have their distinctive traditional systems of village governance and administration. With the Constitution (Scheduled Tribes) Order (Amendment) Act, 2011, that came into effect on 8th January, 2012, there are 37 tribal communities specified as Scheduled Tribes in 34 Entries.

In order to have an ideal society based on equality and rule of law, it needs effective and inclusive public institutions that can deliver quality education and healthcare,

fair economic policies and inclusive environmental protection. To achieve peace, justice and inclusive institution, it is important that government, civil society and communities work together to adopt and implement viable mechanisms for lasting solution to all issues and conflicts, reduce violence, deliver justice, combat corruption and ensure inclusive participation at all times. Freedom to express views, in private and in public, must be ensured and needs to be free from all forms of violence and intimidation. People must be able to contribute to decision making process that affects their lives. Laws and policies must be applied without any form of discrimination. Disputes need to be resolved through functioning political and judicial systems. National and local institutions must be accountable and need to be in place to deliver basic services to families and communities equitably and transparently.

In order to have a just, strong, progressive and equitable society in Manipur, there is a strong need to realize and understand the imperative to maintain peace, equality and justice among different communities living in Manipur without any discrimination on ground of caste, creed and religion. The present socio-economic and political tribulations cannot be attributed to a single factor; rather various factors are at interplay. The emergence of distinct ethnicities and identities and conflict of interest in Manipur can be assumed to be the consequence of the following factors:

(i) Exclusivist politics in the form of distinctive social, political and cultural identities based on history manifested by all social groups in the state (ii) Limited social and cultural interaction among the different ethnic groups despite the physical and linguistic affinities among them (iii) Heightened importance of historical and religious differences in political struggles and (iv) weak institution mechanism

7.3 PEACE, JUSTICE AND STRONG INSTITUTIONS IN MANIPUR

Manipur has been inflicted with insurgency, ethnic conflicts, kidnapping, extortion etc. since the last four decades or so. It is in such a scenario that the judicial system in the country or the state needs to be strengthened and revamped so as to play a more pro-active role to instill confidence among the people. The judicial system plays an important role in managing structural issues regarding poverty, lack of education, unemployment, attached to a lower social class.

The most important indicators of good governance are institutions based on rules, absence of disorder, riots, murders, unwarranted state closures and violence of any nature. And the citizens are obliged to obey the laws which the state and the governance depends on, the fact that these laws are intended to secure justice or moral rights of the individual and welfare of societies. This is possible only when the state ensures accountability and transparency in the administrative set-up.

In a wider sense, equality would mean political equality, social equality, civil equality and economic equality. The ideal of equality is fundamentally, a levelling process

where people demand the same treatment from the State for each and every one of us and resent any distinction between one individual and another regarding rewards and punishments. The government envisions Manipur as a state that is free from violence, terror, intimidation, threat and coercion as well as from poverty, unemployment, illiteracy, diseases and ignorance. Manipur can only manage development properly and achieve the sorts of results intended, when there are accountable institutions and systems in place. Proper functioning of local self-government institutions such as the Imphal Municipality is of immense importance. The Municipality will help dealing in matters concerning water supply, sanitation, maintenance of local clinics, construction of public libraries, maintenance of roads and parks, supply of electricity and other amenities thus providing benefit to the people in the municipal areas.

One of the most important and effective institutions of our democratic system are the Panchayati Raj Institutions. In the development process, the Panchayati Raj institutions are the most important channels for popular participation as they deal with the day-to-day affairs of the rural masses. The administrative and developmental role played by the Panchayati Raj institutions in rural areas of valley districts and village authority council and Autonomous District Council at the rural and hill areas and that of the municipal cooperative council at the urban level should be backed by sound measures to confront difficulties and strengthen the same in delivering the services at the local level. Human Right awareness to every individual is the need of the hour. Human Rights should be incorporated in the text, curriculum and syllabi starting right from the grass-root level so that any discrepancy should not take place, any more by forces of different departments or groups. Likewise, women related crimes starting from prostitution, extortions, trafficking of women to other states, transportation of arms and ammunition and drugs are the social menace of today's society. Their causes should be properly understood and appropriate remedial actions be taken stringently without further delay.

7.4 MECHANISM TO PROMOTE PEACE, JUSTICE AND STRONG INSTITUTIONS

Despite commendable attempts by like-minded individuals/ groups/ organizations and the state government to promote Peace, Unity, Justice and overall balanced socio-economic and political development and peaceful coexistence taking into consideration the inherent oneness in feature and lineage of all the mongoloid groups. Realizing the vital importance of Peace, Justice and balanced socio-economic and political development based on strong institutions, the need of the hour is to strive for viable solutions to bring about balanced socio-economic and political development in the State and thereby reduce and eliminate regional disparities and bring about a Just, Peace and an egalitarian Manipuri society.

In Manipur, the existing number of Courts in the category of Subordinate Courts is 35 and it is much below the standard of ratio of Judge-Population ratio as directed

GOALS	TARGET	PRIORITY INDICATOR	DATA SOURCE	INTERVENTION/ SCHEMES	DEPARTMENT	SCHEMATIC INDICATORS
	SDG 16 : Peace, Justice and Strong Institutions					
SDG 16 : Peace, Justice and Strong Institutions	16.1 : Significantly reduce all forms of violence and related death rates everywhere	16.1.2 : Proportion of population subjected to physical, psychological or sexual violence in the previous 12 months	Crime Statistics - Manipur		Home	Crime Rate/ Crime Related Death Rate (Per 1 lakh population)
						Crime Rate Against Children
	16.2 : End abuse, exploitation, trafficking and all forms of violence against and torture of children	16.2.1 : Number of victims of human trafficking per 100,000 population, by sex, age and form of exploitation	ICPS	National Child Labour Project (NCLP)	Social Welfare	No. of children rehabilitated under ICPS
	16.6 : Develop effective, accountable and transparent institutions at all levels	16.6.1 : Number of Government services provided online to citizens.		Digi Locker	ICT	No. of registered users
						No. of online services provided by State Government
	16.9 : By 2030, provide legal identity for all, including birth registration	16.9.2 : Proportion of population covered under Aadhaar	UIDAI	UIDAI	GAD	%age of population enrolled under Aadhaar
			RGI Census	RGI	Ecos & Stats	%age of Birth Registration Coverage

by the Hon'ble Supreme Court of India in the matter of All India Association -vs - Union of India reported in 2002(4) SCC 247 as observed at para 25 of the Judgement as follows:

"25. An independent and efficient judicial system is one of the basic structures of our Constitution. If sufficient number of Judges is not appointed, justice would not be available to the people, thereby undermining the basic structure. It is well known that justice delayed is justice denied. Time and again the inadequacy in the number of Judges has adversely been commented upon. Not only have the Law Commission and the standing committee of Parliament made observations in this regard, but even the head of the judiciary, namely, the Chief Justice of India has had more occasions than once to make observations in regard thereto. Under the circumstances, we feel it is our constitutional obligation to ensure that the backlog of the cases is decreased and efforts are made to increase the disposal of cases. Apart from the steps which may be necessary for increasing the efficiency of the judicial officers, we are of the opinion that time has now come for protecting one of the pillars of the Constitution, namely, the judicial system, by directing increase, in the first instance, in the Judge strength from the existing ratio of 10.5 or 13 per 10 lakhs people to 50 Judges for 10 lakh people. We are conscious of the fact that overnight these vacancies cannot be filled. In order to have Additional Judges, not only the post will have to be created but infrastructure required in the form of Additional Court rooms, buildings, staff, etc., would also have to be made available. We are also aware of the fact that a large number of vacancies as of today from amongst the sanctioned strength remain to be filled. We, therefore, first direct that the existing vacancies in the subordinate Court at all levels should be filled, if possible, latest by 31st March, 2003, in all the States. The increase in the Judge strength to 50 Judges per 10 lakh people should be effected and implemented with the filling up of the posts in phased manner to be determined and directed by the Union Ministry of Law, but this process should be completed and the increased vacancies and posts filled within a period of five years from today. Perhaps increasing the Judge strength by 10 per 10 lakh people every year could be one of the methods which may be adopted thereby completing the first stage within five years before embarking on further increase if necessary."

The current population of the State which is about 30 lakhs and the existing number of Court is 35 only. The ratio of Judge-Population in the State is only 11.6per 10 lakh of population which is below the ratio existing even in the all India level of 13 Courts per 10 lakhs population reported in the year 2002. Further, there is no Court in the far-flung hill areas in the State. One of the mechanisms may be to enhance the number of Institution of Justice i.e. the Courts in all the districts in the State which may be at the lowest level of Court like Gram Nyayalayas in all the Sub-divisions of the State in a phased manner.

7.5 CONCLUSION

- i. Zero Tolerance to Corruption,
- ii. People-to-People Contact:
- iii. Zero Political Exclusion.
- iv. Social Auditing for transparency and accountability
- v. Police Reforms
- vi. Strengthen Infrastructure of Judiciary sector including Court Building, Office of Prosecutors and Residential Quarter
- vii. Improve the Justice sector along with capacity development etc.
- viii. Active involvement of all sections of people including marginalised groups at the grass-root level and all stake-holders in policy making process and policy formulation.
- ix. Strengthened local bodies.
- x. State will integrate reform and strengthen the existing regulatory and policy framework to promote peaceful and inclusive societies for sustainable development
- xi. Strengthening of state e-governance policy, services and ensuring public access to information.
- xii. Strengthening of concerned departments to satisfactorily achieve the target.

Section III



8

No Poverty

8.1 INTRODUCTION

Mahatma Gandhi considered poverty as the worst form of violence. It degrades and destroys human spirit like nothing else. Poverty is a multidimensional social phenomenon and hence its definition, as well as its causes, are multiple and varied (World Bank, 2000/01, WDR). Apart from an acute want of material resources which compromises the right to live a dignified life, a sense of powerlessness, lack of voice, humiliation and marginalization are some of the unwanted constant companions of the poor.

In 2013, the World Bank Group announced two overarching goals: i) the end of chronic extreme poverty by 2030, and ii) the promotion of shared prosperity defined in terms of economic growth of the poorest segments of society. The United Nations has also now declared the eradication of poverty by 2030 as a primary development goal. The first sustainable development goal (SDG) also aims at ending poverty in all its forms everywhere and reducing the proportion of persons below the poverty line to half of the present level by 2030.

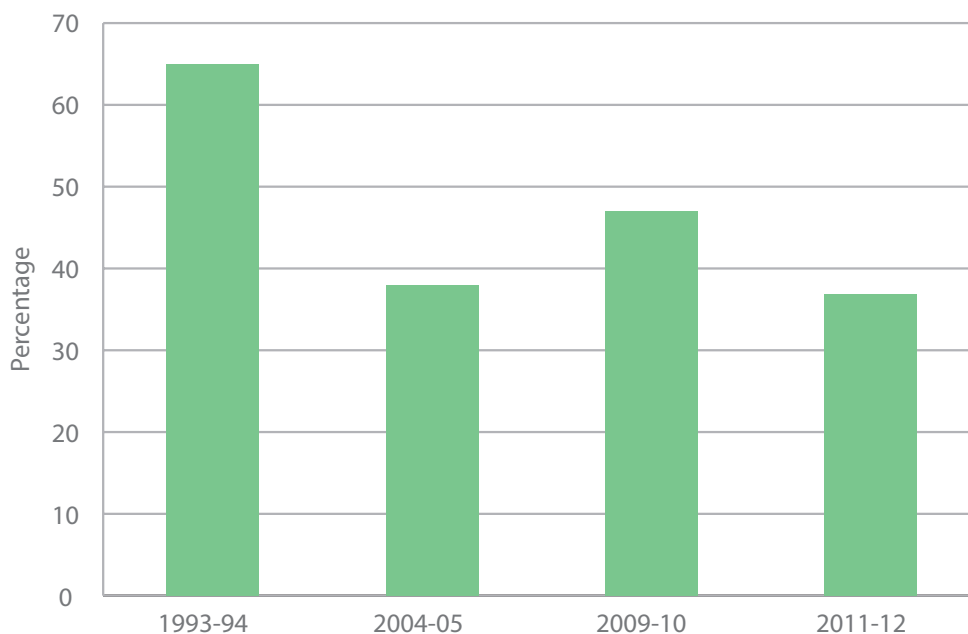
8.2 THE FIRST SDG AND MANIPUR: WHERE DO WE STAND?

Poverty in the midst of abundance is a contemporary enigma characterizing the economy of Manipur. The state has enormous potential to develop and prosper as one of the most developed states in the country. However, the evidence shows that poverty and inequality are still a huge socio-economic problem. Despite the fact that the state is blessed with abundant human and natural resources, reducing poverty still remains a big challenge for the state. Its citizens suffer from wide spread poverty, the economic output is low in both the private and the public sector due to poor infrastructure, poor governance and policy paralysis. The economic reform measures have yielded unsatisfactory results as far as the conditions of the common man are concerned; in fact the conditions are becoming worse every day. The per capita income in the state is quite low compared to the national level. There is low production and productivity in the agriculture and allied sectors which are the primary source of income and occupation in the state. The potential of primary sector driven economic growth has not yet been properly tapped. There is a low level of industrialization in comparison to other states of the country. Public Sector Undertakings have a miserable presence. Connectivity through road, air and telecommunication is a serious constraint in both economic and social development. The potential of power generation, transmission and distribution has not been

fully harnessed. The state also suffers from acute income and wealth inequality and, according to the Planning Commission, approximately one in four [or 36.9%] of the population live below the official poverty line meaning that they experience life as a daily struggle. The official estimates based on Tendulkar poverty lines show that Manipur has 10.22 lakh below poverty line (BPL) people. The census of India suggests that there was dramatic deceleration in employment defined in terms of the number of main workers, with greater increases in the number of “marginal workers”. The fast growing marginal workers category is a sign of an agrarian crisis. It may be noted that census classifies workers into two categories i.e. main and marginal workers. The main workers are those who worked for more than six months in a year and the marginal workers are those who worked for less than six months. The proportion of main workers to a total population was 38.55 percent in 1991, however, it came down to 34.11 percent in 2011. For females, the proportion was 32.65 percent in 1991, however, it falls to 25.33 percent in 2011. As far as the marginal workers category is concerned, the census shows that this category has increased from 3.63 percent to 11.57 percent during the period. The share of females in total workforce representation in the marginal workers has increased during the period of 1991-2011 from 7.31 percent of the total workforce in 1991 to 27.52 percent in 2011. The major impact of the crisis of the agricultural sector is being felt by the landless agricultural workers. They are also the most oppressed, both in class and social/gender and ethnic terms. Between 1991 and 2011 the number of agricultural labourers in Manipur increased from 47,358 to 1,14,918. Their numbers continue to grow because of the pauperisation of peasants and their growing alienation from land.

The number of person below poverty line is 3.76 lakhs (22.3%) and 0.20 lakhs (3.3%) in the rural and urban Manipur respectively according to 61st Round (2004-05) of NSS. The incidence of poverty in Manipur from 1993-94 to 2011-12 using the Tendulkar

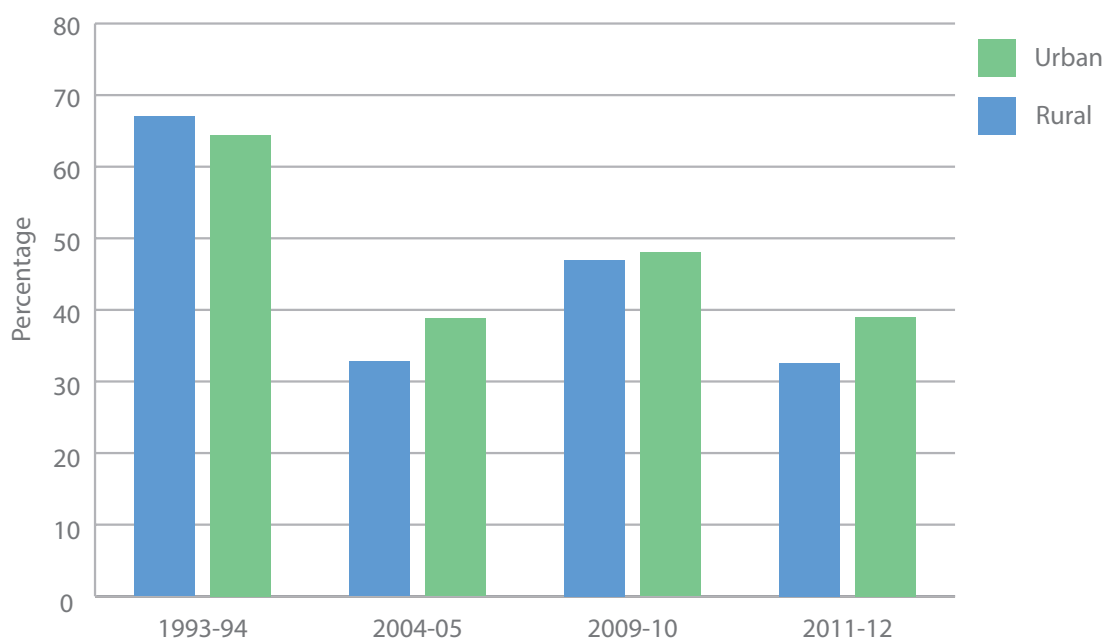
FIGURE 8.1: INCIDENCE OF POVERTY IN MANIPUR (IN %)



method of poverty estimation is shown in figure 8.1. Here it is seen that over the period poverty has declined in the state except for the period of 2009-10. In 1993-94, with 65 % of the population living below the poverty line, the state had the highest incidence of poverty among all the states of the country. Further, the urban poverty ratio was also the highest in the country. After about two decades in 2011-12, there has been a marked reduction in the incidence of poverty in the state. During this period the poverty ratio in the state declined by 28%. However, the state still has the third highest incidence of poverty in the country among the states after Chhattisgarh and Jharkhand. In 2011-12 the headcount poverty ratio in the state stood at 36.9%.

As seen in figure 8.2 during 1993-94 to 2011-12, there has been a considerable reduction in the ratio of poverty both in urban and rural areas. However, the reduction in the incidence of urban poverty has been more significant as compared to the incidence of rural poverty. In 1993-94, 67% of the total urban population was under the poverty line and by 2011-12 it was reduced to 32.8 % i.e., a fall of 34.6 % was observed. On the other hand, during the same period, the incidence of rural poverty reduced from 64.4% to 38.8 % which is a decline of 25.6 %. Despite significant reduction in incidence of urban poverty, the state continues to have the highest urban poverty ratio among the states at 32.6% in 2011-12. Thus, poverty in Manipur is acute in both urban and rural areas.

FIGURE 8.2: INCIDENCE OF POVERTY IN MANIPUR (IN %), RURAL AND URBAN



The adopted poverty line for Manipur in terms of rupees per capita per month is shown in figure 8.3. It may be mentioned that while the earlier adopted Lakdawala method estimated the poverty lines of only 18 major states, the Tendulkar committee calculated the poverty lines for each state in the country including Manipur. In 1993-

94, the poverty line was calculated at ₹322.3 and ₹366.3 for the rural and urban areas respectively. By 2011-12, it increased to ₹1118 for the rural areas and ₹1170 for the urban areas.

FIGURE 8.3: POVERTY LINE OF MANIPUR (. PER CAPITA PER MONTH)

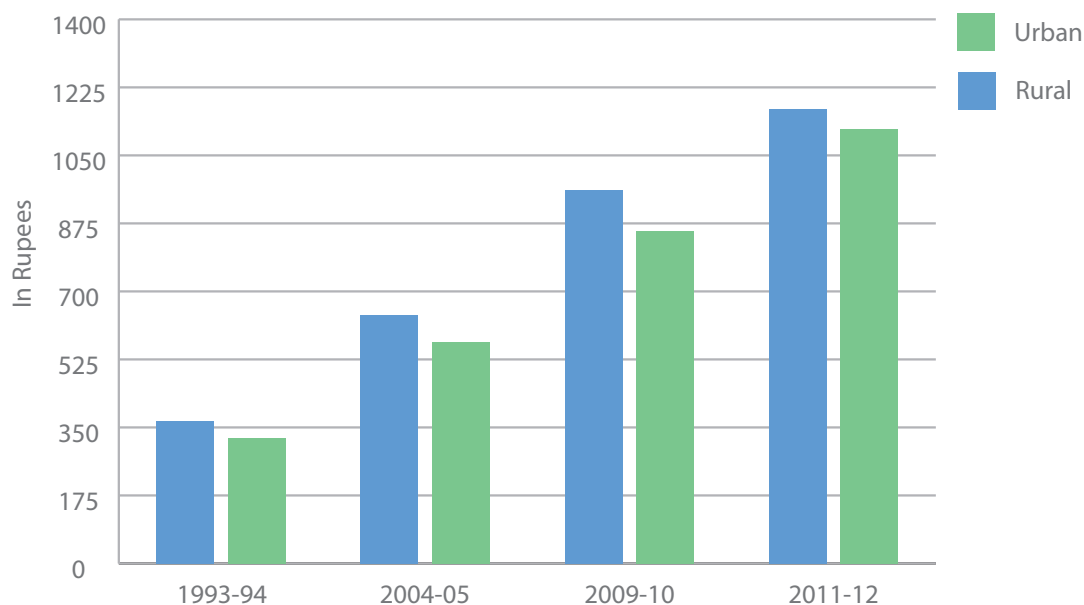
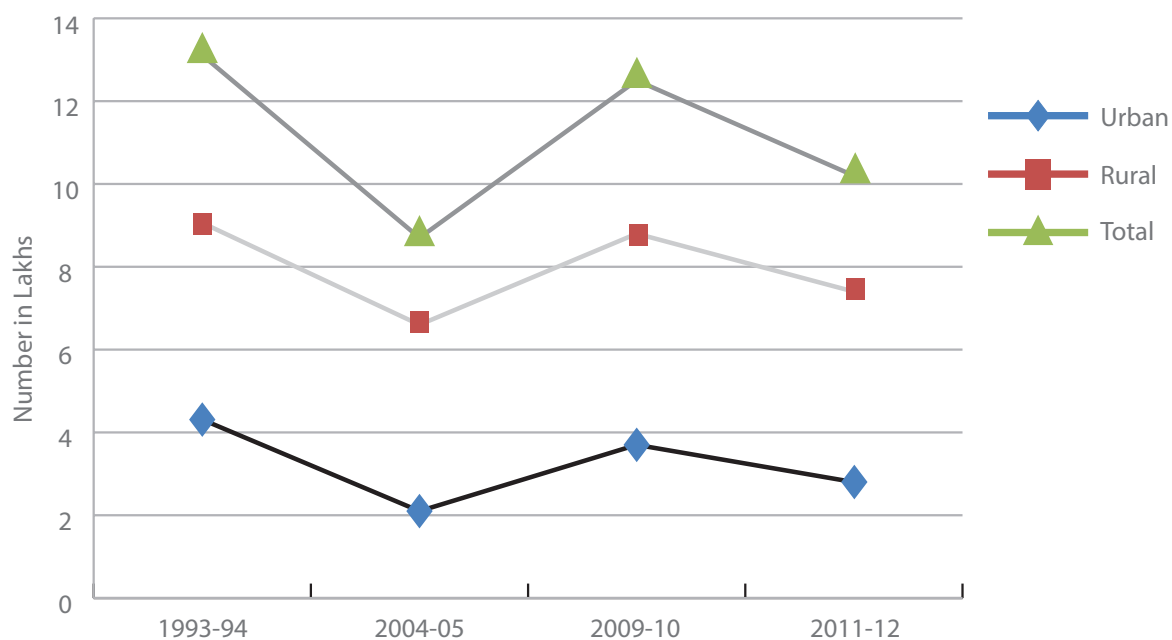


FIGURE 8.4: NUMBER OF POPULATION BELOW POVERTY LINE IN MANIPUR (IN LAKHS)



In terms of the absolute number of poor persons, during 1993-94 to 2011-12, the total number of poor people in the state has reduced by 2.91 lakhs. In 1993-94, a total of 13.11 lakh persons were estimated as poor, out of which 9.06 lakhs i.e., 69% reside in rural areas. In 2011-12, the total number of poor persons stood at 10.2 lakh persons out of which 7.4 lakh were in rural areas and the remaining 2.8 lakhs were

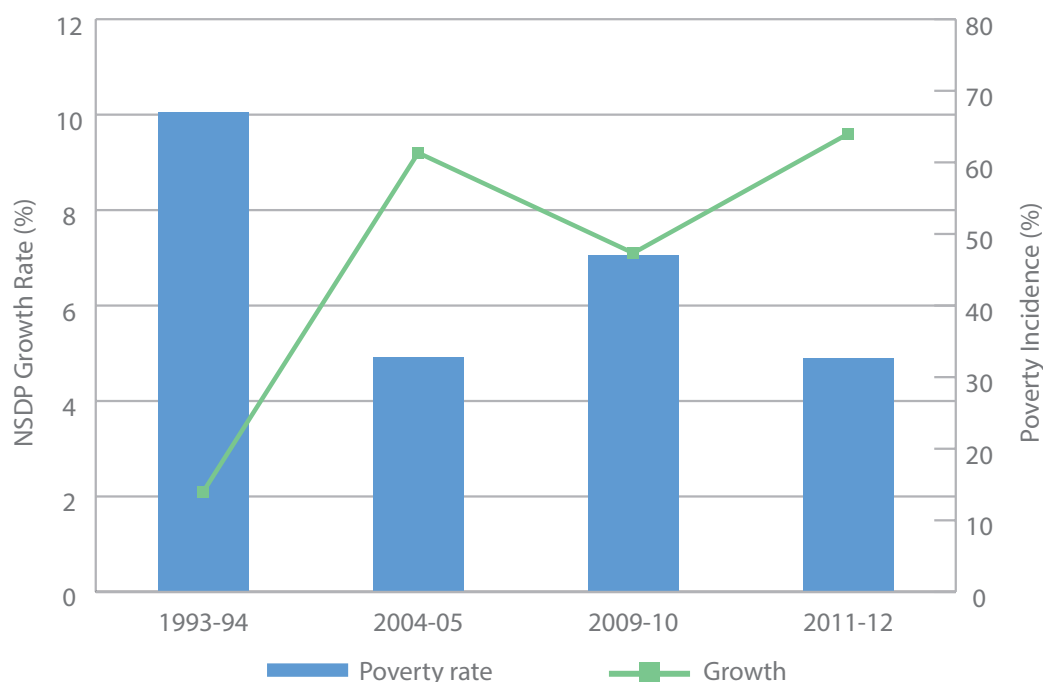
in urban areas. Thus, the total percentage of poor persons living in the rural areas increased to 72% of the total poor persons in the state. During the same period the number of poor persons in then urban areas reduced by 1.51 lakhs while the corresponding figure for the rural areas was 1.66 lakhs. Thus, in terms of poverty reduction, the urban areas have performed better than the rural areas both in terms of absolute number as well as head count ratio.

8.3 POVERTY AND ECONOMIC GROWTH IN MANIPUR

Though economic growth by itself is not the antidote to fight and cure poverty, it is still considered one of the most powerful instruments for poverty alleviation. Without economic growth, states would struggle to have the necessary resources for social security programmes to fight against poverty. States like Punjab have been able to grow at 5% over the last 50 years. The ensuing growth coupled with equity is considered to be one of the main reasons why Punjab has successfully been able to reduce the number of persons below the poverty line (Punjab Vision Document 2030).

The relationship between growth (2011-12 prices) and poverty in Manipur (1993-94 to 2011-12) is shown in figure 8.5. Here, it is observed that the growth in Net State Domestic Product (NSDP) have an inverse relation with the incidence of poverty during the considered period.

FIGURE 8.5: POVERTY AND NSDP GROWTH IN MANIPUR

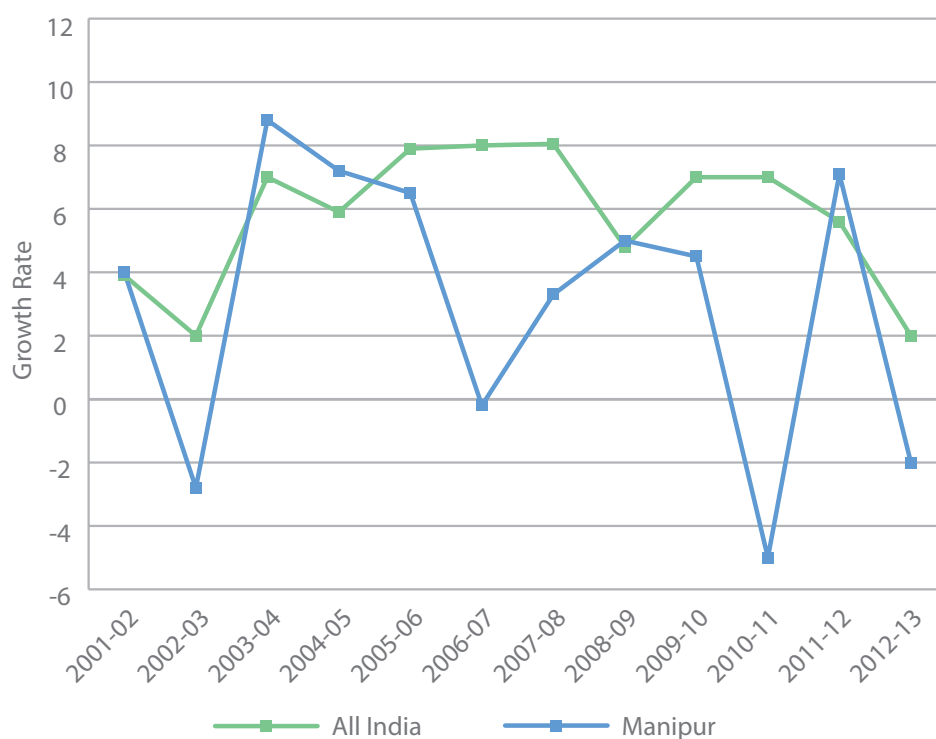


Thus, though economic growth is not the sufficient condition for poverty reduction it is considered by many as a necessary condition. However, the growth of the

FIGURE 8.6: GROWTH OF NSDP (2011-12 PRICES) OF MANIPUR (IN %) VS ALL INDIA NDP



FIGURE 8.7: GROWTH RATE OF PER CAPITA NSDP (2011-12) OF MANIPUR (IN %) VS ALL INDIA PER CAPITA NNP



economy of Manipur has not been satisfactory and if the state is to achieve the first SDG by 2030, it has to grow at a much faster pace than it is growing of late. The following figure 8.6 shows the growth rate of NSDP at 2011-12 prices for Manipur for the years 2001-02 to 2012-13 compared with the all India level. The growth rate of per capita NSDP of the state is also shown in figure 8.7 comparing it with the growth at all India level. It can be seen that both in terms of growth rate of NSDP as well as per capita income, Manipur lags behind the all India average consistently.

8.4 POVERTY ALLEVIATION SCHEMES IN MANIPUR

Achieving the first SDG of eradicating extreme poverty and reducing the proportion of persons living below the poverty line to half of the present level in the state by 2030 requires the existing social protection systems meant for the poor to be implemented in its true spirit vigorously. Like the rest of the country, the state has also implemented numerous poverty alleviation schemes. Among them, the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) inaugurated in 2006 is considered the world's largest anti-poverty programme. The act was inaugurated in Manipur on 2nd February 2006 for the first time in Tamenglong district and was initiated in the rest of the eight districts in two later phases. The implementation of the act has the potential to change the development landscape of the rural areas in the state by reducing poverty and empowering women. However, over the years, the success of the scheme in making a serious dent on rural poverty in the state has been limited due to lack of jobs. During 2015-16, the state could provide just 15 person days of work per household out of the mandated 100 person days.

The Food Security Act was also launched in the state in 2016 with much hype and expectations. The act guarantees 5kg of food grains per person per month at a much subsidized rate. It aims to cover 75 % of the rural population and 50 % of the urban population thereby making eligible two thirds of the total population of the country to receive subsidized food grains. The successful implementation of the act will no doubt deliver a huge impact in the fight against poverty in the state by assuring food security to the poor. However, there are a tremendous amount of complaints regarding its implementation.

The National Social Assistance Programme (NSAP) was also implemented in Manipur in tune with the rest of the country in 1995. The components of the scheme in the state comprise the National Old Age Pension Scheme (NOAPS), the National Family Benefit Scheme (NFBS), and the National Maternity Benefit Scheme (NMBS) (Department of Social Welfare, Govt. of Manipur). The programme aims at providing social welfare assistance mainly to the poor households for the old, death of a main bread earner, and maternity in addition to the other benefits that the state provides currently or in the future.

It is a well-known fact that empowering women and ensuring gender equality is a potent tool if the state is to achieve the SDG of halving the proportion of poor by 2030. One such scheme which tries to ensure the empowerment of women is the Pradhan

Mantri Ujjwala Yojana (PMUY). It provides free Liquid Petroleum Gas (LPG) connection to the poor rural households below the poverty line. In fact, dependence on biomass fuels such as wood, straw and manure is closely related to poverty. The use of these biomass fuels for cooking and boiling water can create dangerously high levels of indoor air pollution which affects a huge number of women and children each year (Todaro and Smith 2003). Furthermore, the time spent on unpaid work of collecting wood and other fuels minimizes the time available for women and children to engage in paid work thereby limiting their contribution to the economic well-being of the family (ADB, 2015). Thus, this scheme has a huge potential to fight against poverty by empowering women in the state.

The Pradhan Mantri Jan Dhan Yojana (PMJDY) which was inaugurated in the state in 2014 aims at financial inclusion of the poor in order to enable them to access financial services. The PMJDY aims at opening one bank account per household at zero balance. Other social security schemes meant for the financial inclusion of the poor include: Pradhan Mantri Suraksha Bima Yojana (PMSBY), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), and Atal Pension Yojana (APY). Furthermore, various social assistance programmes meant for the poor are also functioning such as the National Rural Livelihoods Mission (NRLM), the National Urban Livelihoods Mission (NULM), and the National Land Record Management Programme (NLRMP), among other schemes.

The proper implementation of the various poverty alleviation schemes in the state will have a far reaching effect in achieving the first SDG of reducing the proportion of poor persons in state to half of the present level by 2030. The lackadaisical implementation of these schemes needs to stop and the effectiveness of the poverty alleviation programmes presently implemented in the state need to be rethought and reworked in order to make a serious dent on poverty in the state.

Public distribution System (PDS) is an important constituent of the strategy for poverty alleviation. PDS is operated under the joint responsibility of the Central and State Governments. The Central Govt. takes the responsibilities for procurement, storage, transportation and bulk allocation of food grains at subsidised rates whereas the State Govt. on their part will operate a network of fair price shops through which the essential commodities in the prescribed quantity at prices fixed by the Government will be provided to the target group.

8.4.1 THE CHALLENGES

1. A stagnant economy.
2. Lack of proper data on various dimensions of poverty in the state.
3. Lackadaisical implementation of poverty alleviation as well as social security schemes.
4. Issues of corruption and governance.
5. Degradation of the environment and common property resources on which the poor depend for their livelihood.
6. Need for state institutions to be more responsive and pro-active towards the poor.

7. The conflict trap.
8. Issue of huge unemployment.
9. Problems of frequent bandhs and blockades.
10. Rejuvenating the agriculture sector.
11. Non-existent industrial sector.

Thus, Manipur has huge challenges in achieving sustainable poverty reduction. The new strategy of alleviating poverty must be that of walking solidly on two foot. One foot is comprehensive social security and welfare measures for the people, protection of traditional livelihoods, public health and education, and special programmes for the marginalised including main streaming of gender budget and policies. The second foot must be that of rapid growth of productive sectors so that quality jobs, in accordance with the expectations of the educated younger generations, are created in Manipur. All targets of the SDGs on poverty in the state can be achieved if Manipur can work towards fulfilling these tasks. The roles of both central and state governments are important in achieving these objectives. Let us once again remember the famous Chinese proverb: "Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime."

8.5 SUSTAINABLE POVERTY REDUCTION: MANIPUR'S NEW ANTI-POVERTY STRATEGY

- i. In order to achieve sustainable poverty reduction, the state needs to make growth more inclusive and sustainable.
- ii. The overall pattern of growth and structural change should be along the classic Kuznets-style trajectory⁴, with an increase in the share of the manufacturing sector in both output and employment. A crucial feature of such a positive tendency is agrarian transformation. The ability of the growth pattern to generate more productive and remunerative employment outside agriculture will play an important role.
- iii. Studies have shown that agricultural growth leads to reduction in poverty twice as that of non-agriculture. We need more diversified agriculture for raising the income of farmers and the implementation of proven low-cost technologies to increase agricultural efficiency and output. We need to invest more in Farm mechanization, thereby increasing crop yield and farmers' income.
- iv. However, future employment has to be created in manufacturing and services. In this context, the Make in Manipur initiative, focus on start-ups, Mudra, financial inclusion, etc., are steps in the right direction. Equally, service sector employment has to be promoted. Over time, the share of the organized sector has to be raised while simultaneously improving productivity in the unorganized sector. Ministry

4 The theory shows Income inequality first increases before decreasing after hitting a peak as per-capita income increases over the course of economic development.

of Commerce has identified 12 champion sectors in services and is working with other line ministries with a view to boost growth in these segments. Efforts should be made to enhance exports of potential products.

- v. Sustained economic growth has to be combined with a development-centred poverty relief effort. A targeted poverty alleviation effort is required to narrow the gap between rural urban, hill and valley disparities, and accelerate economic and social development of poverty-stricken areas.
- vi. If the poor lack a guarantee of basic living, it is impossible to achieve sustainable poverty reduction. Thus, the state needs to boost the self-development capability of poverty-stricken areas, household and individuals through development-oriented poverty relief efforts. In addition, providing essential social security programs will guarantee a basic livelihood for the poor and lay the foundation for sustainable-oriented poverty alleviation.
- vii. Poverty relief efforts should be incorporated with social mobilization. Wide-ranging participation of market entities, civil society organisations, non-governmental organizations, and common people is vital to augment the efficacy of poverty relief efforts.
- viii. Rational institutional arrangements will be helpful for poverty reduction.
- ix. MGNREGA should be extended to urban areas of the state. This act must be strictly implemented by involving the people, CSOs, NGOs and the Panchayati Raj institutions. The Right to Education Act, the Food Security Act and systematic investment in public healthcare if properly resourced and implemented, will constitute a giant step in solving the problems of inequality that plague a progressive and healthy Manipur.
- x. The Minimum Wages Act for agricultural workers must be strictly implemented throughout the state. Agricultural credit to peasants and agricultural workers must be made available at 4 % rate of interest. For SCs and STs in both rural and urban areas, credit facilities should be expanded and the credit given at concessional interest rates.
- xi. State/Central Government may focus on the state as a vibrant border trade region with its neighbours and East and South-East Asian countries. In order to realize something really transformative on trade and development, the productive base of the economy should be enhanced at any cost. This calls for a concerted effort to make Manipur's growth more productive and more inclusive in the future.
- xii. Vocational courses should be encouraged by introducing vocational subjects in conventional courses and through market, industry, and institution linkups. Job oriented courses may be introduced in degree colleges to get more job opportunities or self-employment opportunities.
- xiii. Creation of special economic zones, industrial estates, biotech parks, food parks, IT parks, railway projects, and roadway projects including rural roads etc. will provide large-scale employment opportunities to unskilled, semi-skilled and skilled workers.

- xiv. Infrastructure development and projects should be taken up on a war footing without disturbing the social and cultural identities of the various ethnic groups and also by taking into account the natural and cultural landscapes, bio-diversity characteristics, and the broader visual context of custom and heritage places.
- xv. Creation of infrastructure facilities at all tourist spots and promotion of Manipur as a tourist destination in neighbouring countries for foreign tourists throughout the year.
- xvi. The key content of a sustainable poverty alleviation strategy must be the elimination of all factors and obstacles that cause poverty through targeted assistance for the poor and enabling their self-development towards the goal of sustainable poverty reduction.
- xvii. The strategy must target every poor household, individual, and population in a certain way; it must also determine the key factors that cause the poverty of those households and population.
- xviii. The strategy must register poor households and population in a record, and timely update these details, such as family condition, reasons for poverty, and measures taken for assistance. The registration records of poor households and population shall be renewed every year according to changes in their livelihood condition to ensure that all of those in need get appropriate assistance.
- xix. The strategy should evaluate the results of poverty alleviation schemes to ensure that poor households shake off poverty; and, on the other hand, assess the poverty alleviation performance of local governments, so as to urge them to give priority to reducing poverty and improving people's livelihoods.
- xx. The government should take a series of measures to further innovate its poverty relief mechanism, so as to facilitate the implementation of its poverty alleviation strategy and ensure eradication of poverty by 2030.
- xxi. All targets of the SDG goal on poverty can be achieved if Manipur can work towards fulfilling these tasks. The roles of both the central and state governments are important in achieving these objectives.
- xxii. Baseline survey of Below Poverty Line (BPL) can be conducted in community participation basis by Directorate of Economics & Statistics. Baseline Survey result will be used as base case, and targets and goals will be indicated accordingly.⁵

8.6 CONCLUSION

The first SDG is 'no poverty' or ending poverty in all its forms everywhere by 2030. It also aims at reducing the proportion of persons living below the poverty line to half the level of its present ratio by 2030. This means Manipur has to reduce the incidence of poverty from the present 36.9 %to about 18%. Considering the high incidence of poverty coupled with low economic growth, the achievement of the first SDG is a huge

challenge for Manipur. Nonetheless, the goal can be achieved and the need of the hour is sustainable economic growth in the state accompanied by the trickledown effect. The state has a huge role to play if the first SDG is to be achieved in Manipur. Preventing corruption, ensuing proper delivery of social assistance schemes in all its forms and empowering the marginalized people can go a long way in achieving the goal.

A pro-poor development strategy taking into consideration the needs and aspirations of the people must be taken up. Tackling the menacing problem of unemployment and underemployment in both the hill and valley districts by promoting venues for self-employment is the need of the hour. The proper implementation of social security schemes like MGNREGS, NFSA, NRLM, NULM and NSAP etc. could make a huge change in the lives of the poor. Such schemes should be implemented through grassroots level of governance to effectively reach people. The rejuvenation of both the farm and non-farm sector in the state could also go a long way in achieving the desired goal of halving the proportion of poor by 2030.

9

Gender Equality

9.1 MANIPURI WOMEN: PRESENT STATUS AND FUTURE ROADMAP

Goal 5 of the SDGs aims to ensure gender equality and to empower all women and girls. Women and girls represent half the world's population and therefore half of its potential, but gender inequality is pervasive worldwide and impedes social progress. Ending all forms of discrimination against women and girls is not only a basic human right but it is also crucial to accelerating sustainable development; studies have proved that empowering women and girls has a multiplier effect driving up economic growth and development. The SDGs aim to ensure an end to discrimination against women and girls everywhere. There are still huge inequalities in the labour market in some regions with women still systematically denied access to jobs. Sexual violence and exploitation, the unequal division of unpaid care and domestic work and discrimination in public work all remain huge barriers. Ensuring equal rights to economic resources such as land and property are vital targets to realizing this goal, as is ensuring universal access to sexual and reproductive health. There are today more women in public office than ever before but encouraging women leaders will help strengthen policies and legislation for greater gender equality (UNDP 2015).⁶

In view of the global scenario, this chapter attempts to highlight the present status of Manipuri women with respect to goal 5 of the United Nations SDGs. It uses some socio-economic and political indicators available in secondary sources of data to analyse the current position of Manipuri women. The limitation of the chapter is that not all the indicators of the various targets under goal 5 are available for Manipur; hence the need arises to develop relevant indicators and collect data to ensure smooth movement towards achievement of the goals. This chapter gives some tentative suggestions and policy recommendations for a future course of action towards reaching the target by 2030.

9.1.1 WOMEN IN MANIPUR

Women in Manipur occupy a unique status in society, their position and status is comparatively high when compared with women in other states of India. It is true, that like other women, they also perform the triple tasks of housework, productive work, and community managing work, but they are more socially visible outside the home front and are relatively more economically active and independent than

6 <http://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-5-gender-equality.html>

women in the rest of India. The Planning Commission of India, in its National Human Development Report 2001 had calculated an index, the gender disparity index; values of All India and Manipur are given below:

TABLE 9.1: GENDER DISPARITY INDEX, INDIA AND MANIPUR

STATE/COUNTRY	1981	1991
Manipur	0.802	0.815
India	0.620	0.676

Source: National Human Development Report 2001

The higher the gender disparity index, the lower is the gender inequality. Table 9.1 shows that the gender disparity index is higher in Manipur indicating lower gender inequality, compared to all India figures. In fact, the index is highest for Manipur compared to all the other states of the North east, in both 1981 and 1991. Despite the positive figures, we need to question whether there is really less gender inequality in Manipur. Are Manipuri women really able to compare favourably with men on all aspects related to sustainable development goals as the above index suggests? We need to explore that.

The targets and indicators of goal 5 seek to ensure women freedom from discrimination on the basis of sex, freedom from all forms of violence, and points out the need to undertake reforms to give women equal rights to financial and other resources and ownership over property, to recognize and value unpaid care and work, and to ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life, etc.

Discrimination can be in terms of access to education, to paid work on equal terms with men, to equal pay for equal work, etc. In light of these targets and indicators, this chapter explores the current status of Manipur women with respect to various topics such as: (a) women and education, (b) women and decision making, (c) women and economic participation, (d) women and occupational segregation, (e) gender wage gap, (f) women and access to resources, (g) women and reproductive health, (h) women and violence, and (i) women and unpaid work.

9.1.2 WOMEN AND EDUCATION

When women are well-educated, there are positive externalities in the form of favourable changes in reproductive behaviour (delaying marriage, better spacing of children, earlier cessation of childbearing, etc.), better use of health services etc., all of which contribute to lowering infant and child mortality rates, adoption of small family norms, better child care through improved hygiene and nutrition of children, enhanced socio-economic status of families and empowerment of women.

TABLE 9.2: LITERACY RATE OF MANIPUR BY GENDER (1921-2011)

YEAR	FEMALE	MALE	PERSON	GENDER GAP
1921	0.15	7.65	4	7.50
1931	0.30	6.40	3.82	6.10
1941	0.61	9.77	3.25	9.16
1951	2.38	20.77	5.06	18.39
1961	15.93	45.12	11.41	29.29
1971	19.53	46.04	30.42	26.51
1981	29.06	53.29	41.35	24.23
1991	47.60	71.63	59.89	24.03
** 2001	60.50	80.30	70.50	19.80
**2011	70.26	83.58	76.94	13.32

Source: Economic survey Manipur 2018-19, (p.12) Table No. 2.17. Directorate of Economics and Statistics Govt. of Manipur

**Excluding Mao- Maram, Paomata and Purul sub- division of Senapati District.

Women often receive less education than men because of social norms and discriminatory treatment towards them. There has been less investment in education of daughters from the earliest times because they were perceived as bringing no return to parents, whereas investment in sons was believed to have larger economic payoffs (Malhotra, Vanneman and Kishor 1995: 285). The gender gap in education has followed a shaped path over the years but a double-digit gap is still there. From 29.29 in 1961 it declined to 13.69 in 2011.

9.1.3 WOMEN IN DECISION MAKING

An important aspect in the empowerment of women is the extent of their involvement in the process of decision making whether at the household level or at the level of the community or society, that is in the Government. The table below gives available figure for Manipur.

TABLE 9.3: NO. OF WOMEN ELECTED M.L.A IN STATE ASSEMBLY ELECTIONS (2012 & 2017)

MANIPUR	WOMEN	MEN	TOTAL	% OF WOMEN TO TOTAL
2012	3	57	60	5%
2017	2	58	60	3.3%

Source: Men and Women in India, CSO (2016), New Delhi.

The representation of women in formal electoral politics is quite low as is evident from the result of two assemble elections. For 18 years, that is from 1972 until 1990/91 Manipur had to wait for the first woman MLA, the late Hangmila Shaiza from Ukhrul Assembly constituency in 1990/91. Then K. Apabi Devi from Oinam AC and later W. Leima Devi from Naoriya Pahanglakpa AC. W. Leima Devi went on to become a Minister of State. In the 10th Legislative Assembly elections, 2012, three women MLAs were elected at the same time, namely O. Landhoni Devi (Khangabok Assembly AC), AK. Mirabai Devi (Patsoi AC), and Nemcha Kipgen (Kangpokpi AC). In 2017 AK Mirabai Devi and Nemcha Kipgen were successful and latter became a Minister. Thus, Manipur had just 8 women MLAs and one woman MP in some 45 years of elective exercise.

TABLE 9.4: STATUS OF WOMEN IN PANCHAYATI RAJ INSTITUTIONS (AS ON 15-11-2016)

STATE/ COUNTRY	ELECTED REPRESENTATIVES		
	TOTAL	TOTAL WOMEN	% OF WOMEN
Manipur	1784	868	49
India	2917336	1341773	46

Source: Ministry of Panchayati Raj, Government of India.

The picture regarding representation at local Panchayati Raj institutions are a bit different. We see that at the local level, women are well-represented, sometimes crossing the one-third mark. For instance, in the 2007 Panchayat elections, out of 165 Gram Pradhans, there were 110(66.7%) men and 55(33.3%) women. Out of 1,511 GP members, 962(63.7%) were men and 539(35.7%) were women. Out of 4 Zilla Adhyakshas, two were men and two were women. Out of 61 ZP members, 39(63.9%) were men and 22(36.1%) were women. There are no Manipuri women judges in the Supreme Court and High Courts but their proportion in lower courts is quite high.

TABLE 9.5: NUMBER OF WOMEN JUDGES IN MANIPUR

COURTS	WOMEN	MEN	TOTAL	% WOMEN
High Courts	-	3	3	-
Lower Courts*	12	15	27	44

Source:

I Department of Justice, Ministry of Law and Justice, Government of India (as on 6- 10-2016).

II * <http://hcimphal.nic.in> accessed on 29-06-2017.

9.1.4 DECISION MAKING IN THE HOUSEHOLD

The participation of women in household decision making is quite high in Manipur. But this does not get translated into greater decision making power at the state level. They are still under-represented at policy and decision-making levels. Women

in Manipur exercise an active role as Meira Paibis, as a collective force in times of crisis they are strong, but their contributions are forgotten later as they are still under the dictates of patriarchy and when it comes to being in the forefront of decision making power, we see a diminished role of the Manipuri women. They are yet to make a mark in society as capable leaders and decisions makers.

TABLE 9.6: PARTICIPATION OF CURRENTLY MARRIED WOMEN IN HOUSEHOLD DECISION (%)

STATE /COUNTRY	URBAN	RURAL	TOTAL	TOTAL (2005-06)
Manipur	96.4	96.0	96.2	94.4
India	85.8	83.0	84	76.0

Source: NFHS 4 (2015-16), Manipur & India.

9.2 WOMEN AND ECONOMIC PARTICIPATION

Economic disparity is also another important feature of women's lives. Women's economic contribution is limited when women are not employed. Globally, women are less engaged in paid employment than men. Women's economic participation equals women's economic empowerment. Increasing the number of women in the workforce is an important objective, but if they enter it under poor conditions, their empowerment may not be improved. Exploitation, dangerous or stigmatized work, low pay and job insecurity are unfavourable terms often encountered by women (HDR 2016).

According to NSS data, both in urban areas and in rural areas, male work participation rates (WPR) are higher than the female WPR. Rural female WPR have declined for Manipur from 35.95% in 1983 to only 21.2 % in 2009-10, while that of India fell from 34% to 26.1%. The figure has increased slightly to 26.2 % in 2011-12. The figures for female WPR in rural areas for India in 2009-10 are higher than that of Manipur.

TABLE 9.7: WORK PARTICIPATION RATE MANIPUR VIS-À-VIS ALL INDIA (1983-84-2011-12) (PS+SS)

STATE/ COUNTRY	AREA	GENDER	1983 ^{38TH} R	1987- 88 ^{43RD} R	1993- 94 ^{50TH} R	1999- 00 ^{55TH} R	2004- 05 ^{61ST} R	2009- 10 ^{66TH} R	2011- 12 ^{68TH} R
Manipur	Rural	Male	50.85	43.7	47.7	52.4	52.4	49.9	51.0
		Female	35.95	19.1	30.8	35.1	35.1	21.2	26.2
	Urban	Male	46.95	37.5	43.4	45.6	45.6	47.2	45.6
		Female	27.81	12.3	22.3	22.1	22.1	14.6	18.2
India	Rural	Male	54.7	53.9	55.3	53.1	54.6	54.7	54.3
		Female	34.0	32.3	32.8	29.9	32.7	26.1	24.8
	Urban	Male	51.2	50.6	52.1	51.8	54.9	54.3	54.6
		Female	15.1	15.2	15.5	13.9	16.6	13.8	14.7

Source: Various NSS Rounds, Note: R= Round

9.2.1 WOMEN AND OCCUPATIONAL SEGREGATION

Women's employment is concentrated in a relatively small number of occupations dubbed 'female areas' which tend to attract lower rewards and less prestige. Women are more likely to be working in 'men's jobs' than the opposite, but, as a rule, women are employed in a narrower range of occupations than men. They dominate in clerical and secretarial jobs and in low-end service occupations (as shop assistants, waitresses, maids, hairdressers, dressmakers) and as professionals, they are most likely to be teachers or nurses. These 'female occupations' in general, pay less and have lesser status and advancement prospects. Horizontal segregation refers to the distribution of men and women across occupations (e.g. women as maids and secretaries, and men as truck drivers and doctors); while 'vertical segregation' refers to the distribution of men and women in the job hierarchy in terms of status within an occupation, and one sex is at a higher grade or level (e.g. production workers versus production supervisors; or doctors versus nurses, senior managers, versus junior managers) (United Nations 1999; Anker 2002). Women and men thus are concentrated at different levels of the labour hierarchy. There are barriers which hamper women's movement into more senior and managerial positions, referred to as the 'glass ceiling.' Even in occupations dominated by women, men often occupy the more skilled, "responsible" and "better paid positions" (United Nations 2009: 29).

Occupational segregation by gender occurs everywhere. It causes labour market rigidity and economic inefficiency, wastes human resources, prevents change, disadvantages women and perpetuates gender inequalities.

Stereotypical characteristics of women affect occupational segregation by gender (Anker 2002: 140-142). Table 9.8 below illustrates this argument.

TABLE 9.8: WOMEN AND STEREOTYPES

	COMMON STEREOTYPES AND CHARACTERISTICS OF WOMEN	EFFECT ON OCCUPATIONAL SEGREGATION	EXAMPLES OF TYPICAL OCCUPATIONS AFFECTED
Positive	Caring nature	Helps qualify women for occupations involving care for others, e.g. children, the sick, older people	Nurse, Doctor, Ayah, social worker, Teacher, Midwife
	Skill and experience in household-related work	Helps qualify women for occupations that are frequently home-based (and almost carried out by women) often as unpaid household work	Maid, Housekeeper, Cleaner, Cook, Waiter, Launderer, Hairdresser, Spinner, Sewer, Weaver, Spinner, Sewer, Knitter, Tailor/Dressmaker
	Greater manual dexterity	Helps qualify women for occupations where finger dexterity is important	Sewer, knitter, weaver, Tailor/Dressmaker, Typist

	COMMON STEREOTYPES AND CHARACTERISTICS OF WOMEN	EFFECT ON OCCUPATIONAL SEGREGATION	EXAMPLES OF TYPICAL OCCUPATIONS AFFECTED
	Attractive physical appearance	Helps qualify women for occupations where physical appearance helps attract and/or please customers	Receptionist, Salesperson, Shop Assistant
	Disinclination to supervise others	Helps disqualify women for all types of supervisory and managerial occupations	Manager, Supervisor, Government executive and Administrator, Legislative official
Negative	Lesser ability in science and mathematics	Helps disqualify women for occupations where high levels of scientific and mathematical knowledge required	Physical Scientist(chemist/physicist) Architect, Engineer, Mathematician, Statistician
	Lesser willingness to travel	Helps disqualify women for occupations where considerable travel is required	Aircraft Officer, Ship officer, Transport equipment driver/Operator
	Lesser willingness to face physical danger and use physical force	Helps disqualify women for occupations where physical danger is relatively great	Fire-fighter, Police Officer, Security Guard, Miner/Quarrier

9.2.2 GENDER WAGE GAP

Women's concentration in lower-paying predominantly female jobs and their exclusion from higher paying jobs held mostly by men both help explain the gender wage gap. Human capital theorists attribute the gender wage gap where women earn less than men to the difference in the kind and amount of human capital each has accumulated. Feminist scholars point out the many ways in which social factors shape wage setting and wage inequality. They have also suggested that institutional or structural factors as well as individual level factors contribute to the gender wage gap.

TABLE 9.9: AVERAGE DAILY WAGE FOR INFORMAL CASUAL WAGE WORKERS BY GENDER FOR THREE DIFFERENT ROUNDS

AVERAGE DAILY WAGE RATE(IN RS)	1999-00	2004-05	2009-10
Male	53.32	82.73	107.75
Female	34.16	75.04	88.30
Gender Gap	19.16	7.69	19.40
Female Wage (as % of MaleWage)	64.1	91.40	82.00

Source: Calculated from the Unit Level Data of NSSO, different rounds. Ph. D Thesis. G. Ranita (2015).

The above table shows that among the informal casual workers, women are getting lower wages than their men counterparts for all rounds on average. It is evident from the above that there exists a gender wage gap in the informal work sector even though the extent of the variation is different for different rounds.

9.3 WOMEN AND ACCESS TO RESOURCES

Gender differences in access to resources occur because men are more likely to be perceived as workers needing these inputs and because laws sometimes bar women from ownership of property and other goods needed for production or for collateral purposes. The right to land in law is never implemented. Traditional India had seen women only as members of families or groups, as daughters, wives and mothers and not as individuals with an identity or right of their own. Gender differences in access to information occur mainly because of women's lesser freedom of movement from the home and their lack of time to join membership organizations or interact in the market due to domestic responsibilities and/or cultural restrictions (Kantor 2002: 287). Regarding access to skill improvement and training, extension services is an example, which reaches only men, with women continuing to perform unskilled tasks in the agricultural sector.

TABLE 9.10: WOMEN HAVING BANK/SAVING ACCOUNT (%)

STATE/ COUNTRY	URBAN	RURAL	TOTAL(2015)	TOTAL(2005-06)
Manipur	42.9	29.7	34.8	8.0
India	61.0	48.5	53.0	15.1

Source: NFHS, 4(2015-16), Manipur and India.

The percentage of women having bank accounts is still low in Manipur compared to the overall picture of India as a whole. In rural areas, it is as low as just 29.7%. Only one third of the women population has a bank account compared to more than 50% of the all India average. But the figure is high compared to that of 2005-06. This figure does not include the accounts opened under Prime Minister Jan Dhan Yojna, a new scheme for financial inclusion. If it is included the percentage may be higher.

TABLE 9.11: WOMEN OWNING A HOUSE/LAND (ALONE OR JOINTLY WITH OTHERS)

STATE /COUNTRY	URBAN	RURAL	TOTAL
Manipur	72.7	68.1	69.9
India	35.2	40.1	38.4

Source: NFHS- 4 (2015-16)

According to NFHS-4, the proportion of women owning a house/land alone or jointly with others is quite high. The question is whether this really gets translated to actual ownership at times of divorce/widowhood etc. and whether the ownership is in name only.

9.4 INFORMATION AND COMMUNICATION TECHNOLOGY AND WOMEN EMPOWERMENT

TABLE 9.12: WOMEN HAVING MOBILE PHONE (%)

STATE/COUNTRY	URBAN	RURAL	TOTAL
Manipur	71.6	57.8	63.1
India	61.8	36.4	45.9

Source: NFHS 4(2015-16), Manipur & India.

The figures for women having a mobile phone are quite high for Manipur, better than the all India figures. However, there is still a rural-urban gap of 13.8 in Manipur. In this era of the digital age, the use of mobile phones is becoming an indispensable part of daily life. Therefore, women need to enhance further use of ICT in the coming days in order to catch up with the digital revolution which is taking place at a rapid pace.

9.5 WOMEN AND REPRODUCTIVE HEALTH

Health can be considered a person's greatest possession and is a major determinant of a person's quality of life. Health of women is an important factor in determining the overall health of the society. Not only is an investment in health a investment in human resources development on which the nation's development depends, but most importantly, health improves a women's quality of life, and hence is an important element in fostering human development.

Reproductive health is one of the most important aspects of a woman's health and Target 5.6 of the SDGs seeks to ensure that.

TABLE 9.13: FERTILITY (CONTROL OVER THEIR OWN BODIES)

COUNTRY/ STATE	REGION	TOTAL FERTILITY RATE 15-49			
		NFHS-1	NFHS-2	NFHS-3	NFHS-4
India	Urban	2.70	2.27	2.06	1.8
Manipur		nc	2.36	2.35	2.1
India	Rural	3.67	3.07	2.98	2.4
Manipur		3.03	3.41	3.07	2.9

Source: IIPS- various national family health surveys, NFHS-1, NFHS-2, NFHS-3 and NFHS-4.

The percentage of women married before 18years of age are lower for Manipur compared to all India figures. Percentages of women who use family planning methods are lower for Manipur compared to India as a whole, both in the use of any method as well as in the use of modern methods. Unmet needs for family planning and for spacing are also higher for Manipur compared to India. Except for the hill districts of Ukhrul

and Tamenglong, the percentage of mothers who have an antenatal check up in the first trimester is higher for Manipur as compared to all India figures. The percentages of mothers who had full antenatal care was higher for Manipur compared to all India figures, except for the hill districts of Chandel, Churachandpur, Ukhrul, Senapati, Tamenglong. Delivery care in terms of institutional births and institutional births in public facilities were low for all the hill districts of Manipur. The percentage of such care for the valley districts of Imphal East, Imphal West and Bishnupur district was better than the all India figure. The percentages of pregnant women, all women and men with anaemia was lower for Manipur for all districts compared to all India figures which says much about the diet of people of Manipur.

9.6 WOMEN AND VIOLENCE

Violence against women in India may span their entire life-cycle; from conception until death. Such violence may begin with sex-selective abortions and female infanticide as well as discrimination in the upbringing of girls versus boys; in terms of opportunities for education and skill formation, in terms of food and nutrition, and also in terms of the household work that the girl child is expected to share. It may include: health care disparity, child marriage, even child prostitution, covert and overt acts of emotional and physical abuse, forced marital relations, sexual exploitation and rape within marriage and without, incest, dowry related abuse and death, destitution of widows, divorcees and the deserted, and even female genital mutilation. "Most of these are not even recognised as a form of violence and are often condoned or justified on grounds of religious, cultural and traditional social norms or on grounds of attracting social stigma and thus jeopardising the social status of the concerned family" (IAMR 2011: 105-106; Planning Commission 2001).

In recent years, Manipur has seen an increase in domestic violence and instances of wife battering in Manipur homes. The number of cases filed at the family courts relating to the demand for maintenance increased from 133 in 2001 to 203 in 2003 (IHD 2006: 240). Women in Manipur have greater access to decision making power in the home. Yet the incidence of domestic violence is to the extent of 43.9% according to the national family health sample survey-3 (IIPS 2007). Evidently, if there is greater decision-making power, it should imply more power, and hence less violence. It could be interpreted that women have greater access to decision-making power because of greater economic independence. The man of the house could resent this, leading to incidents of violence. On the one hand, women of Manipur have greater economic independence; on the other hand, they are still not free from drudgery and abuse in their lives. Though there are practically no cases of dowry harassment nor of bride burning, rape, molestation, forced marriage, and marital violence rising divorce rates and polygamy also prevail in Manipur. The total number of crimes against women has risen from 105 in 1999 to 147 in 2001 according to the DIG crime branch, Imphal. But these are only reported cases. There may be many unreported cases.

NFHS-3 data shows that percentages of women aged 15-49 who have experienced different forms of violence, are higher for Manipur compared to the all-India figures.

TABLE 9.14: DOMESTIC VIOLENCE

FORMS OF VIOLENCE	STATE/ COUNTRY	NFHS- 4(2015-16)	NFHS-3(2005- 06)
Ever-married women who have ever experienced spousal violence (%)	Manipur	53.1	43.8
	India	28.8	37.2
Ever-married women who have experienced violence during any pregnancy (%)	Manipur	3.4	na
	India	3.3	na

Source: NFHS-3 and 4 (2005-06 & 2015-16).

Thus, Manipuri women are not free from violence and abuse in their lives despite their economic independence. This could entail that social norms still restrict women from enjoying their freedom of enterprise as a full-fledged human being, in a liberal atmosphere that guarantees her freedom of expression and freedom of just being herself, without having to bow to social dictates of what a good woman should be.

The rate of incidence of crimes against women has declined from 2014 to 2015. The most positive aspect of women in Manipur is that there are no dowry related crimes against women. However, the percentage of crimes against women to total crimes within the state is higher than that of India as a whole. For example, it is 7% in 2014 for Manipur, while it was only 5% for India in 2014. The figures are 5% for Manipur in 2015, but 4% for India.

9.7 WOMEN AND UNPAID WORK

Women's triple role is productive⁷, reproductive⁸ and community managing⁹ work. This subsection tries to address the issues related to reproductive work of women or women's unpaid work, particularly unpaid household labour. Such labour is variously named 'caring labour', 'family labour', 'unpaid labour', 'reproductive labour', 'social reproduction', etc. (Folbre and Nelson 1995), which feminists have been pointing out regularly as 'invisible', taken for granted and not recognized as work that is of economic value.

7 Productive role comprises work done by both women and men for payment in cash or kind. It includes both market production with an exchange value, and subsistence/home production with an actual use-value, but also a potential exchange value.

8 The reproductive role comprises the childbearing/rearing responsibilities and domestic tasks undertaken by women, required to guarantee the maintenance and reproduction of the labour force. It includes not only biological reproduction, but also the care and maintenance of the workforce (husband and working children) and the future workforce (infants and school going children)

9 The community managing role comprises voluntary unpaid work/activities undertaken primarily by women at the community level, as an extension of their reproductive work. This is to ensure the provision and maintenance of scarce resources of collective consumption, such as water, health care and education.

TABLE 9.15: RATE (PER LAKH WOMEN) OF INCIDENCE OF CRIMES COMMITTED AGAINST WOMEN DURING 2015

	RAPE	KIDNAPPING & ABDUCTION	DOWRY DEATHS	CRUELTY BY HUSBAND & RELATIVES	ASSAULT WITH INTENT TO OUTRAGE HER MODESTY	INSULT TO MODESTY	DOWRY PROHIBITION ACT	TOTAL CRIMES AGAINST WOMEN	TOTAL CRIMES AGAINST WOMEN	TOTAL COGNIZABLE CRIMES	% OF ALL INDIA CRIME AGAINST WOMEN	% OF CRIME AGAINST WOMEN TO TOTAL CRIMES WITHIN STATE.
Manipur (2015)	3.6	7.4	0	3.1	6.6	0.2	0	20.8	266	4851	0%	5%
Manipur (2014)	5.9	8.1	0.1	3.2	7.8	0	0	26.7	337	4509	0%	7%
All India (2015)	5.7	9.8	1.3	18.7	13.6	1.4	1.6	53.9	327394	7326099	100%	4%
All India (2014)	6.1	5.1	1.4	20.5	13.7	1.6	1.7	56.3	337922	7229193	100%	5%

Source: Crime in India, National Crime Records Bureau, Ministry of Home Affairs.

Men and Women in India 2016.

Unpaid care work consists primarily of housework such as cooking, cleaning, and washing clothes, and caring for a husband, children, the elderly, the sick or disabled. The three words each have different meanings. 'Unpaid' means a person performing the work is not receiving any wages. 'Care', is serving people for their well-being - it does not mean that the serving is always done with love. 'Work' represents time and energy cost; and it usually arises from social or contractual obligations (Lee 2005: 1). Human development also depends on the amount of work and leisure time that a woman has at her disposal, and the drudgery associated with household work can affect a women's capability to live a good life.

In India, the Central Statistical Organization carried out a pilot time-use survey in 1998-99 on an experimental basis in six selected states; Haryana, Madhya Pradesh, Gujarat, Orissa, Tamil Nadu and Meghalaya.

The average Indian male spent about 42 hours a week, (or 6 hours a day), as compared to only about 19 hours a week, (or about 2.7 hours a day) in SNA activities. The situation changes completely when we consider extended SNA activities. Men spend only about 3.6 hours (3 hours 39 minutes a week, or 31 minutes a day) as compared to 34.6 hours (34 hours and 38 minutes a week or 4 hours and 57 minutes a day) by females on domestic work. Thus, women devote about ten times more time than men to extended SNA activities (CSO 2000: 57).

At present there are only two studies on unpaid work for women in Manipur, both by Mayanglambam (2010, 2016); one on tribal women and another on valley women. The figures she calculated are as given below.

TABLE 9.16: AVERAGE TIME SPENT ON HOUSEHOLD, PAID AND UNPAID WORK PER DAY BY SEX, MANIPUR (IN HRS)

TYPE OF WORK	VALLEY DISTRICT		HILL DISTRICT		TOTAL	
	F	M	F	M	F	M
Household chores (Non-SNA)	7.4	2.3	8.6	2.7	8	2.5
Unpaid work(Non-SNA+Care)	7.7	4.6	7.5	6.6	7.6	5.6
Total Unpaid work	15.1	6.9	16.1	9.3	15.6	8.1
Paid work(SNA)	7.3	8.4	7.5	8.2	7.4	8.3

Source: Sarda M.(2010, 2016) Personal Time use Survey, Manipur.

Mayanglambam's table lists productive work by women, unpaid productive work consists of household chores and care work, which is taken as extended SNA activities in the Indian classification of Time Use activities. The burden of unpaid work is borne disproportionately by women. The average daily work hours of women are more than that of man by more than 50% both in hill and valley districts

of Manipur. However, unlike other parts of India women's participation in paid work is closer to men's with a difference in participation rate less than 1%. Thus, there is little time for leisure and personal care for women as they have to bear the double burden of work. This may reduce the quality of their lives and also affect their overall productivity in paid work too.

MAIN FINDINGS

Women and Education

- Gender gap has narrowed over the years. It declined from 29.29 in 1961 to 13.69 in 2011 Census.
- Except for high school level (Classes IX-X), the gross enrolment ratio for boys exceed girls by about 7-8 percentage points for different levels of school education. Gender parity index is yet to reach perfect parity.

Reproductive Health

- The percentage of early marriage of women before 18 years of age is lower as compared to the all India average. Within Manipur, Imphal West and East have lower percentages compared to the remaining 7 districts.
- Family Planning: As for family planning methods, it has been totally women-centric, i.e. participation of male is negligible (<1%). The use of measures such as oral pills and IUD insertion may have numerous side effects that can affect women's health.
- The unmet need of family planning is still high, around 23-33% including spacing of children etc.
- Maternal Care: The proportion of women having antenatal care (full and first trimester) and delivery care are very low in the three hill districts of Manipur: namely Ukhrul, Senapati, and Tamenglong respectively in comparison to the overall average picture of Manipur. Institutional delivery in a public facility stood lowest in Senapati followed by Ukhrul.
- Anaemia: Though the incidence/prevalence of anaemia is lower than all India average, it is still higher when compared to men in all districts of the state.

Women in Decision Making

- Women in Manipur are hardly involved in major decision making processes. The representation of women in formal electoral politics is quite low despite their active role as Meira Paibis.
- The picture regarding representation of women at local Panchayati Raj institutions is a bit different. We see higher representation of women mainly due to reservations.
- The participation of women in household decision making is quite high compared to the overall picture of India.

Access to Resources

- The percentage of women having bank accounts is still low in Manipur compared to the overall picture of India as a whole.
- According to NHFS-4, the proportion of women owning a house/land alone or jointly with others is quite high. The question is whether this really gets translated to actual ownership at times of divorce/widowhood etc. and whether the ownership is in name only.
- Economic Participation
- According to NSS data, both in urban and in rural areas, male work participation rates are higher than female work participation rates.
- Women share the burden more or less equally with men in agriculture, but they predominate in trade and manufacturing, especially in household industry, main household industry for women being handloom weaving.
- The share of women employed in the organised sector is quite low, only comprising about 25% of total employment.
- The majority of women are working in the informal sector or unorganised sector- 72.7% and 63.6 % in rural and urban areas (NSSO, 2011-12). The figure may be higher if informal employment is added. This has implications for job security and quality.
- There is also occupational segregation by sex with men dominating in managerial and higher positions.
- Declining labour force participation rates in both rural and urban areas from 36.5 % to 27% (a decrease of 9 percentage points in rural areas) and 31.7% to 20.4 % in urban areas (a decrease of 10.3 percentage points).
- WPR for women is marginally higher by 1.1% in rural areas but declining work participation rates in urban areas is observed by 2.9% points between 1999-2000 and 2011-12. The declining trend in both WPR and LFPR is a matter of concern towards empowerment of women.
- The unemployment rate by 3 measures of unemployment has increased marginally.
- Educated Unemployment: The number of female job seekers has increased by 50% during the period 1999-00 to 2015(as on March 2015).
- The Economic Census (6th, 2013) results show that 82% of total enterprise is owned by women, irrespective of the size of the enterprise. Furthermore, it is worth noting that 92% of the women owned enterprises are perennial; this reflects the reality that Manipuri women are hard-working in spite of all the odds. There is need for institutional support for the growth of women entrepreneurs.
- The latest economic Census (6th, 2013) results reveal the predominance of women in the non-agricultural establishment, both in rural and urban areas of Manipur. However, most of the enterprises are run without hiring labour i.e., own account enterprises (low productivity and low scale).

- Sources of Finance: 95% of the total enterprises run by women are self-financed. The availability of adequate institutional finance is the necessary condition of enterprise growth.

Unpaid Work

- The burden of unpaid work is borne disproportionately by women. The average daily work hours of women are more than that of man by more than 50% both in the hill and valley districts of Manipur. However, unlike other parts of India, women's participation in paid work is closer to men's with difference in participation rate of less than 1%. Thus, there is little time for leisure and personal care for women as they have to bear the double burden of work. This may reduce the quality of their lives and also affect their overall productivity in paid work too.
- Low availability of clean fuel means more time taken by women to cook food as well as the risk of indoor air pollution through using unclean fuel and inefficient cook stoves which can affect women's health adversely.

9.8 THE TRANSGENDER OF MANIPUR

Transgender is treated as 'Third Gender' for the purpose of safeguarding their rights under Part III of the Indian Constitution and laws made by the Parliament and the State Legislature.

- i. Centre and State Governments are to take steps to treat them socially and educationally backward classes of citizens and extends all kinds of reservation in cases of admission in educational and public appointments and frame various social welfare scheme for their betterment.
- ii. A transgender Welfare Board, Manipur has also been constituted.

According to the 2011 census, Manipur has 1,343 transwomen. There has not been a survey of transmen. Transgender in Manipur have carved a niche in the fields of art, culture and other socio-economic activities. Shumang Leela, the open air theatre, has been an integral part of Manipuri society since time immemorial where men portray women. Because of their contribution to Shumang leela, religious functions and other forms of art, transgender are respected in Manipuri society. People do not mock or look down at them as a social nuisance. The multitude of livelihoods available to them makes gives them greater opportunities than their counterparts in the rest of India.

There are numerous beauty parlours in Manipur that are exclusively run by transgenders catering to the fast-growing demand from beauty-conscious housewives and girls for their services. Some have even opened beauty parlours in Delhi, Kolkata and Kerala. Others run eateries and hotels that are doing reasonably well. There are some hotels exclusively run by these transgender at Moreh, the border town. Despite the efforts of voluntary organisations such as All Manipur Nupi

Maanbi Association (AMNMA), an organisation of transgender people, transgender in Manipur often choose to live in denial and fear of being shunned by society due to their identity which is still not accepted by many. Civil society organisations and the government should initiate measures to enhance our understanding of the problems faced by transgender so that they can come out and lead a normal and productive life. Socioeconomically poorer MSM can be prioritised on the grounds of greater vulnerability to HIV infection.

9.9 WOMEN RELATED SCHEMES

In order to give proper care, nutrition and benefits to women, social welfare Department has implemented many new schemes viz,

- a. Pradhan Mantri Matru Vandana Yojana (PMMVY), a maternity benefit scheme for all pregnant women & Lactating Mothers (PW & LM) through direct Benefit Transfer (DBT). The scheme is for pregnant mothers as on 1/1/2017 for the first born child and provides Rs. 5000/- in 3 instalments i.e., at the time of registration, third trimester and first immunization of the child. The fund is transferred onto the bank account through PFMS. From the starting of the scheme till date 26,618 numbers of beneficiaries have benefitted from the scheme.
- b. POSHAN Abhiyan, a centrally Sponsored Scheme which aims at reducing malnutrition, adopting a convergent, life cycle and result oriented approach. It focuses on adolescent girls pregnant women, lactating mothers and children from 0-6 years of age. The first 1000 days of a child are most critical in addressing under nutrition, which includes the nine months of pregnancy, six months of exclusive breastfeeding and the period from 6 months to 2 years. Timely interventions during this period also contribute to improvements in birth weight and reduction in both infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR). An additional one year of sustained intervention (till the age of 3 years) would ensure that gains of the first 1000 days are consolidated. Further, continued attention on children in the age group of 3-6 years would contribute to their overall development.
- c. Mahila Shakti Kendra (MSK) aims at providing one stop convergent support services to rural women in the area of digital literacy, skill training, health and nutrition.
- d. Beti Bachao Beti Padhao is a scheme to empower the girl child and enable her to receive education. The department has also taken up a lot of State level campaigns to ensure successful implementation of the scheme. Lots of awareness programmes are being taken up for empowerment of women.
- e. Social Welfare Department is also giving provision of Crèches and Child care centres under National Crèche Scheme. It is Centrally Sponsored Scheme under the Ministry of Women and Child Development, Government of India for the children of working mothers. The scheme provides Day Care to Children within the Age group of 0-6 years of working mothers belonging to families whose monthly income is not more than 12,000/- only.

- f. Women Helpline '181' is a 24/7 toll free helpline launched in the State on 23rd June 2017 by the State Social Welfare Minister Smt. Nemcha Kipgen. It provides toll-free – 24-hours telecom service to women affected by violence and facilities crisis and intervention through referral to the appropriate agencies. The total number of calls received from the inception till October 2019 are 13242 out of which 401 calls with cases. Total cases solved are 370 and 31 cases are under process.
- g. Financial Assistance to Poor and Needy Widow is a scheme with the objective to provide social security by way of giving one-time financial assistance @ Rs. 20,000/- each to the poor and needy widows in the age groups of 18-40 years
- h. One Stop Centres aims at providing integrated support and assistance under one roof to women affected by violence, both in private and public space, within the family, community and at the workplace. One Stop Centres (OSC) is being set up in each of the 16 Districts of the State.
 - i. Working Women Hostel with Day Care Centre is to provide availability of safe and conveniently located accommodation for working women, with day care facility for their children up to the age of 5 years,
 - ii. Vocational Training is also given to women in the women Training Institute, Takyelpat, in various vocational streams such as Tailoring, Wool Knitting, Computer Training etc.

TRANSGENDER

The Ministry of Social Justice and Empowerment, Government of India has formulated an umbrella Scheme comprising of the following five Centrally Sponsored Schemes on the funding pattern of 75:25 between Government of India and State for the welfare of the Transgender persons as shown below:

- i. Scheme for financial support to the parents of Transgender Children.
- ii. Scheme for pre-metric Scholarship for the Transgender students studying in classes VII to X.
- iii. Scheme for post-metric Scholarship for the Transgender students studying in classes XI and above for studies in India.
- iv. Scheme of assistance for skill development training to Transgender persons.
- v. National Pension Scheme for Transgender person.

OTHER SCHEMES

Besides the above mentioned schemes, Social Welfare Department is also implementing new Schemes for the disabled and old aged viz, Chief Ministergi Shotharabasingi Tengbang (CMST) under which there are five sub-schemes as shown below:

- i. Care Giver Allowance/ Maintenance Grant to Persons with Disabilities with High Support Needs @ Rs. 1500 /- per months.

- ii. Self-Employment Loan with subsidy to the persons with Disabilities along with skill training.
- iii. Scholarship to Students with Disabilities @ Rs. 3000/- per annum for classes I-V, Rs. 4000/- p.a for classes VI-VIII, Rs. 6000/- p.a. for classes IX –XII and Rs. 8000/- p.a. to Graduate and above.
- iv. Free –Travel & Concession to persons with Disabilities.
- v. Maintenance Grant for Homeless Older persons @ Rs. 1000/- per months.

9.10 SUGGESTIONS AND POLICY RECOMMENDATIONS

- Policies must be formulated taking into account three roles of that women perform in the Society; i) productive role (paid work), ii) reproductive role (household labour and care work for child and elders), and iii) community managing role (in Manipur's context it could be a role such as Meira Paibis).
- A policy package for fostering self-employment is required as a first step towards empowerment.
- Need for gender sensitive planning of civic amenities by providing crèche facilities, clean, well-maintained toilets, feeding rooms with provision of adequate supply of water, construction of storage facilities wherever feasible, and ensuring hygienic conditions and safety of working women.
- Public policy on education must be restructured; vocational skills need to be developed. Steps should be taken to raise awareness about the importance of education. Adult education should be encouraged.
- Attempts should be made towards monetary valuation of unpaid household labour.
- Macro-economic policies should be streamlined taking into account women's reproductive and care-giving work which consumes a considerable proportion of their time and energy. There is need for designing more egalitarian and gender-sensitive macroeconomic policies.
- The statistical system of the State should be tuned to produce reliable and timely statistics on issues related to women. Better methods of collecting data on women in the unorganized sector should be evolved to improve the quantity and quality of information on women.
- Feminist development critiques insist that a gender perspective should be built into all development issues. Using a gender perspective, we should ask, what kind of development policies can best promote the interests of women.
- Women must be empowered to hold the authority accountable, answerable to their promises, and to call for corrective action when they fail to deliver. Empowerment is necessary for monitoring and advising.
- There is need for more efficient and equitable sharing of time, resources

and family responsibilities among men and women, and flexible workplace innovations for them to ease the intense time pressures on working women.

- The effort to integrate unpaid work into the macro-economy must include not only time use surveys and valuation processes and satellite accounts, it must also include efforts to get the public interested in such things.
- The economic empowerment of women needs to go along with political empowerment which would improve their bargaining power both in the household, at work and in society as a whole.
- Filling gender gaps in the process of development should be worked out by specific attention to gender needs.
- Capacity building efforts should be taken up to increasing the productivity of women's labour by enabling their access to extension services, credit, assets, education, information and skill training; and on the other hand ensuring access to proper market outlets for their products; increase control over their own income, increase their ability to participate in the political processes, empower to take advantage of all opportunities in life.

10

Industry, Innovation and Infrastructure

10.1 INTRODUCTION

Industrial development has been an important determinant of the course of our history. From the first steam engines to the first assembly lines, to today's truly global production chains and processes, industry has changed our lives. But without sustainable practices and infrastructure in place, recent growth has left vast sections of people behind accentuating inequality and thus more inclusive policies began to be seriously considered. Industrialisation is a universal goal of economic growth irrespective of level of growth. At all levels of development, industry has been an important primary driver in alleviating poverty, achieving food security and minimizing damage to the environment. While industrialization was not factored into the Millennium Development Goals framework, inclusive and sustainable industrialization now features prominently in the post-2015 development discourse.

Industrialization offers extensive opportunities for the employment of women and, in view of advances in technology, creates increased demand for skilled workers which, in turn, has stimulating effect on the development of education and training facilities. The Lima Declaration, adopted by UNIDO's Member States in December 2013, set the foundation for a new vision of inclusive and sustainable industrial development (ISID) and highlighted the role of industrialization as a driver for development. "Inclusive" in this context means that industrial development must include all peoples, as well as the private sector, civil society organizations, multinational development institutions, and offer equal opportunities and an equitable distribution of the benefits of industrialization to all stakeholders. The term "sustainable" addresses the need to decouple the prosperity generated from industrial activities from excessive natural resource use and negative environmental impacts. ISID therefore implies that no one is left behind, and all parts of society benefit from industrial progress, which also provides the means for tackling critical social and humanitarian needs. The productivity gap between developed and developing countries may be largely attributed to differences in their industrial development and use of technology.

The ISID approach is based on three main pillars: (i) Creating shared prosperity for All, (ii) Advancing economic competitiveness and (iii) Safeguarding the environment. Sustainable industrialisation and robust and resilient infrastructural facilities are the critical components for economic development and overall well-being of the people of any region. Sustainable development depends on investment in infrastructure, sustainable industrial development and technological progress. Investments in

transport, irrigation, energy and information and communications technology have been crucial to driving economic growth and empowering communities in many countries. A strong physical network of industry and communication can enhance productivity and incomes, and improve health, wellbeing and education. Technological progress embedded in industrialization enhances our wellbeing and can create a win-win situation through increased resource and energy use efficiency.

What is needed is industrialisation that makes opportunities accessible to all and is spurred and sustained by innovation and resilient infrastructure. Infrastructure constitutes facilities and systems serving a country, city, or other area, including the services and facilities necessary for its economy to function. It typically characterizes technical structures such as roads, bridges, airports, ports, railways, water supply, sewers, electrical grids, telecommunication (including internet connectivity and broadband speeds) and can be defined as the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance social welfare. Infrastructure spans not only these public works facilities, but also the operating procedures, management practices, and development policies that interact together with societal demand and the physical world to facilitate the transport of people and goods, provision of water for drinking and a variety of other uses, safe disposal of society's waste products, provision of energy where it is needed, and transmission of information within and between communities.

Flagship interventions like Make in India and Start up India as well as Pandit Deendayal Upadhyay Shramev Jayate Karyakram (PDUSJK) are giving a big push to innovation and sustainable industrial and economic development. Every one job in manufacturing creates 2.2 jobs in other sectors. Industrialisation is a universal goal of economic growth. Industrial growth implies structural transformation of the economy from a traditional agrarian to a modern industry based model. Expansion of manufacturing sector creates jobs, develops and introduces new technologies and produces essential goods and services for the market. Developing countries are highly inadequate in basic infrastructure such as roads, ICT, sanitation and electrical power. About 2.6 billion people in the developing world face difficulties in accessing electricity throughout the day. For many lower-income countries, the infrastructure constraints affect firm productivity by around 40%.

At present Manipur is facing acute shortage of infrastructural facilities and the adequacy of our infrastructure for Act East Policy has been questioned seriously. The emerging opportunities cannot be availed of without adequate infrastructure. The contribution from industry especially from MSMEs in the state's NSDP should be increased by fostering innovative technologies and different business models attracting good investment, and as such a goal for creating employment opportunities of 15 lakh youths by 2030 be set. For an inclusive development by 2030 some of the developmental strategies with reference to industry, innovation and infrastructure are suggested as below.

10.2 INDUSTRY

Industry in the State is expected to be led by the Micro & Small Enterprises. However, these Enterprises will be a mix of manufacturing and service sectors. The State has a traditional base in handloom and handicraft sectors. In recent years, the Food Processing and hospitality sector has also emerged generating income and employment. Of late, there are various IT based enterprises being set up in the State providing IT solutions to Government and Private sectors in the State.

The Focus of the Department will be towards strengthening these existing units as well as to encourage cluster based models to develop. Moreover, focus should be towards encouraging and establishing enterprises using local resources like bamboo, spices, Minor Forest Produces, Horticulture, Agriculture etc. Tourism, Hospitality and Health sectors could be focus areas to develop service based industries. With adequate innovation and technology interventions, the produces could be targeted for foreign markets beyond the State and the Country.

Another aspect to be considered would be the geographically advantageous location of the State being the land link to South East Asian Markets. This provides avenues to develop the trading infrastructure of the State. As part of the AEP, Manipur should focus on establishing proper road, rail connectivity, adequate Power and Water infrastructure to enable trading activities to flourish. The State should focus on establishing warehousing, cold storage facilities. Plans should be made for establishing logistic hub to cater to the expected flow of trade and commerce in the region.

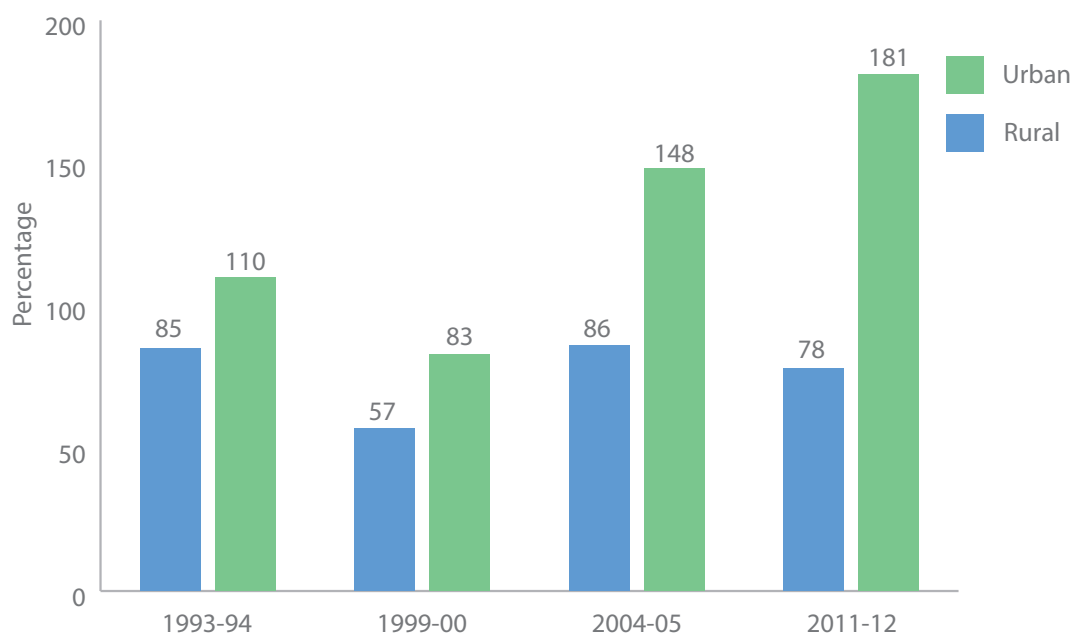
The State should also plan on setting up industrial parks at selected location with adequate provision of basic infrastructure like road connectivity, power, water supply etc. This will encourage cluster based industrial development in the State. Steps should be taken to establish land banks to encourage investors from outside the state to set up industrial units and bring in technology and investment to the State. The Government should concurrently take steps to create conducive administrative procedures to overcome delays and difficulties to potential investors. Creation of a Single Window Mechanism will attract genuine investors to the State.

Manipur is the first state in India to have set up the 4-core infrastructure of the National e-Governance Plan, namely Common Service Centre, State Wide Area Network, State Data Centre and State Portal, State Service Delivery Gateway and e-forms. The government sees hydropower as a major industry and has given top-priority consideration to developing the state's hydropower potential. In view of this goal, it has decided to invite private investors in the hydropower generation industry. Hydropower majors such as Satluj Jal Vidyut Nigam Limited (SJVN) & National Hydroelectric Power Corporation Limited (NHPC) are jointly setting up a mega hydroelectric power project at Tipaimukh, with an investment of US\$2.0 billion.

10.2.1 VISION DOCUMENT FOR FOOD PROCESSING INDUSTRIES, FOOD PARK AND MAKE IN MANIPUR

Introduction: Food processing is a fast growing industry in the State. It is based on locally available raw materials viz., fruits, vegetables, pulses, spices, fish, meat, dairy products, minor forest produces, aromatic and medicinal plants etc. Manipur due to its favourable agro climatic conditions has a great potential for development of food processing industries in various sectors as stated above. Among other industries food processing has been practiced at the cottage and small scale industries in traditional and indigenous methods of preparation in food processing industry. With the changing of technology, new technologies are now applied and many food produces have been introduced in the State for various food processing industries. There is potential for export of many food products in the form of fresh and processed food products. Various schemes under the Ministry of Food Processing Industries and associated Institutions and Organisations etc are being implemented.

FIGURE 10.1: WORKERS IN MANUFACTURING PER 1000 USUALLY WORKING PERSONS-MANIPUR



While the proportion of rural workers in manufacturing has been erratic, that of urban workers has been rising since 1999-00, more than doubling between 1999-00 and 2011-12.

Establishment of SEZs (Special Economic Zones) for different industries in harmony with geographical, cultural and ecological advantages of the state should be the main agenda for industrial development. The development of IT firms, Jewellery industries, IT peripherals, etc. need to be given top priority.

Special focus should be accorded on the establishment of pharmaceutical industries as it is very convenient in a hilly and uneven topography where establishment of heavy industry may not be feasible. Special Economic Zone for pharmaceuticals, medicinal and aromatic plants should be established with the facilities of export oriented units as there is a good potential for pharma exporting in Myanmar and south East Asian countries. The industrialisation model specially the pharma industry developed in the Solan area of Himachal Pradesh, one of the hilly states in India, can be replicated in Manipur too wherever possible. Some of the points for attracting industry in the state are the tax incentives and proper security and overall ease of doing business. After providing all such enabling incentives, the state can have MOUs for employment of youths with the industry for providing employment to local youth upto seventy percent of the total workforce required. The traditional cottage industries of Manipur like handicraft, handloom, bamboo, cane, sericulture etc. should be a part of the SEZs. Model village (or a cluster of villages) should be identified with a special name of the cottage industry preferably in every district of the state such as Silk Village, handicraft village, 'traditional cuisine' village, etc. Proper logistics, warehousing and cold storage hubs in important trade centres in the state should be developed to boost the food processing and agro based industries. Export oriented food processing units should be established in the state to enhance the export from Manipur in the very near future as a part of Make in India campaign. Climate diversity across the state can be conducive for horticulture. A special export oriented horticulture and Floriculture Park should be established. Three common facility centres for bamboo processing have been established at Tamenglong, Churachandpur and Imphal. Government of Manipur is taking up a Bamboo Technology Park at Kadamtala, Jiribam with an estimated cost of US\$ 104.3 million. More such centres should be given focus.

The valley area of the state is very small occupying about ten percent of the total geographical area and one can drive from one corner to another in the valley within one or two hours. Hence, all these parks, centres and SEZs can be established in a composite manner preferably near the foot hill by providing all necessary infrastructural facilities like road, power, water, banking and other amenities including housing facilities. Subsequently the area could be developed as an industrial township and as such Foreign Direct Investment can also be attracted for contract manufacturing and other future investment opportunities.

The industry-academia collaboration to set up incubation centres and organise various entrepreneurship skill development programmes through University/ Colleges should be encouraged to create and motivate promising and budding entrepreneurs. The symbiotic relation should be deliberately engineered. The current state of affairs should not dictate the future. Outcomes of research on various aspects of the state conducted in our universities and research centres need to be collected in a central repository which simplifies access and help the dissemination process. Weakness in dissemination of scientific knowledge raising the issue of duplication in research has deprived us of many opportunities.

10.3 TOURISM

Since the Manila declaration of World Tourism Conference in 1980, tourism has been accorded a significant role in ushering economic development. It declared that “Tourism is considered an activity essential to the life of nations because of its direct effects on the social cultural, educational and economic sectors of national societies and their international relations. Its development is linked to the social and economic development of nations and can only be possible if man has access to creative rest and holidays and enjoys the freedom to travel within the framework of free time and leisure whose profoundly human character it underlines. Its very existence and development depend entirely on the existence of a state of lasting peace, to which tourism itself is required to contribute” (Manila Declaration 1980). Currently, tourism motivates billions of people to travel every year, and it is estimated that the figure will continue to grow at an average of 3.3% annually until 2030. According to the long-term forecasts of the UNWTO, international tourist arrivals worldwide will grow to 1.8 billion. Noteworthy is the resilience shown by the sector in recent years, which despite challenges such as the global economic crisis, natural disasters and pandemics, has experienced almost uninterrupted growth. Not only does the tourism sector spearheads growth, it also improves the quality of people’s lives, support environmental protection, champion diverse cultural heritage and strengthens peace in the world. Tourism is included as part of three SDGs – Goal 8 on economic growth and jobs; Goal 12 on sustainable production and consumption and Goal 14 on Life below water. Yet, sustainable tourism can and must play a significant role in delivering solutions through the framework of all 17 SDGs. Tourism is a great example for conveying to enterprises that sustainable development is a business driver.

TOURISM AND SDGS

SDG 1 – End poverty in all its forms everywhere

Tourism provides income through job creation at local and community levels. It can be linked with national poverty reduction strategies and entrepreneurship. Low skills requirement and local recruitment can empower less favoured groups, particularly youth and women.

SDG 2 – End hunger, achieve food security and nutrition, promote sustainable agriculture

Tourism can spur sustainable agricultural by promoting the production and supplies to hotels, and sales of local products to tourists. Agro-tourism can generate additional income while enhancing the value of the tourism experience.

SDG 3 – Ensure healthy lives and promote well-being for all at all ages

Tax income generated from tourism can be reinvested in health care and services, improving maternal health, reduce child mortality and preventing

diseases. Visitors fees collected in protected areas can as well contribute to health services.

SDG 4 – Ensure inclusive and equitable quality education and promote lifelong learning for all

Tourism has the potential to promote inclusiveness. A skilful workforce is crucial for tourism to prosper. The tourism sector provides opportunities for direct and indirect jobs for youth, women, and those with special needs, who should benefit through educational means.

SDG 5 – Achieve gender equality and empower all women and girls

Tourism can empower women, particularly through the provision of direct jobs and income-generation from MMEs in tourism and hospitality related enterprises. Tourism can be a tool for women to become fully engaged and lead in every aspect of society.

SDG 6 – Ensure availability and sustainable management of water and sanitation for all

Tourism investment requirement for providing utilities can play a critical role in achieving water access and security, as well as hygiene and sanitation for all. The efficient use of water in tourism, pollution control and technology efficiency can be key to safeguarding our most precious resource.

SDG 7 – Ensure access to affordable, reliable, sustainable and modern energy for all

As a sector, which is energy intensive, tourism can accelerate the shift towards increased renewable energy shares in the global energy mix. By promoting investments in clean energy sources, tourism can help to reduce greenhouse gases, mitigate climate change and contribute to access of energy for all.

SDG 8 – Promote sustained, inclusive and sustainable economic growth, employment and decent work for all

Tourism, as services trade, is one of the top four export earners globally, currently providing one in ten jobs worldwide. Decent work opportunities in tourism, particularly for youth and women, and policies that favour better diversification through tourism value chains can enhance tourism positive socio-economic impacts.

SDG 9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Tourism development relies on good public and private infrastructure. The sector can influence public policy for infrastructure upgrade and retrofit, making them more sustainable, innovative and resource-efficient and moving towards low carbon growth, thus attracting tourists and other sources of foreign investment.

Source : UNWTO (2018) Tourism and Sustainable Development Goals Good Practices in the Americas

Tourism is a labour intensive service industry, unlike manufacturing it is consumed at the point of production and therefore provides a multitude of employment and income spin-offs. According to World Travel and Tourism Council an investment of ₹10 lakhs can generate 47.5 jobs as against 12.5 in manufacturing. It can also benefit the poor in three ways: direct earnings through direct and indirect employment, indirect and induced effects where tourism expenditure impacts the non-tourism sector through supply-chain linkages; dynamic impacts of tourism on the economy. It has extensive employment effect which is crucial for inclusive development. Tourism is one of the fastest growing sectors of the world economy. A study by the European Commission found that 43% of those employed in the tourist accommodation sector and 48% of those employed in hotels and restaurants were under 35 years. There were 30% more young people employed in tourism than in other sectors of the economy. Taking into account, tourism development and its sustainability responsible tourism is also in the limelight.

KEY CHARACTERISTICS OF RESPONSIBLE TOURISM

- Minimises negative economic, environmental and social impacts
- Generates greater economic benefits for local people and enhances the well-being of host communities, improves working conditions and access to the industry
- Involves local people in decisions that affect their lives and life chances
- Makes positive contributions to the conservation of natural and cultural heritage, to the maintenance of the world's diversity
- Provides more enjoyable experiences for tourists through more meaningful connections with local people, and a greater understanding of local cultural, social and environmental issues
- Provides access for physically challenged people
- Is culturally sensitive, engenders respect between tourists and hosts, and builds local pride and confidence
- Tourism also improves livelihoods, promotes poverty alleviation, enhances the protection of biodiversity and cultural heritage development, and helps to build peace.

Various committees on NER development have recommended the promotion of tourism for development in this region. Manipur has huge potential for tourism development. Manipur has prospects for heritage tourism, adventure tourism, nature & ecotourism, war tourism, medical and educational tourism. Manipur's valleys and hills provide the ideal landscape for a range of adventure sports such as rock climbing, rafting, wind surfing and trekking. Manipur has been described as the "Switzerland of the East" and "jewel of India". Yet its tourism potential has remained largely undiscovered and underdeveloped. This again can become an opportunity. Least touched and least discovered Manipur promises to be one of the greatest tourist destinations of the 21st century. The Manipur Sangai festival held during 21-

30 November every year has been showcasing since 2010 the best of the state's culture, crafts, textile heritage including handloom and handwoven fabrics, indigenous sports, cuisine, music and dance. By 2016-17 Manipur developed 72 tourist spots. A total of 148,721 tourists including 3036 foreigners visited Manipur in 2016-17 despite the restrictions. The people of Manipur include Meitei, Nagas, Kuki-Chin-Mizo and Gorkhas groups and Muslims and other communities which have lived in complete harmony for centuries. These are the people whose folklore, myths and legends, dances, indigenous games and martial arts, exotic handlooms and handicrafts reflect the mystique of nature and an indefatigable spirit of the people. These can be basis for heritage tourism. Loktak Lake remains one of the biggest assets of the state- providing livelihood to the people of the state in various forms. From being a provider of fish and various economic plants sustaining the people around it, the hydroelectric project transformed it into a provider of power without which industrialization is unthinkable. Now in addition to generation of hydropower it is being gradually transformed into a major tourist centre. The Sendra hillock and the Keibul Lamjao National park, the only natural habitat of the brow antlered deer (*Cervi Eldi Eldi*), locally known as Sangai provide enormous scope for tourism. The contribution of this lake to the state economy as a source of fish, power and a tourist destination can be immense. Its value can be enhanced by constructing ring road across the catchment area of the Loktak Lake to make the lake and its surrounding areas more accessible and attractive to the tourists. This will protect the ecosystem and develop better eco-tourism facility around the Loktak Lake. This will also protect the unwanted encroachment in the lake and also promote avenues for development of resorts and rural/community based tourism in the catchment areas. This will encourage homestays, a tourism practice which is catching up fast.

To include the hills in development of tourism, there is a necessity of development of eco-tourism sites at various lakes, waterfalls and caves in the hill districts and promote them with the Manipur Tourism Tag. The holy place/pilgrimage of Baruni Hills and Koubru Hills can be popularised by adding items of adventure tourism like rock climbing, trekking, rafting, para-gliding, para-sailing/motor, cable cars etc. Further, in order to promote Koubru hills as a holy place for religious tourism and also for adventure tourism, cable car facility can be provided to reach the hill top. It will encourage domestic tourism among people in the state and bring the people of the valley and the hill closer. The promotion of the hill district headquarters of the state like Ukhrul, Tamenglong, Tengnoupal etc. upto the level of other famous hill stations in India will enhance the overall development of tourism in the state. Eco-tourism should also be maintained mainly in hilly area of Manipur state. "Ecotourism is environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy, study and appreciate nature (and any accompanying cultural features – both past and present), that promotes conservation, has low visitor impact, and provides for beneficially active socio-economic involvement of local populations"- *The official definition adopted by the IUCN in 1996*

Manipur is having the potential to make a vibrant destination for medical and educational tourism too. Visitors from Myanmar are visiting Manipur for getting better

medical treatment in the state. Shija hospital group has taken the lead by introducing many state-of-the-art practices. Many Myanmar citizens are ready to pay a visit to Gaya, Bodhgaya and Varanasi and other Buddhist monasteries etc. via the continental route. The proposed plan to ply regular bus services between Imphal (India) and Mandalay (Myanmar) should be expedited at the earliest. The introduction of this bus service will bring closer ties and better people-to-people contact between the two countries and subsequently it will also boost the tourism activities in the state. Immigration and visa on arrival facility on the continental route between Moreh-Tamu sector for the citizens from Myanmar should be provided so that the foreign tourist inflow in Manipur can be increased to a considerable extent.

Today tourists are discerning travellers who look for new and unique experiences. Home stays have developed to capitalise on the demand for unique experiences among such tourists. These are facilities provided in the houses of local volunteers where tourists can stay and share the experiences. This practice has caught up in Kerala, Himachal Pradesh, Uttarakhand and Sikkim. It is being tried in Moirang, Ukhrul and Churachandpur. Shirui in Ukhrul and Loktak in Bishenpur can be centres for home stays. This can go together with the growing number of festivals connected with local produces such as Shirui festival in Ukhrul, Orange festival in Tamenglong, pineapple festival in Thoubal, Loktak festival at Bishenpur etc. Each district will have, in the near future, festivals celebrating its uniqueness. Quality tourism need not be big and expensive all the time.

War tourism is also catching up. The battle of Imphal was fought for three months between the Allied and Japanese forces during March to July 1944. Many war cemeteries are being restored to keep the memory of the sacrifices alive. The Japanese war Memorial at Maibam Lokpaching (17 km from Imphal) is the only Japanese war memorial in India. Manipur can become a frequented tourist destination for Japanese and allied war veterans and their descendants. Now Manipur's participation in the First World War largely as recruits in the Labour Corps, the main basis of logistics in the war is being studied. Memorials for those martyrs who were buried in far flung cemeteries in France, Egypt, Italy, Yemen can be a fitting tribute enriching the efforts in war tourism. The Khongjom war memorial honouring Manipuri soldiers in the Anglo Manipuri war of 1891 has also become an important part of the war tourism circuit. It was in Moirang, Bishenpur district that the Indian National Army (Azad Hind Fauz) had hoisted for the first time the flag of independent India. The game of polo is developing as niche tourism considering the rich legacy of the game in the state. Manipur has been recognised as the origin of the game. Polo is only one aspect of our horsemanship. Manipuri horsemen played a significant role in Southeast Asia as cavalry. They were in high demand.

10.4 INFRASTRUCTURE

Infrastructure constitutes facilities and systems serving a country, city, or other area, including the services and facilities necessary for its economy to function. It typically

characterises technical structures such as roads, bridges, airports, ports, railways, water supply, sewers, electrical grids, telecommunication (including internet connectivity and broadband speeds) and can be defined as the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance social welfare. Infrastructure spans not only these public works facilities, but also the operating procedures, management practices, and development policies that interact together with societal demand and the physical world to facilitate the transport of people and goods, provision of water for drinking and a variety of other uses, safe disposal of society's waste products, provision of energy where it is needed, and transmission of information within and between communities.

Hard infrastructure is the physical networks necessary for the functioning of a modern industrial nation such as roads, railways, airports, etc. Soft infrastructure consists of the institutions which are required to maintain an economy, like health, and cultural and social standards of a country, such as the financial system, the education system, the health care system, the system of government and law enforcement. Critical infrastructure distinguishes those infrastructure elements that, if significantly damaged or destroyed, would cause serious disruption of a system or organization. Bridges across a river and on-line booking system for an airline are critical infrastructures. Electricity, irrigation, roads transport are examples of critical infrastructure.

Infrastructure like railway, power, roads, industry, water and sanitation, information technology and airports and banking are the indispensable elements for all forms of growth and development. The requirement of this sector is overwhelming and is dependent on the overall economic growth in the State. Manipur requires a high degree of infrastructure development. Although at present the necessity for infrastructural development may not be evident in certain areas, these sectors may face bottlenecks in the near future. An increase in the demand for larger quantity and better quality infrastructure can also be anticipated in the event of the successful achievement of the Vision 2030 goals.

10.4.1 ROAD CONNECTIVITY

Connectivity is the most important factor for the development of this region. At this stage of development, it deserves to be the topmost priority. The issues of viability and competitiveness are intricately linked with connectivity. Besides trade, commerce, industry and mobility of goods and people, it facilitates better understanding among people through people-to-people contact between hill and plain; rural and urban etc. In the absence of rail and widespread air links, roads are the only conduit for transporting people and goods in the state of Manipur. However, the poor condition of the existing roads and lack of road connectivity have greatly restricted mobility, hampered the delivery of services and prevented the emergence and growth of markets especially in the hill districts.

The road density of Manipur should be increased to take it at par with the All India Standard i.e. 142 Kms per 1000 sq.km. wherein Manipur is having 56.51 Kms per 1000 sq.km. at the end of 12th plan period.

TABLE 10.1: LENGTH OF ROADS IN MANIPUR, 2015 IN KM

	TOTAL	SURFACED
National Highways	1746	1746
State Highways	715	715
PWD Roads	9507	4884
Rural Road	11121	4906
Urban road	182	127
Project road	976	972

Source: Economic Survey Manipur 2018-19

The number of motor vehicles registered in the state as on 31st March 2017 was 34172 out of which 21753 were two wheelers. It is necessary to improve the roads that connect the capital city with all the adjoining towns, trade centres and district headquarters. The proposal of constructing one ring road in greater Imphal by the Government of Manipur needs to be expedited at the earliest. By 2030 we shall need two ring roads viz. Inner Ring Road and Outer Ring Road. The inner ring road around the capital city should be of expressway standard and the traffic congestion in the city area shall be reduced substantially and further, there will facilitate urbanisation in and around the periphery of the city. The outer ring road shall connect all major towns in the valley and adjoining towns in hill areas. Further, there should be proper roads connecting the district headquarters of the state without passing through Imphal which will reduce the traffic congestion in Imphal significantly.

The NH-102 which goes to Moreh and forms a part of proposed Asian Highway 1 and 2 should have six lanes from Imphal to Pallel and at least four lane from Pallel to Moreh as this road is going to connect India with Myanmar and other ASEAN countries. It is through this connectivity India's Act East policy can be meaningfully pursued. All other National highways passing through Manipur should be renovated with at least four lane roads.

Due to the uneven terrain in the hill areas of the state, it is suggested that express highways including tunnel expressways may be constructed preferably on Public Private Partnership (PPP) mode including funding/participation from foreign institutions between Pallel to Moreh (about 70 Km.) and Noney to Jiribam (137 Km.) sectors.

10.4.2 RAIL CONNECTIVITY

Imphal the capital city of Manipur has no railway link till today, but the undergoing construction of rail link connecting Imphal and Jiribam through Tupul when completed would provide an important alternative to roads for large scale movement of goods and people into and outside the state. Railway line upto Indo-Myanmar border town – Moreh will be the vision of the state after it reaches Imphal in very near future. By 2030, we would like to see local train networks in the state connecting important towns both in valley and hill areas.

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

The scheme has been started in Manipur w.e.f. 25th December, 2000 with the conversion of 642 roads of works of the then erstwhile Rural Roads Scheme under BMS (Basic Minimum Services) to PMGSY Phase I with 6 divisions from the Public Works Department, Manipur as Programme Implementation Units (PIUs). The PMGSY is a centrally sponsored Scheme which is being implemented by the Manipur State Rural Roads Development Agency (MSRRDA) which was established in March, 2005. Now, there are 25 PIUs for 9 districts. PMGSY envisages providing new road connectivity to 1225 village in Manipur by constructing 6000 km (approx) of road including 20% up-gradation of existing roads. The objective is to connect eligible unconnected habitations with a population of 500 persons and above. Bharat Nirman (BN) is also a part of PMGSY. BN covers new connectivity to Villages having population of 500 in Manipur. From Phase VII onwards, only BN component has been considered along with BADP Roads of Border Blocks.

10.4.3 AIR CONNECTIVITY

The Imphal Airport has been designated as Bir Tikendrajit International Airport. Considering the State's location, the Imphal International Airport, could become a major transit hub, in the country, for air travel to major cities in the South East Asian Countries. The Imphal- Mandalay (Myanmar) direct flight will be introduced during 2019. Mandalay International Airport having more than 19 international destinations could become a window for connecting India major cities in the South East Asian Region with Manipur as the Gateway. By 2030, we expect the Imphal International Airport to serve as the major transit hub, in the country, for air services across major cities in the South East Asian region. The comparative advantage it enjoys in terms of cost of travel given its geographical proximity to these countries will help in fully

10.4.4 ELECTRIC MOBILITY

The motor vehicle population in the State is increasing at a rapid pace. During the period, 2014 to 2017, vehicle population grew at an average growth rate of 10%. The Imphal City, with very high population density, and criss-crossed by four national highways, has very high concentration of vehicles. With the objective to strike a right balance between the ability of transport to serve economic development and the ability to protect the environment and sustain quality of life, both now and in the future, the State Government is working on bringing about transition from Internal Combustion Engine (ICE) to E – Vehicle mode in the public transportation sector. The mission, among others, would provide for various Demand incentives (fiscal and non-fiscal incentives), establishment of network of charging stations, mechanism for replacement of ICE vehicles, etc. By 2030, the State Government proposes to have complete electric mobility, across all public transport services, in the State.

10.4.5 ROAD SAFETY MEASURES

As per the World Bank, with more than 200,000 annual fatalities, India's contribution to global traffic deaths stands at 15%. Indian roads are sought to be made safer by increasing penalties for violations and mandating stringent action against violators. For reducing annual road accident fatalities by at least 10% in each district in the State, various institutional measures, or otherwise, are being taken up; such as, setting up of Road Safety Council, Road Safety Fund, identification of vulnerable stretches/spots, Highway patrolling and Traffic Calming measures, among others. It is also proposed to set up a 24/7 Traffic Control room with quick responsive video walls for seamless flow of information to enable the teams working at these fields to work in a prompt and efficient manner and provide rational response. With road fatalities and injuries being included in the SDGs, efforts in this direction are expected to be intensified and integrated with other initiatives. Maintenance of risky roads in urban and rural areas is likely to be taken more seriously under the various road building schemes.

10.4.6 EDUCATIONAL INFRASTRUCTURE

Despite the high literacy rate there is massive mismatch between skills required and the competence of available workers. The paradox of unemployment of local labourers coexisting with unfilled job vacancies persists. Youth unemployment is high. Human resource development is considered as one of the important infrastructural components for meeting such challenges of the region. Availability of appropriately skilled workforce becomes an asset for the state striving for better growth in the economy.

Short term skill based education on various trades like tourism, hospitality, foreign trade, film, media production, fashion design, food processing, information technology, handloom & handicrafts and agriculture and allied activities should be introduced in various colleges and universities by expanding the network and reach of the community colleges and vocational programmes. Manipur needs to produce more skilled workers with more ITIs (Industrial Training Institutions) with modern trades for better employability. The number of Government polytechnics should be increased and every district should have at least one Government Polytechnic with adequate infrastructure to run various courses of contemporary relevance so that many a young boys and girls going outside the state for study can do so in the state much more economically.

The total number of Schools in the state during the year 2016-17 stood at 4,825 as against 3,676 in 2015-16. The number of school students has decreased from 489.54 thousand in 2015-16 to 462.61 thousands in 2016-17. While the overall literacy rate has increased from 59.89 % (Male -71.63 % , Female - 47.60 %) in 1991, 70.50 % (Male-80.30 %, Female-60.50 %) in 2001 to 76.94 % (Male-83.58 %, Female-70.26 %) in 2011 census.- Economic Survey of Manipur 2018-19

Higher education system should be standardized and more quality colleges and universities are required across the state. Institutions of National importance like IITs, IIMs, AIIMS, IIITs, IISERs etc. should be established here in Manipur so that Manipur could be transformed into an educational hub or Academic Gateway of India to South East Asian Countries. Act East policy also calls for such preparedness among the people. Public Private Partnership should have a major role in meeting this infrastructural gap. While pushing for quality education, the issue of relevancy and value education should be seriously considered. We should develop appropriate infrastructures for education which will enable us to meet our challenges efficiently. Education, being the base for the development of human resources, improving those infrastructures related with it continued to be one of the main objectives of the state Government

10.4.7 HEALTHCARE

For better human development index healthcare facilities provided in the region becomes an important parameter. Manipur needs a minimum of 100 bedded District Hospitals in all the districts of Manipur with modern equipment and amenities of healthcare to ensure uniform access to healthcare facilities across the state. Improvement and renovation works for PHCs and CHCs in all the towns and villages across the state with adequate number of doctors and other paramedical staffs for the purpose should be taken up.

Many patients from Manipur travel to metros like Delhi, Mumbai, Vellore for treatment as the facilities are not available in the state spending huge amount of money in the process. Super specialty /Multispecialty hospitals for Cancer and Heart in the capital of the state in PPP mode should be established so that they need not go outside the state for better treatment. Having super-specialty or multi-specialty hospitals in the state will boost medical tourism too in the state.

HEALTH SERVICES

Medical facilities in the state were mainly provided by the state Government. Medical and Health care facilities were available to the people of Manipur through a network of 553 hospitals/dispensaries with a total manpower of 801 doctors and 2081 nurses, midwives during the year 2017-18. The number of beds available was 1,480 in 2017-18. Out of 765.62 thousands patients treated in 2017-18, 46.06 thousands were indoor patients while 719.55 thousands were outdoor patients- "Economic Survey of Manipur- 2018-19"

10.4.8 POWER AND WATER SUPPLY

Energy is the backbone for any development. For the developed countries the per capita consumption of power is generally high. The power supply position showed a marked improvement with the commissioning of the Loktak hydroelectric project in August 1984. The demand for power in the state is met mainly from Grid power and a

little of diesel generation. In Manipur too for the domestic, commercial and industrial consumption, adequate power supply is required. In pursuance of electricity Act 2003 Electricity department was corporatized into Manipur State Power Company Limited (MSPCL) and Manipur State Power Distribution Company Limited (MSPDCL) w.e.f. from 1st February, 2014. In order to have additional source of power, wind energy and solar energy parks should be established in appropriate places. In case environmental clearance is there, hydroelectric generation for the state should be taken up at the appropriate places. Loktak downstream and Tipaimukh projects should be re-examined for environmental issues.

Today, Manipur is poised to be the Gateway of India to ASEAN countries and as such Imphal city should have the capability to nurture 1.5 million populations by 2030. However, urbanization has led to disappearance of more and more wetlands in and around the cities. These should have been playing an important role in supply of potable water and management of floods. The growing realization of their importance has led to the announcement of a plethora of measures aimed at protecting and restoring wetlands in the state. For that matter, proper planning for water supply is very much needed. Thoubal multipurpose project needs to be completed within a time frame and at the same time rain water harvesting mechanism should be encouraged in the state especially in the big buildings, schools, colleges and office buildings. Special treatment plants for Loktak lake water should be established so that whenever there is shortage of water Loktak lake water can supplement to the requirements.

The Manipur Renewable Energy Development Agency (MANIREDA) have taken up many activation under the different Renewable Energy Projects which includes solar lighting, hydro project, wind-solar hybrid system etc. Under Jawaharlal Nehru National Solar Mission (JNNSM), the MANIREDA has implemented 6,680 sq. m. collector area equivalent to 3,340 nos. of 100 LPD Flat Plate Collector Type of Solar Water Heater.

10.4.9 BANKING

Reach of banking facilities in every nook and corner of the state is a must for overall development of the state. The need for a well-developed banking system in the economic life of a state can hardly be exaggerated. The number of scheduled commercial bank in Manipur during 2018 was 77 in Rural, 44 in Semi-Urban and 75 in Urban area. The deposit in Scheduled Commercial Banks of Manipur during the year 2018 is Rs. 9,54,360 lakhs against the credit of Rs. 4,52,997 lakhs. The credit-deposit ratio was 47 in 2018 as against 43 in 2017. Besides 4 cooperative banks, one regional rural bank there are 25 scheduled commercial banks in Manipur. There are altogether 85 rural branches, 46 semi-urban and 78 urban bank branches in the State. The credit deposit ratio was 57 in 2018-19 rising from 46 in 2016 and 39 in 2015. By 2030, all the revenue blocks should have banking facilities and at least one nationalised public sector bank branch should be opened up. Credit-deposit ratio in Manipur is considerably low and therefore, banks should be persuaded to

increase the lending facilities especially for the industry start-ups and agricultural farmers for the overall improvement of their livelihood. The interface between people and banks becomes realizable in view of Information technology enabled services (ITES). All monetary transactions can be conducted efficiently sitting at home through mobiles with assured internet connectivity. The infrastructure for access to banking services has undergone some radical changes. Even banks are not needed in remote areas with quality net connectivity. The Union Ministry of electronics and information technology under its digital India programme declared Karang, a small lake island in Manipur, as the first cashless island in India on January 13, 2017 after the island fulfilled Centre's necessary criteria in a campaign which run from January 9-12.

10.4.10 INNOVATION

According to Schumpeter innovation in business is the major reason for increased investments and business fluctuations. Innovation is recognised to be a dynamically nonlinear, complex adaptive system and systemic process, requiring the production and transfer of knowledge through different inputs and interactions from and between actors within the system. The ability of an organisation to innovate is the requisite for the optimal utilization of resources and new technologies. Innovation for development seeks to identify more effective solutions that add value for the people affected by development challenges. New approaches include setting up innovation labs to re-design public service delivery; using data innovation to implement and monitor the SDGs; exploring emerging and alternative sources of financing and implementation of the SDGs, from social impact bonds to pay-for-success and crowd funding avenues or using behavioural insights to facilitate policy-making and digitisation.

Livelihood Business Incubators (LBI): Under the ASPIRE (A Scheme for Promotion Innovation, Rural Industries and Entrepreneurship) of the Ministry of Small & Medium Enterprises, Government of India, 9 Livelihood Business Incubators were established in 9 (nine) districts of Manipur with the objective of leading support to entrepreneurs and promote start-ups for innovation and entrepreneurship in rural, agriculture based industry and products from forest, horticulture, fisheries and animal husbandry. Total number of persons trained under LBI was 5823.

In 2014 UNDP established the Innovation Facility as a global mechanism to support innovation for development. The Facility provides technical support and funding across all regions to develop and then test frontier technologies and new approaches to deliver better results. The Facility's portfolio is firmly rooted in the 2030 Agenda for Sustainable Development. While initiatives span 16 of the 17 Goals, the majority of initiatives address Sustainable Development Goals that eradicate poverty, enhance livelihood options, reduce inequalities as well as build resilient and peaceful societies. UNIDO has established the Shanghai Global Innovation centre which is part of a global innovation network between different industrial and technological research and development organisations. This will increase the capacity and

knowledge base for bringing in best practices and new and improved technologies to Chinese industries and industries in other developing countries. Similarly Centers of Innovation in Technology (CITEs) in Peru play an important role in the promotion of innovation, quality and productivity. In 2014 CITEs not only became instruments for innovation and competitiveness but also became instruments for productive diversification in Peru.

Micro, small and medium enterprises (MSMEs) take time to upgrade their production technology and management practices. New technology has become synonymous with imports of capital goods, not through better organisation of the productive process. However, changes in management practices and productive processes, as epitomised in innovation, can be alternative drivers of the manufacturing sector providing the foundation for sustained economic growth. Effective utilization of innovation enables sustainable solutions for inclusive economic development and environmental challenges. Thus, to achieve transformative changes and to transfer and deploy technology for entrepreneurship, innovation needs to be scaled up and spread more widely. The integration of science, technology and innovation in the national productive processes is key to the success of policy priorities and programmes.

10.5 CONCLUSION

- Infrastructure to be strengthened by providing better air, railway and digital connectivity.
- Infrastructure to be strengthened for social and economic sectors; Health, Education, Industry, Tourism, Power and Water Supply.
- Infrastructure for access to bank services will be strengthened and coverage of each revenue blocks by at least one nationalised public sector banks.
- Transport system will be improved by providing affordable and reliable public transport and railways crisscrossing the state.
- Innovative practices need to be encouraged at every level to usher in inclusive and sustainable industrial development.
- Trading infrastructure of the State will be strengthened to enable trading activities to flourish tap the geographical advantage of location of the State to South East Asian Markets.
- Envisages establishing logistic hub to cater to the expected flow of trade and commerce in the region.

11

Clean Water and Sanitation

11.1 INTRODUCTION

The sustainable development goal no 6 is about bringing a world where the human right to safe drinking water and sanitation is respected and taken care of and a world with improved hygiene is ensured. It talks about ensuring availability and sustainable management of water resources and sanitation for all. Proper water use and sanitation is a key foundation for achieving the sustainable development goals, including good health and gender equality. By managing our water sustainably, we are also able to better manage our production of food and energy and contribute to decent work and economic growth. Moreover, we can preserve our biodiversity and take action on climate change.

11.2 INCORPORATING SDG-6 IN STATE VISION 2030

The targets under this goal start with achieving universal and equitable access to safe and affordable drinking water for all by 2030 and there are 7 other targets also mentioned within this goal. Public Health Engineering Department (PHED), Government of Manipur deals with planning, investigation, project formulation and implementation of water supply schemes of the state and sewerage project of Imphal city. It is also in charge for operation and maintenance of created assets for water supply and Imphal sewerage. It has also been given the mandate to implement the Swachh Bharat Mission (Gramin) in the State.

11.3 WATER SUPPLY

Manipur faces a serious challenge in terms of supply of clean drinking water to its population due to its hilly terrain, lack of water supply infrastructure and inadequate water conservation. The water supply system in Manipur can be classified into three categories as follows:

- a. **Imphal Planning Area:** The present water demand of the Imphal Planning Area is 123 million liters per day (MLD). However, the total production is only 89.93 MLD, implying a shortfall of 27%. The frequency of water supply is erratic, with some areas being supplied daily while others getting supply once in two to three days. The water supply to households is limited to only few hours every day. The service level of water supply by PHED varies from 85 to 117 lpcd as compared to the prescribed norm of 135 lpcd. The coverage of PHED piped water supply is only 45%.

- b. **Other Towns:** Apart from Imphal, Manipur has 28 other towns. The water supply schemes in the 25 other towns included in the Project are in a dilapidated condition due to aging and are producing water far below the demand level of these towns. Upgradation of these schemes has not been done since about 15 years due to lack of funds. Further, the service level of water supply requires augmentation from the current level of 40-55 lpcd to the prescribed norm of 70 lpcd.
- c. **Rural Areas:** As of March 31, 2019, out of the 2,976 rural habitations of Manipur, only 219 have been fully covered in terms of drinking water supply, whereas 2,757 have been partially covered. The schemes in rural areas were previously designed with a service level of 40 lpcd and did not use filter units due to cost constraints. Augmentation of these schemes is needed due to increase in population, village expansion and increase in service level to 70 lpcd as per national norms. Also, due to degradation of raw water quality, use of filter units has become essential. Many schemes require reconstruction/rehabilitation due to damage from floods, landslides and earthquakes. Further, the polyethylene pipes used in the distribution network have been damaged and are required to be replaced by galvanized iron (GI) pipes.

Currently, the residents of Manipur meet their daily water requirements through PHED water supply, private tankers, public hydrants, dug wells, bottled water and other sources. According to a PHED survey, a significant number of households (11%) are currently using public hydrants to meet their domestic water demand. It was also estimated that households are spending about 1 to 2 hours every day for collecting water for their daily needs. Due to limited water supply at the household level, most of the state's population is dependent on private water suppliers, who charge USD 3 to 10 per 1,000 liters (as compared to a fixed rate of USD 1.1 to 2.1 per month for PHED supply). This puts an additional financial burden on the population. Due to the use of untreated water, Manipur has witnessed increased incidence of water borne diseases, especially among children.

In order to overcome these hurdles PHE Department has sought loan from New Development Bank for Manipur Water Supply Project amounting to 423 US million Dollar of which 305 US million dollars is loan component by NDB. The Project consists of construction and upgradation of water supply systems in i) Imphal Planning Area with investment of 143.5 USD million, ii) 25 other towns with a project of 54.1 USD million, and iii) 1,731 rural habitations amounting 209.8 USD million. The Project will enable supply of clean drinking water at household level to the residents of the project areas as per national guidelines (135 lpcd for Imphal Planning Area and 70 lpcd for 25 other towns and rural areas). The project will also cover IEC activities for water conservation and capacity building for the department and field officials. The remaining rural villages will be covered under Jal Jeevan Mission scheme of Ministry of Jal Shakti, Government of India. The outputs of the Project will be the newly constructed/upgraded drinking water supply infrastructure covering Imphal Planning Area, 25 other towns and 1,731 rural habitations. The outcomes of the

Project will be: i) increase in coverage of drinking water supply in the state, and ii) increase in water supply level to 135 lpcd for Imphal Planning Area, 70 lpcd for the 25 other towns and 1,731 rural habitations.

The Project will contribute towards achieving the following Sustainable Development Goal (SDG): i) SDG 6 (ensuring availability of water for all), in particular target 6.1 to achieve universal and equitable access to safe and affordable drinking water for all by 2030. The Project will enable supply of clean drinking water to about 3.11 million people in the state by 2025 and will meet the drinking water demand for the project areas until 2036 for an estimated population of 4.00 million.

11.4 SANITATION

A sub goal within the SDG no 6 is, “By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations”. Under Nirmal Bharat Programme (Total sanitation for all) sanitation is ‘a system that promotes appropriate disposal of human wastes, proper use of toilets and discourages open space defecation.’

The Swacch Bharat Abhiyan (Clean India Mission) launched by PM Narendra Modi aims to eradicate practice of open defecation by 2019, all the identified 465827 rural individual households, 3919 government schools, 1201 Anganwadis of the State are to be provided with sanitary latrines by 2nd October 2019.

According to 2011 census, out of total households of 246,692,667 of India, only 36.4% had water closet type latrines whereas it was 46.6% for Manipur. Across the districts of Manipur, Imphal West had the highest figure of 62.2% whereas the lowest figure of 26.3% was recorded in Chandel. The corresponding figure for rural India stood at 19.4% and for rural Manipur it was 37.9%. Across the districts of Manipur, this figure varied in the range of 22.6% of Chandel to 46.4% of Imphal West. The urban areas were better off in this aspect with figures of urban India and urban Manipur being 72.6% and 63.7% respectively. Across the districts of Manipur, the figure ranged from 40.2% of Tamenglong to 72.4% of Imphal East.

According to 2011 census, 49.8% Indian households indulge in open defecation. Manipur is much better off in this aspect with only 8.9% of its households indulging in it and this figure across its districts ranges from 3% of Imphal West to 27.6% of Tamenglong. Open defecation was found to be much more prevalent amongst rural population than urban counterpart. Rural population of 12.3% and 2.3% of 67nd .3% against its urban counterpart figure of 12.6% whereas the corresponding figures for Manipur was 12.3% and 2.3% respectively. Across the districts of Manipur, this figure for rural population ranged from 5.3% of Imphal West to 31.6% of Tamenglong whereas for the urban populations, it ranged from 0.9% of Churachandpur to 3.5% of Thoubal.

As per census 2011 estimate, the total number of hhs in Manipur not having latrine is 54287 and 10.7% of hhs did not have latrines within their premises as against 53.1%

of Indian hhs. Across the districts of Manipur, this figure ranged from 5.1% of Imphal West to 23.4% of Tamenglong. The target which has been set under Swachh Bharat Mission (Gramin) (SBMG) is to provide a sanitary latrine to each and every rural hh by 2nd October 2019. Manipur was declared as 23rd Open Defecation Free (ODF) state of India under the Swachh Bharat Mission Grammin (SBM-G) on 2nd October 2018. Altogether 4,41,267 nos. of individual household latrine have been provided in the State.

The sanitary works to be taken up under Swachh Bharat Mission (urban) for the urban areas for the State of Manipur will be implemented by Manipur Housing and Urban Development (MAHUD) department. The Mission has targeted to create a completely sanitised environment, adopting improved hygiene behaviour and managing solid and liquid wastes. Under SBM (urban), 237 individual toilets and 140 community/public toilets have been constructed. Also, door to door waste collection from 130 wards has been completed. Five cities namely Moirang, Kakching, Bishnupur, Nambol and Lilong have attained open defecation free (ODF) status. The process of converting waste to energy is yet to materialize whereas for waste to compost production, the plant at Lamdeng after functioning for few months has come to a grinding halt due to mechanical failure. With no competent expert for resolving the problem being available in the State, waiting for experts from outside is taking its toll on the plant and solid waste disposal system of the Imphal City.

To minimize the adverse effects of open discharges of effluents from the individual septic tanks, pits and likely health hazards from the absence of sewerage system etc. PHED envisaged providing a sewerage system for the whole of Imphal City in phases.

11.4.1 IMPHAL SEWERAGE

Sewerage Project for Imphal City phase-I(27.00MLD), covering Imphal Municipal ward No. 1,2,3,4,5,6,14,15,24,25 and 26 (out of 27 wards) under EAP/France, has been taken up since 2004. This project was formulated for conveyance and treatment of sewage for Imphal City with a revised cost of Rs. 345.43 crore (State share Rs.303.89 crore and Rs.41.54 crore French/EAP component in kind). This project is completed and being inaugurated by December 2019. This project comprises of Sewerage treatment plant (capacity:27.00 MLD), five pumping stations, 24.23 kms of primary sewers lines, 44.14 kms. of secondary sewers lines and will cover about 9000 households. DPR for the remaining area of Imphal City (16 wards) by the consultant GKW Consult GmbH is completed. The estimated cost of the project is Rs 1326.38 crore and searching for funding.

Another aspect of sanitation is the discharge of the domestic waste water. The domestic waste water outlets could be a great source of various diseases and also leads to soil and water pollution of the surroundings. As per census 2011, only 4.1% hhs had their waste water outlets connected to closed drainage whereas 48.8% were found to be connected to open drainage and 47.2% outlets did not have any drainage connection. 56.1% of 3,35,752 rural hhs did not have any drainage

connection whereas urban hhs were in much better position in this regard as only 29.6% amongst them did not have any drainage connection. But most of the urban drainage connection (64.4%) were of the open type which itself is something to be concerned about.

Better and efficient mechanism for maintenance and repair of WTPs, distribution network, solid waste management plant is an essential need of the hour in state of Manipur.

11.5 THE OTHER SUB-TARGETS UNDER SDG-6

While Target 6.3 deals with improving water quality, waste water management, recycling and reusing, Target 6.4 seeks to 'sustainably increase water use efficiency' across all sectors and reduce water scarcity. Both these targets are dealing directing to work towards source sustainability including both quality and quantity of water. For improvement in water use efficiency, the Central Government plans to create a Bureau of water use efficiency to regulate, monitor and improve water use across industrial, agriculture, potable water, power generation and urban domestic environment. The target envisaged is improving water use efficiency by 20%. Target 6.5 and Target 6.6 is about integrated water resource management and water related eco-system conservation goal. IWRM and eco-system conservation are context specific topics and demand intense institutional, political, economic and judicial interventions.

Target 6.7 is about expansion of international co-operation and capacity building support to developing countries in water and sanitation related activities and programs in terms of financial and technological support. Target 6.8 proposes to strengthen local participation in improving water and sanitation management. This aspect has been quite in vogue in Indian policy and programmes. E.g. the 73rd constitutional amendment granted Panchayat Raj Institutions "administrative responsibilities that include managing water and sanitation" in a bid to strengthen local governance and decentralise management of basic utilities. The NRDWP and National Water Policy 2012 place special emphasis on inclusive participation, gender equity and community empowerment to promote a bottom up approach.

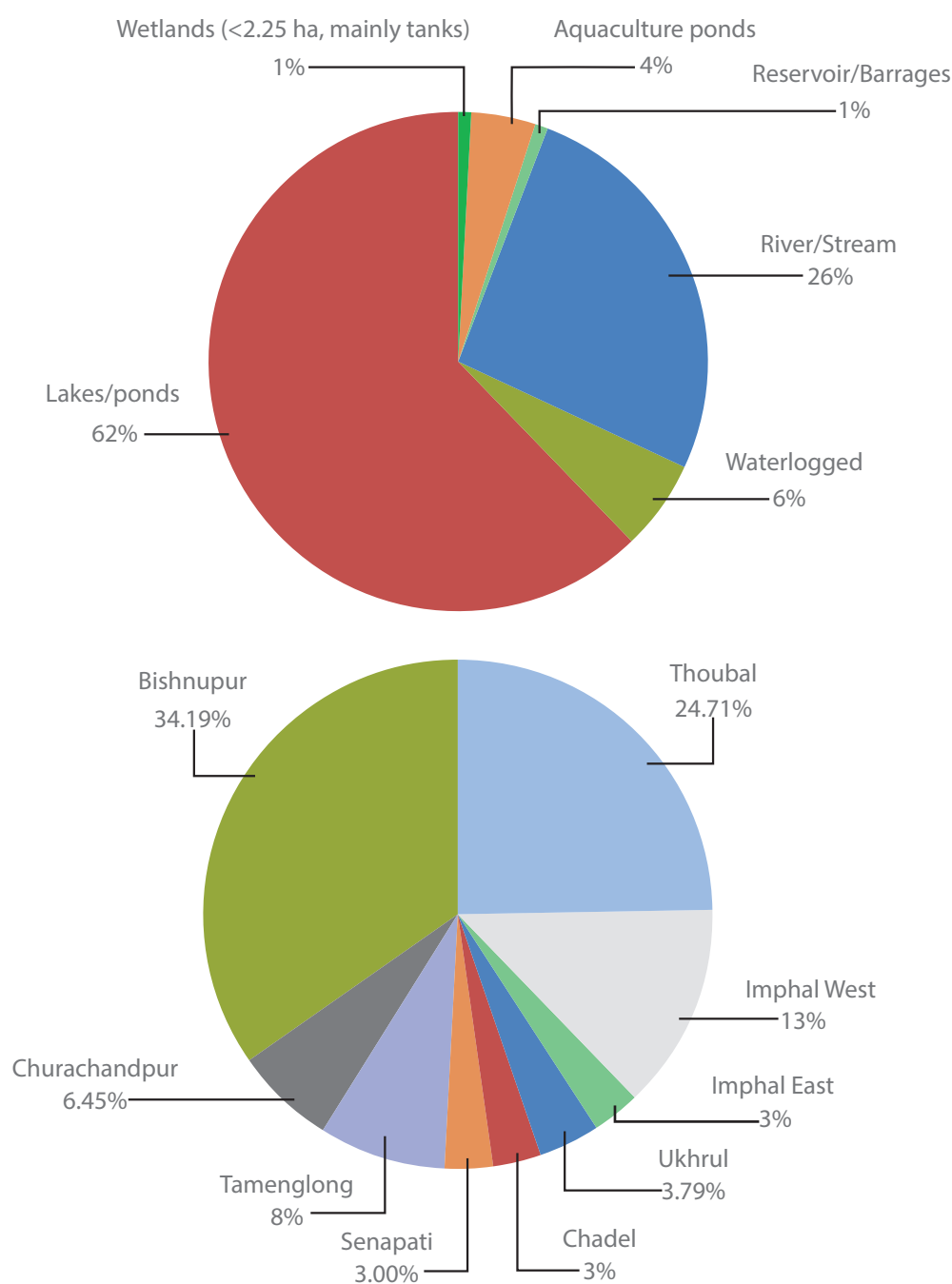
11.5.1 WATER AVAILABILITY AND ITS MANAGEMENT

Manipur receives appreciable amount of unevenly distributed precipitation throughout the year with peak rainfall during monsoon period. The recorded average rainfall in the last 5 decades (1961-2010) was about 1435 mm. There is abundance of water resources, but its full hydrological potential is yet to be realized for enough and safe drinking water supply, generation of hydropower, irrigation facilities, fishery, eco-tourism etc.

The National Wetland Atlas, 2010 reported that Manipur state has 167 wetlands (≥ 2.25 Ha) and 541 wetlands (<2.25 Ha) covering 63,616 ha i.e. 2.85% of total

geographic area (TGA) under different types of wetlands like lake/pond (61.5%), river/stream (26.2%), waterlogged area (5.5%) and aquaculture pond. Out of the 16 (sixteen) districts of Manipur, four districts are rich in wetlands. They are Bishnupur (34.19 % of district's TGA), Thoubal and Kakching (24.71 % of district's TGA) and Imphal West (13 % of district's TGA). Other three districts viz. Chandel, Senapati and Imphal East district has the lowest wetland area covering only 3 % each of their TGA.

FIG 11.1 : DISTRIBUTION OF WATER RESOURCES IN MANIPUR



(Source : National Wetlands Atlas, MoEFCC, Govt. of India)

It is fact that the state's limited water resources are stressed not only due to pollution at open sub-surface water bodies but due to many factors like depleting underground water storage, drying up of stream heads / springs, growing demand by different sectors, increase in population and haphazard water allocation, etc. The state is in one of the high rainfall regions of the country and receives appreciable amount of rain annually as recorded in the last 5 decades (1961-2010). It was 1435 millimetre per annum on an average, which has been termed as high rainfall region in India. Even then the state is facing problems of water availability.

Moreover, India's Network for Climate Change Assessment Report 2010 has reported that Manipur is vulnerable to the water-induced disasters because of its location in the eastern Himalayan periphery, fragile geo-environmental setting and economic under-development.

Out of the available water resources in the State, there are four major river basins of Manipur state, namely

- i. the Barak River Basin (Barak Valley) to the west,
- ii. the Manipur River Basin in central Manipur,
- iii. the Yu River Basin in the east, and
- iv. the Liyai River Basin in the north.

The Manipur River basin in the central Manipur, with a far less discharge capacity of 0.5192 Million hectares per minute in a total catchment area of 6,873 sq. km. on the other hand, is the most important of these river basins as it passes through thickly populated areas and covers the whole of Imphal valley consisting of the five valley districts.

TABLE 11.1 : QUANTUM OF WATER YIELD FROM MAJOR RIVER BASINS OF MANIPUR

RIVER BASIN	ESTIMATED AVERAGE YIELD (MILLION HECTARE METERS)	CATCHMENT AREA (KM2)	PERCENTAGE OF AVERAGE YIELD	PER DAY YIELD	YIELD IN MLD	
Barak River Basin	1.3295	9041	68%	0.00364	364	MLD
Barak	0.8412	6865	43%	0.00230	230	MLD
Tuvai River	0.3453	1860	17%	0.00095	95	MLD
Jiri River	0.143	316	7.30%	0.00039	39	MLD
Manipur River Basin	0.6246	6332	32%	0.00171	171	MLD
Manipur River (uptolthai Barrage)	0.4221	5109	21%	0.00116	116	MLD
Manipur River (beyond Ithai Barrage)	0.2025	1223	10%	0.00055	55	MLD
Total	1.9541	15373	100%	0.00535	535	MLD
	19541000	Mil Liters				

During July 2009, as follow up action of the Hon'ble Supreme Court direction, the Manipur Legislative Assembly has resolved and constituted 2 (two) committees for wetland & water body conservation namely High Level Committee under the Chairmanship of Hon'ble Chief Minister (Annexure-1) and Steering Committee under the Chairmanship of concerned Administrative Secretary (Forests & Environment), Government of Manipur for inventorization, protection, conservation and preservation of the Wetlands / Lakes / Water bodies, etc. of Manipur State. Accordingly, the Directorate of Environment, Government of Manipur being State Nodal Agency for Wetland Conservation in Manipur, in consultation with line departments, had prepared Conservation and Management Action Plan for 19 (nineteen) wetlands of Manipur and submitted to Government of India in 2011. The Manipur State Wetlands Authority has been constituted on 31st Jan., 2018, with the Directorate of Environment as State Nodal Department and constituted two committees on 26th May 2018, namely:

- i. Grievance Committee of Manipur State Wetlands Authority to provide a mechanism for hearing and forwarding the grievances raised by public to the Manipur State Wetlands Authority
- ii. Technical Committee of Manipur State Wetlands Authority to review brief documents, management plans and advise on any technical matter referred by the Manipur State Wetlands Authority

Now, 23 (twenty three) wetlands have been recommended by the Manipur Remote Sensing Applications Centre (MARSAC), Imphal to conduct ground trothing and feasibility study for inventorization and conservation. Out of these 23 wetlands, 6 (six) wetlands namely (i) Jaimeng Wetland, Kangpokpi District, (ii) Waithou Pat Wetland, Thoubal District, (iii) Ikop-Kharung Pat Wetland, Thoubal District, (iv) Yaral Pat Wetland, Imphal East District (v) Pumlun-Khoidum Pat Wetland, Thoubal District and (vi) Utra Pat Wetland, Bishnupur have been recommended by the Technical Committee of Manipur State Wetlands Authority for notification and conservation action based on the reports prepared by the experts of Technical sub-committee of Manipur State Wetlands Authority. Now, the said 6 (six) wetlands of Manipur is under process for Notification in State Gazette for Protection and conservation as per the Wetlands (Conservation & Management) Rules 2010 and 2017.

The Government of Manipur had constituted the River Rejuvenation Committee (RRC) on the 12th April, 2019 with Director (Environment) for preparation of Action Plan of nine rivers namely (i) Nambul River, (ii) Imphal River, (iii) Iril River (iv) Khuga River (v) Khujairok River (vi) Lokchao River, (vii) Manipur River (viii) Thoubal River and (ix) Wangjing River. Now, the action plan for the said 9 (nine) rivers had been prepared and submitted for pollution abatement programme along with different activities like channelization, treatment, utilization and disposal of treated domestic sewage, watershed management, catchment area treatment, maintenance of e-flow of the river, etc. Out of these 9 (nine) rivers, Nambul River has already started action under National River Conservation Plan in the Government of India.

Various projects and programmes taken up by the State to sustainably manage its water resources include irrigation projects, command area development and water management programme, multipurpose river valley projects, flood control projects and wetland conservation and management schemes, integrated watershed development project etc.

It is claimed that urbanisation significantly affects the natural water cycle in terms of the quantity and quality of water. The important question is how 'natural recharge areas' to aquifer systems progressively get 'encroached upon' by infrastructure in the absence of a process of recognising the importance of recharge zones as part of urban planning. Conservation and protection of natural as well as artificial recharge zones in and around growing towns and cities is of utmost importance in an urban groundwater management plan. Protecting recharge areas is relevant both in ensuring optimized groundwater storage as well as in preserving basic groundwater quality, even as the clamour for rooftop rainwater harvesting gathers momentum in large sections of urban India.

The first priority for cities when planning water supply should be the protection, restoration and recharge of their traditional water bodies. This would reduce costs of supply from a distance and also preserve the ecology of the city. There is a growing concern that climate change and its promise of growing intensity of extreme rain events will bring even more flooding to cities and even more despair. Encroachments severely reduce the water holding capacity of the natural reservoirs. This results in outflow of water during monsoon, leading to widespread floods. Rain, as it is said is decentralized, and so should be water supply. Water bodies capture rain or floodwater from rivers. Rainwater harvesting activities and catchment area treatment through watershed management programme has help in not only mitigating runoff water and soil erosion but has also contributed to ground water recharge and rejuvenation of spring water in hill areas. Significant number of farm ponds, dugout ponds and other water harvesting structures have been constructed under Integrated Watershed Management Programme and MNREGS. However, much needs to be done in this area.

We must shift the focus on augmentation of water supply to managing the supply for all and managing to supply clean water. First, we will have to spend less in bringing water to our houses. In other words, cut the length of the pipeline to reduce the electricity and pumping costs and its resultant 'leakage'. This means that we will have to revive local water bodies and recharge groundwater, so that we can source water from sources as close as possible. Secondly, we must use less, not more water in our homes, so that we have less to treat and less to dispose of. Thirdly, we must again cut the costs and transportation of sewage – use decentralized networks and use a variety of technologies to treat sewage as locally as possible. Finally, we must begin to learn that we will have to reuse every drop of our sewage – turn it into drinking water with expensive technology or re-use and recycle it in our gardens, in our industries or use it (after treatment) to rejuvenate natural water bodies. This would require change of standards so that groundwater pollution boards incentivize the reuse of wastewater for recharge. This water-waste agenda needs to

be incorporated deliberately into city plans. This will require reworking the reform conditions, essential for investment in this sector.

Aquatic ecosystems are at the centre of all life and all forms of development. Healthy ecosystems are required for continuous supply of water and other services vital for human well-being and development. According to the Millennium Ecosystem Assessment (MEA, 2005b), ecosystem services comprise four main categories:

- provisioning (e.g. clean water);
- regulating (e.g. flow regulation and flood control);
- cultural (e.g. recreation); and
- Supporting (e.g. habitat for aquatic species).

Ecosystem valuation can be broadly described as what users would be willing to pay directly for the services, or what it would cost to replace the same services with built infrastructure (Ecosystem valuation has demonstrated that benefits far exceed costs of water-related investments in ecosystem conservation. In order to effectively address the myriad environmental challenges, water managers need to recognize and incorporate natural infrastructure into their planning and implementation activities (Dini, 2013). For example, the creation of ‘green corridors’ along rivers, floodplains and streams can link ecosystems, thus absorbing nutrients and reducing water pollution.

11.5.2 WASTEWATER REUSE

Although the concept of wastewater reuse is acknowledged in the water policy, encouraging reuse of grey water and giving incentives to industries for recovery of industrial pollutants, it does not address agricultural irrigation. Therefore, current use of wastewater in agricultural irrigation is done primarily indirectly in an unplanned manner. This is due to the lack of adequate infrastructure to collect and properly treat wastewater. The practice represents health risks for the farmers and consumers of raw crops. Untreated wastewater represents potential risks for the environmental sector. Untreated wastewater degrades water sources affecting life in aquatic systems; it can also affect the soils negatively, as it may add components which reduce the soils’ adequacy for agricultural production. Furthermore, it is a potential risk for public health because it contains pathogens that cause illness. On the other hand, wastewater is an alternative source of irrigation water.

TABLE 11.2: NATURAL INFRASTRUCTURE SOLUTIONS FOR WATER RESOURCES MANAGEMENT

Water supply regulation (including drought mitigation)	Re/afforestation and forest conservation Reconnecting rivers to floodplains Wetland restoration/conservation Constructing wetlands Water harvesting Green spaces (bio-retention & infiltration) Permeable pavements
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Water quality Regulation	Re/afforestation and forest conservation Riparian buffers Reconnecting rivers to floodplains Wetland restoration/conservation Constructing wetland Green spaces (bio-retention & infiltration)
Moderation of extreme events(floods)	Re/afforestation and forest conservation Riparian buffers Reconnecting rivers to floodplains Wetland restoration/conservation Constructing wetland Establishing flood bypasses

11.6 CONCLUSION

The many key Priorities identified by State Mission for water resources if implemented effectively and successfully will take us over the SDG-6. The prioritised areas include

- i. Enhancement of water resources, catchment and improvement of river/ streams basin health through catchment area treatment and conservation of water resources through river basin care and development;
- ii. Averting disasters due to heavy precipitation and increase in extreme events like flood, draught etc. through enhancement/river front development at eroded/hazard zones;
- iii. Watershed management, water harvesting (including rainwater) through rain water harvesting in community lands, roof top harvesting etc. for collection of water sources (integrate to building by laws), construction of small check dams;
- iv. conservation of water resources *[wetland, lakes, rivers, major water bodies]* and encouragement of indigenous and community pond/lake through conservation of water bodies, wetlands (hill and valley), major urban water bodies, conservation and management of Loktak and associated wetlands integrating Manipur river basin(short term action plan as well as long term action plan), comprehensive coverage of ecologically safe sanitation in villages adjoining Pumlun, Ikop, Khanung and Khoidum,
- v. Encourage and development of community water harvesting as mini water reservoir at hill ridges, Minor/integrated irrigation tanks/community ponds, water harvesting in terms of digging/extension of ponds.

12

Terrestrial Biodiversity in Sustainable Development of Manipur

12.1 INTRODUCTION

Biological diversity - or biodiversity - is the term given to the variety of life on Earth. It provides a variety of goods and services essential for a range of human needs such as food, fuel and energy, medicines, clean water and air, flood/storm control, soil stabilisation, pest and disease control, and supports livelihoods, cultural and spiritual values.

12.2 MEGA DIVERSITY COUNTRY AND INDO-BURMA HOTSPOT

India is one of the mega-diversity countries of the world accounting for 2.5% of the land area and 7.5% of the globally recorded species. There are 34 hotspots in the world which contain 75% biodiversity covering just 2.3% of earth's surface, high degree of threat (lost at least 70% of its primary vegetation), unique *Germplasm Centre* and specialised forest communities. 50% Vascular plant species and 42% terrestrial vertebrates exist only on these hotspots and support nearly 60% of the world's plant, bird, mammal, reptile, and amphibian species, with a very high share of endemic species. Indo-Burma hotspot falls in the bio-geographic tri-junction of the Indian, the Himalayan and the Oriental landmass. The characteristics of hotspot are as follows:

- Highest rainfall zone located here.
- Diverse habitats- Alpine, Temperate, Tropical, Cold desert, Wet-lands, Fallows, etc. broadly under wet humid tropics.
- Gateway for migration of floras from Tibet, China, Malaysia, Myanmar, Japan, etc.
- A mega diversity region in India; ca 50% (i.e. 8,500 species) of total Indian angiospermic flora.
- High rate of endemism (ca 4000 species of flowering plants out of 8,500 Spp)
- High diversity in orchids, rhododendrons, primulas, canes & bamboos, hedychiums, medicinal plants, ferns and fern-allies.
- Genetic diversity in Musa, Citrus, Pyrus, Prunus, Curcuma, Oryza, grain legumes, etc.
- Maximum ethnic diversity, tribal populations intimately connected and have influenced flora.

- Maximum habitat disturbance by way of shifting agriculture and developmental activities.
- Evidently the only home of several botanical curiosities

12.2.1 THREATS TO BIODIVERSITY

Biodiversity is already under threat from increased demand for resources, land degradation (e.g. desertification), the loss of habitats, pollution, invasive non-native species as well as genetically modified organisms. Climate change constitutes an additional challenge as it often exacerbates the impacts of these other stresses.

12.2.2 BIO-DIVERSITY AND FOREST RESOURCES

Manipur is known for its richness in bio-diversity, varied topographic and climatic features, cultural heritage etc. The abundance in the diversity of the forests and its resources are attributed to the ideal location of the State at the junction of two world's hotspots of biodiversity, the Indo-Myanmar hotspot and the Himalayan hotspot of biological diversity. According to India State of Forest Report (ISFR) 2017, released by the Forest Survey of India (FSI) Dehradun, Manipur recorded a Forest Cover of 17,346 sq. km in 2017, where the percentage of Geographic Area under forest has been increased by 1.18%. In 2015, the area under forest cover was 76.51% of the total geographical area of the State which has increased to 77.69% as per 2017 assessment. In absolute terms, a net increase of 263 sq. km. has been recorded in Manipur which has been attributed to the conservation and plantation activities as well as re-growth of shifting cultivation areas.

TABLE 12.1: CHANGE IN FOREST COVER:

S. NO.	PARTICULARS	ISFR, 2015	ISFR, 2017	REMARKS
1	Percentage of Total Geographic Area	76.51%	77.69%	Increased by 1.18%
2	Increase in Forest Cover	17083 sq. km.	17346 sq. km.	Increased by 263 sq. km.
3	Very Dense Forest	729 sq. km.	908 sq. km.	Increased by 179 sq. km.
4	Moderately Dense Forest	5964 sq. km.	6510 sq. km.	Increased by 546 sq. km.

TABLE 12.2: THE BIENNIAL CHANGE IN FOREST COVER OF MANIPUR HAS BEEN AS FOLLOWS:

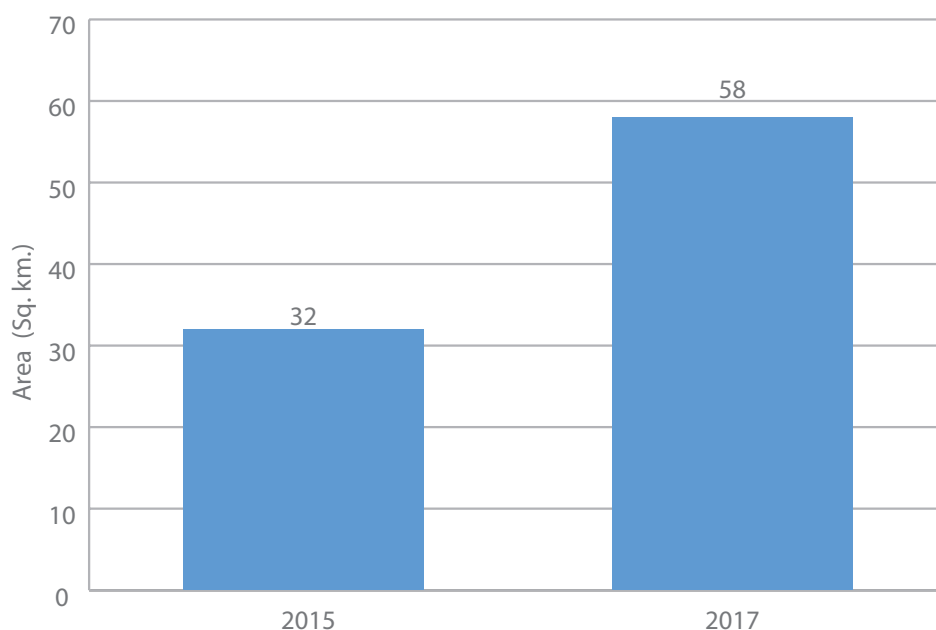
YEAR	GEOGRAPHICAL AREA OF THE STATE OF MANIPUR (SQ. KM)	AREA UNDER FOREST COVER (SQ. KM)	INCREASE(+)/ DECREASE (-) (SQ. KM)	% OF GEOGRAPHICAL AREA OF THE STATE
2005	22327	17086	-133	76.53
2007	22327	17280	194	77.40
2009	22327	17280	0	77.40
2011	22327	17090	-190	76.54
2013	22327	16990	-100	76.10

YEAR	GEOGRAPHICAL AREA OF THE STATE OF MANIPUR (SQ. KM)	AREA UNDER FOREST COVER (SQ. KM)	INCREASE(+)/ DECREASE (-) (SQ. KM)	% OF GEOGRAPHICAL AREA OF THE STATE
2015	22327	17083	93	76.51
2017	22327	17346	263	77.69

The total carbon stock of forest in Manipur is 143.091 million tonnes (524.667 million tonnes of CO₂ equivalent) which is 2.02% of total forest carbon of the Country. In 2015, within forest, an increase of 26 sq.km. has been observed in the water body coverage compare to the assessment of 2005. As per 2005 assessment, there were water bodies over 32 sq. km. inside forest area. This has increased to 58 sq. km. as per 2015 assessment made by Forest Survey of India.

The state has vast area of forest covering as much as 17,418 sq. kms. which forms about 78% of the total geographical area of the state. The actual area under forest is about 15% higher than the recorded forests area of the state. Of the total forests area, reserved forests and protected forests accounts for 1,467 sq. kms. and 4,171 sq. kms., during 2017-18. The remaining 11,780 sq. kms. is treated as 'Unclassed forest'. The important major forests products are timber, firewood, bamboos, cane etc. The production of timber other than teak has shown an increase from 3.48 thousand cubic meters in 2016-17 to 148.71 thousand cubic meters in 2017-18.- Economic Survey of Manipur-2018-19

This increase in area under natural water bodies in forests of Manipur may be attributed to the protection and conservation of forests and extensive plantations taken up in last 5-10 years. Being 77.69% geographical area of the State under forest cover, there is a high level of dependency of people on forests in Manipur. Being majority population of the State a forest-dependent community, forests is the source of food security, energy, water and income. So far as role of forests in



food security is concerned, it may be mentioned that many herbs and wild edible vegetables and fruits collected from forests, supplement the diet in Manipur. In case of Manipur, the ground water is a scarce resource. As such the use of ground water is negligible in the State. The major sources of water in the State are perennial rivers, lakes and springs in hills. All these three sources of water will remain live only when the forest cover in the State is maintained and augmented. Therefore, the protection and conservation of forests particularly dense forests should be the prime objective of the State. The treatment of watershed areas of major rivers and lakes with extensive plantation activities and technical vegetative measures will play a vital role in river rejuvenation. The State of Manipur is mostly dependent on hydro-electricity which may be attributed to protection of forests in upstream in the hills of Manipur as most of the rivers in the State are originating from the hills of Manipur. Further, majority of population of the State being rural population is dependent on fuelwood coming out of forest of Manipur. Being a forest dependent State, the majority population particularly in hills gets their income from forest produces or forest based income generating activities. Such activities include collection of Non-Timber Forest Produces (NTFPs), medicinal plants, timber and bamboo operations including manufacturing of wood and bamboo products. The people involved in collection of NTFPs and medicinal plants form an important agent in the supply chain of food and pharmaceutical industries.

The forests and wildlife of Manipur project a huge potential for Nature Tourism, Adventure Tourism and Cultural Tourism. Out of 34 hotspots across the globe, India has four and out of the four, Manipur has two – Himalayan and the Indo-Burma hotspot. In fact, Manipur has the largest area of Indo-Burma hotspot as compared to other Indian States. Manipur is the home of Brow-Antlered deer called as Sangai (*Rucervus eldii eldii*), one of the endangered deer species in the world, available only in Keibul Lamjao National Park of the State, a unique floating National Park with floating vegetative mass called 'Phumdi'. In addition, the State also has Shirui National Park, Yangoupokpi Lokchao Wildlife Sanctuary, Kailam Wildlife Sanctuary, Jiri-Makru Wildlife Sanctuary, Bunning Wildlife Sanctuary, Zeilad Wildlife Sanctuary, Khongjaingamba Ching Wildlife Sanctuary and Thinungei Bird Sanctuary. About 4.2% of the geographical area of the State falls under Protected Area (PA) Network including 10 Community Reserves. Moreover, Forest Department is also maintaining ex-situ conservation sites viz. Manipur Zoological Garden, Conservation Breeding Centre of Sangai at Langol Reserve Forest, State Orchidarium, Botanical Garden and an Arboretum at Imphal.

Forests particularly in hills are always under pressure due to shifting cultivation and illegal felling and extraction of other forest produces. Deforestation in hills is a major cause of soil erosion, landslides and siltation of rivers in the State. Developmental needs of the people put an additional threat to green cover of the State. Thus, Forest Department of Manipur carries an immense responsibility to maintain a balance between conservation and people's need. While meeting the people's need, on one hand it becomes essential for the Department to conserve pristine forests of hills to maintain hydrological regime, water resources and soil fertility of Manipur and on

the other hand it is equally essential to convert open forests in to dense forests and increase tree cover to provide better environment to people.

High ecological value of the ecosystem services generated by the forest of Manipur include the services like climate change mitigation, carbon sink, oxygen releaser, noise control, water conservation, soil erosion control, sediment retention, soil formation, maintenance of nutrient cycle, raw materials for forest based activities/ industries, diverse gene pool, recreation, cultural values etc.

VISION 2030: FORESTRY SECTOR

MISSION	PRIORITY AREAS	PLAN OF ACTION
PROTECTION, CONSERVATION AND CONSOLIDATION OF FORESTS	Boundary Consolidation of notified forests areas including PAs. Forest Land Encroachment Issues. Prevention of Forest Fires. Establishment of a Forest Protection Force. Establishment of fully equipped GIS lab in all Forest Division in tune with Digital India.	Digitization of forest boundaries. Effective implementation of laws and regulations pertaining to forests & wildlife and eviction of encroachers. Fire-fighting training and digital mapping of fire-prone forest areas. Strengthening the mechanism of forest protection by constitution of a Battalion of Forest Protection Force.
INCREASE IN CARBON STOCK AND SUSTAINABLE MANAGEMENT OF FORESTS	Improvement in density of forests. Improvement in Growing Stock. Re-stocking of degraded forest areas. Formulation of Working Plans as per the new Working Plan Code 2014. Sustainable Management of forest produce including NTFPs. Formulation of Bamboo Policy for the State for sustainable use and better utilization.	Afforestation and reforestation of degraded forest areas. Regeneration of forest areas and improvement in measures for soil and moisture conservation. Extension of the Sustainable Forest Management (SFM) techniques among the various stakeholders. Maintenance of Natural Bamboo brakes by protection and sustainable management. Development of marketing platforms for bamboo products. Development of supply chain for sustainable use of NTFPs and medicinal plants.
PROTECTED AREA (PA) NETWORK AND WILDLIFE MANAGEMENT	Protect, conserve and improve wildlife habitats. Wildlife Management. Community participation in protection and conservation of Wildlife. Development of Eco-Tourism.	Conservation of flora and fauna of the region especially rare, endemic and threatened species. Protect and conserve migratory birds and their habitats. Project formulation, Micro Planning & Management plan. Habitat management in Protected Areas and other wildlife areas including wetlands. Development of Nature Tourism, Adventure Tourism and Cultural Tourism.

MISSION	PRIORITY AREAS	PLAN OF ACTION
COMMUNITY PARTICIPATION & LIVELIHOOD GENERATION	Development of Agro forestry, farm forestry and urban forestry. Forestry Extension. Reforms in Joint Forest Management (JFM) model. Community mobilization and people participation in sustainable management of forests. Forest for livelihood and mainstay of economy.	Development of Agro-forestry models for farmlands and community lands. Development of strategies for better and active involvement of community and JFMCs in sustainable forest management. Development of mechanism for carbon trading. Development of strategies for livelihood from forests. Microfinance for women empowerment and NTFP-based livelihood generation.
BIODIVERSITY CONSERVATION and CLIMATE CHANGE MITIGATION	Mitigation and adaptation of climate change. Reducing Emissions from Deforestation and forest Degradation (REDD+) Sustainable use of natural resources. Quantification of existing Carbon Stock. Measures to shift to renewable energy resources.	Involvement of all stakeholders in biodiversity conservation, sustainable resource use and benefit sharing. Maintenance and protection of existing Carbon stock and increasing green cover in the State. Increasing the area under Tree Outside Forest (TOF) on community land, farmlands, wastelands, etc. thorough mass participation. Sustainable use of the water resources including rainwater harvesting. Development of mechanism to use the existing renewable energy resources.
NTFP DEVELOPMENT	Formulation of NTFP policy. Increase area under NTFP plantation outside forest. Sustainable utilization of NTFPs.	NTFPs plantation on farmlands and abandoned shifting cultivation areas. Value addition of NTFPs. Development of supply chain and marketing linkages for NTFP.
CAPACITY DEVELOPMENT OF FOREST PERSONNEL	Modernization of Manipur Forest Training School. Capacity building of frontline field staff. Utilization of technology.	Development of domain knowledge for better protection and conservation strategies. Training of forest staff in communication skill and information technology. Training for Micro planning at grassroots level. Training on development of Forest based micro entrepreneurship for livelihood generation IT based communication models including developing web applications for transit of forest produce and prevent illegal movement.

MISSION	PRIORITY AREAS	PLAN OF ACTION
<p>AWARENESS AND OUTREACH PROGRAMMES INCLUDING NATURE LEARNING CENTRES</p>	<p>Providing institutional mechanism for dissemination of information and communication for various stakeholders.</p>	<p>Capacity building for all stakeholders.</p> <p>Awareness generation programmes in prevention of forest fires.</p> <p>Awareness activities for greater people participation including Nature Camps and activities with focussed attention on students and young generation.</p> <p>Development of information centres like Nature interpretation Centres, museum, web applications, mobile applications, etc.</p> <p>Incorporating nature and environment conservation practices in education syllabus.</p>

PROPOSED MILESTONES OF FOREST DEPARTMENT

1. Complete Digitization of Reserved Forests & Protected Area (PA) Network.
2. Constitution of Manipur Forest Protection Force.
3. Increase of Forest Cover and carbon stock of the State by 0.5%.
4. Formulation of Bamboo and NTFP Policy and development of project on NTFPs in Mission mode.
5. Revision of Working Plan of all Divisions as per new Working Plan Code.
6. Increase in PA Network by 0.25% through notification of Protected Areas.
7. Formulation of Management Plan of all PAs and notification of ESZs of all PAs.
8. Increase in Tree Cover Outside Forests by 5 %.
9. Development of Eco-Tourism in Keibul Lamjao National Park, Bunning Wildlife Sanctuary, Zeilad Wildlife Sanctuary and in other potential forest areas.
10. Establishment of Ex-situ Conservation Centers for species like Hoolock Gibbon, Himalayan Black Bear, Slow Loris, etc.
11. Establishment of new State Forest Training Institution with modern state-of-the-art facilities.

12.3 BIODIVERSITY LOSS AND CHOICE FOR CONSERVATION

The loss of bio resources in the Indo-Burma biodiversity hotspot is occurring at an alarming rate, as a consequence of increasing population pressure, agricultural land degradation, age old practice of jhumming or shifting cultivation, urbanization and neglect, largely contributed by climate change. Biodiversity loss and degradation of ecosystems resulting from climate change have a greater impact on the poor who rely directly on the natural environment to meet their basic needs.

Among the vulnerable groups, indigenous peoples will be disproportionately impacted and their livelihoods will be adversely affected if climate and land-use change lead to losses in biodiversity, including losses to habitats of animals which are important food sources.

Forest Biodiversity in Mitigating Climate Change

Forests have an important contribution to the net terrestrial sink. The realisation of importance of forests in mitigating climate change (CC) has led countries to study their forest carbon budgets, (WGBU,1998).

12.3.1 RICH FLORA

The state harbours over 3,000 species of higher plants and contribute important source of germplasm., the dominant families in flora of Manipur are: Orchidaceae: ca 249 species (69 genera); Poaceae: ca 200 species (87 genera); Leguminosae: ca 168 species (65 genera); Asteraceae: ca 84 species (63 genera); Rubiaceae: ca 84 species (35 genera); Euphorbiaceae: ca 52 species (25 genera); Acanthaceae: ca 50 species (22 genera); Cyperaceae: ca 49 species (10 genera); Rosaceae: ca 48 species (14 genera); Lamiaceae: ca 43 species (32 genera); the largest genus recorded is the orchid *Dendrobium* (43 species).The Manipur state also harbours a good number of primitive flowering plants. As many as 41 primitive flowering plants under 11 families and 75 species of endemic plants have been listed so far. Moreover many taxa in Manipur are facing threat of survival in their natural habitats; probably few of them have already become extinct.

12.3.2 ORCHIDS

Many epiphytic and terrestrial orchids of immense horticultural value are grown in wild. About 249 species belonging to 69 genera of the family *Orchidaceae* have been reported from this state. *Vanda coerulea* (*Blue vanda*) and *Ranantheraaimschootiana* (*Red vanda*) are included in schedule VI (plants) of the Indian Wildlife (Protection) Act, 1972 (Amended, 1991). Due to overexploitation most of the orchids have already been depleted considerably and several are seen only in orchidaria.

12.3.3 MEDICINAL PLANTS

The sector has immense potential as the sustainable commercialization can benefit cultivators and industry both by opening up national and global markets for new products from the region. *Acoruscalamus*, *Asparagus racemosus*, *Adhatodavesica*, *Catharanthusroseus*, *Centellaasiatica*, *Cymbopogonflexuosus*, *Cymbopogonmartinii*, *Gloriosasuperba*, *Menthaarvensis*, *Ocimumbasilicum*, *Piper longum*, *Rauvolfia serpentina*, *Vetiveriazizanioides* have already established markets and their cultivation can ensure the growers with a guaranteed market. WHO has insisted to develop Good Agricultural Practices (GAP) for growing medicinal plants to guarantee quality of raw drug and to facilitate the standardization of quality of drugs. NMPB is established with an aim to bring in the much-needed coordination among different players for development of medicinal plant sector.

Manipur has a record of existence of more than 121 algae, 50 species of fleshy fungi and a few Mosses. Algae like *Lamanea australis* and fungi like *Ustilago consimilis*, *Ustilago esculenta* and *Vulvariella esculenta* are some of the rare species. *L. australis*, *L. torulosa*, *L. fluviatilis*, *L. mamillosa* and *L. catenata* which are scarcely available during their short growing period and also have considerable potential of protein, lipid, carbohydrate, free amino acids that may be used in food and pharmaceutical industry as a source in preparation of nutrient supplements, medicine and fine chemical synthesis.

12.3.4 BAMBOO RESOURCES

The state of Manipur is rich in bamboo resources. Out of 136 species of bamboo in India 89 bamboo species under 16 genera grow naturally or cultivated in tropical and subtropical region of Northeast India (NMBA 2008) and 53 bamboo species are reported from Manipur (Anonymous 2010). 45 species of bamboos grow in hills and plains of Manipur. These include 13 species of *Bambusa* along with one variety, 4 of *Cephalostachyum*, 1 of *Chimonobambusa*, 1 of *Chimonocalamus*, 9 of *Dendrocalamus*, 2 of *Drepanostachyum*, 2 of *Gigantocloa*, 1 of *Himalayacalamus*, 2 of *Melocalamus*, 1 of *Melocanna*, 1 of *Neomicrocalamus*, 1 of *Pseudostachyum*, 3 of *Schizostachyum*, 1 of *Thyrsostachys* and 2 of *Yushania*.

In view of huge bamboo stocks in the state, proper management of the bamboo resources to ensure an increasing bamboo yield to meet the local need and export of value added bamboo products, should be taken up in a time bound manner. Bamboo is excellent species for agroforestry with high food and carbon values. Thus, bamboo has significant potential of making CDM projects and enhanced food security.

12.3.5 AGRICULTURE

Forests and agriculture provide the main sources of income. Rice grown in 72 percent of the area are the major crop, and the rich soil also supports maize (1.79 percent), Sugarcane, Mustard, Tobacco, Fruits, Vegetables and pulses like peas and beans. Terracing is common in the hills, where the tribes plough the hill slopes with hand hoes.

Vavilov Centre of Diversity of crop Plants-Manipur has a rich gene pool of primitive cultivars and land races. There is enormous gene pool of rice (269 varieties), Maize and Coix etc. There are also numerous wild relatives of cultivated plants. Mention may be made of *Alpinia*, *Alocasia*, *Amomum*, *Mucuna*, *Payrus*, *Prunus* & *Rubus* etc. The genus *Dioscorea* is represented by 8 species and *Piper* with 21 species. Wild species of banana like *Enseteglaucum*, *Musa cheesmanii*, *M. magnesium*, *M. balbisiana* etc. have been recorded from this state. The genus *Citrus* is represented by *Citrus indica*, *C. latipes*, *C. maxima*, *C. medica* and other varieties etc. Fiber crops like *Bauhinia*, *Butea*, *Cannabis*, *Corchorus*, *Crotalaria*, *Sesania*, *Sida* and their varieties are common in this state.

12.3.6 ANIMAL BIODIVERSITY

Manipur with its just 0.7% of India's land mass, has more than 22% animal resources, two-third of which are land based. Many of its wildlife are not yet fully identified and studied and many more species are still to be discovered.

Vertebrate animals of India and Manipur

CATEGORY	INDIA	MANIPUR
Mammals	370	120
Birds	1,200	500
Reptiles & Amphibians	580	100
Fishes	1,700	170

Other species of wildlife (fauna) described from Manipur

Annelida	16 sp.
Arthropoda	150 sp.
Mollusca	28 sp.
Nematoda	292 sp.
Zooplankton More than	50 sp.

Protected area network in Manipur comprises of the following in-situ and ex-situ conservation sites:

SL. NO.	NAME OF CONSERVATION SITE	LOCATION (DISTRICT)	AREA IN SQ.KM.
1.	Keibullamjao National Park	Keibullamjao (Bishnupur)	40.00
2.	Yangoupokpi Lokchao Wildlife Sanctuary	Lokchao (Chandel)	184.80
3.	Shiroi Hill National Park	Ukhrul	41.00
4.	Kailam Wildlife Sanctuary	Churachandpur	187.50
5.	Jiri-Makru Wildlife Sanctuary	Tamenglong	198.00
6.	Bunning Wildlife Sanctuary Tamenglong 115.80	Tamenglong	115.80
7.	Zeliad Wildlife Sanctuary	Tamenglong	21.00

TABLE 12.2: EX-SITU CONSERVATION SITES IN MANIPUR

SL. NO.	NAME OF CONSERVATION SITE	LOCATION (DISTRICT)	AREA IN SQ.KM.
1.	Manipur Zoological Garden	Iroisemba, Imphal West	0.08
2.	2 nd Home SANGAI	Iroisemba, Imphal West	0.60
3.	Orchid Preservation Centre	Khonghampat, Imphal West	0.50

Other animals found in Keibul Lamjao park are Hog Deer (Kharsa), Large Indian Civet (Sadung), Common Otter (Sanamba), Small Indian Civet (MoirangSathibi) and Wild Boar (Susscrofa)

Few threatened mammals of Manipur.

1. *Arctictis binturong* Binturong
2. *Bosgaurus* Gaur or Indian Bison
3. *Cepicornisumatraensis* Sarow
4. *Cervus eldi eldi* Manipur Sangai
5. *Felistemmincki* Golden cat.
6. *Hylobateshoollock* Hoolock gibbon
7. *Neofelisnebulosa* Clouded leopard.
8. *Nycticebuscoucang* Slowlorris.
9. *Surscorta* Wild bear

Few threatened Birds of Manipur Birds: Common name

1. *Aceronipalensis* Hornbill.
2. *Syrmaticushumiae* Hum's bartailed pheasant.
3. *Tragopanblythii* Blyth's tragopa

Few threatened **Reptile and Amphibians** of Manipur

Reptile and Amphibians : Common name

1. *Pythons* sp. Python.
2. *Tylotritonverrucosus* Himalayan newt.
3. *Varanus bengalensis* Large Bengal monitor lizard.
4. *Varanussalavator* Water lizard

An intensive research on the invertebrates of Manipur has to be initiated.

SDGs articulate the strategies to overcome the challenges and tap the opportunities by harnessing the power of science and undertaking boundary-less partnership with different stakeholders in food supply chain at national and international level. Manipur Vision 2030 is the blue print of strategies planned to address the future challenges in meeting the state's food security, and preserving the environment.

12.4 CONSERVATION AND SUSTAINABLE USE OF BIORESOURCES

There is a growing recognition worldwide that conservation and sustainable management of bio-resources are pressing priorities in the world today. The choice of conservation methods and techniques depend on the objectives of the particular conservation effort, the breeding system and behaviour of the species in question as well as the available resources including funds, trained personnel, infrastructure and technologies. The use of biotechnological tools and "bio-prospecting" will open new vistas in medicine, agriculture, silvi-culture, horticulture, environment and other important issues in promoting conservation and sustainable use of bio-resources.

The vision for agriculture has both short-and long-run dimensions. The short-run

product focus should be to move agriculture from being subsistence to cash-crop oriented agriculture and should have an important trade focus so that economic linkages with the high-value items like commercial floriculture and other foliage plants and low-volume, high value horticulture crops, coloured capsicum, tomatoes, asparagus and broccoli may be established.

However, in the longer run, the State must attempt to move the labour force out of primary agriculture into less land/labour intensive areas like horticulture, dairy farming and forestry based non-timber products. These require dedicated transport corridors and specialized storage facilities. Potentials of conservation agriculture, zero tillage, precision agriculture and micro-irrigation need to be explored and fine-tuned. The potential to sequester carbon in soil around the world through soil management has paramount significance. Soil management practices that usually improve soil organic matter include; (1) Conservation tillage (2) Cover crops (3) more complex crop rotations, especially those with high-residue crops, (4) incorporation of crop residues (5) nutrient management (5) alternate land use (6) use of biochar.

With the advancement in weather forecasting and remote sensing technologies short term and medium term prediction can be made more precisely and effective amendments can be implemented to meet natural disasters like drought and floods. Agroforestry systems, crop rotations, intercropping, and conservation tillage provide opportunities to protect crops and animals from pests and diseases while maintaining yields without heavy investment in artificial chemicals. Opportunities are opening up with advancement and availability of modern technologies. Therefore, there is an urgent need for our preparedness with concrete action plan to face these challenges.

Livestock and Climate Change.

Livestock sector is key contributor to arrange of critical environment problem. Livestock contribute both directly and indirectly to climate change through the emissions of green house gases such as carbon dioxide, CH₄ and nitrous oxide.

Proposed solution:

- i. Modification of housing system of livestock.
- ii. Introduction for controlling of greenhouse gas emission from livestock.
- iii. Utilisation of animal manure for energy intensive and fertilizer as an alternative means for synthetic fertilizer.
- iv. Safeguard environmental pollution and prevent spread of enteric disease.

SPICES:

The State's climatic conditions offer vast scope for production of spices, particularly high valued organic spices. Spices such as the lakadong turmeric, chilli and ginger have high intrinsic value and hold vast industrial and pharmaceutical potential. Hill areas of Manipur hold high potential for large cardamom, organic ginger, turmeric and chillies. There is great scope in promoting production of organic spices in north

eastern States by popularizing organic farming practices among growers. Various schemes are being implemented by the Spice Board in NE.

Geo-political structure of the region suggests that industrial development should be based on locally available resources such as bamboo, natural rubber, orange, tea and horticultural products. A people-centric strategy for development would be to add as much value to these resources within the region, rather than marketing the raw material to the rest of the country. This would create more jobs and enhance income-generation, in addition to promoting industrialization within the region. A planned exploitation of agriculture and allied sectors such as tea, bamboo diversified products, sericulture, floriculture and herbal and medicinal plants could provide the necessary boost to manufacturing and self-employment. The small manufacturers can be nurtured initially with the help of captive markets. Future challenges for production are formidable with uncertain impact of climate change, declining water availability and falling margin of profitability. Maintenance of genetic and species diversity and of spatial heterogeneity in low-input agricultural systems reduces the risk of crop failure in a variable environment and reduces the potential impacts of pests and pathogens (*high to medium certainty*).

Floriculture: A wide range of ornamental flowers are found in this part of the region, mainly gladiolus, lilies, chrysanthemum, roses, anthurium, gerbera and dahlia. Orchids also deserve special attention. The State can also promote the cultivation of cymbidium, paphiopedilum and dendrobium which are in great demand.

INDIGENOUS KNOWLEDGE, INSTITUTIONS AND CONSERVATION ETHOS:

Numerous and distinctive rituals, taboos, totemism such as those of the relation between the snake/python form and the ruling dynasty, puja materials such as flowers, fishes, trees for yek/salais and clans, stand out as the masterpiece of religious belief and expressions of culture that indicate the composite culture of Manipur and conservation through rites and rituals. Native flora and fauna in the folk life and rituals throw light on traditions prevailing in a particular community and reflect conservation ethos. One very important aspect of biodiversity conservation is to involve local people and ensure an element of 'use' at a sustainable level.

Home Gardens are the traditional agroforestry systems that have played an important role in biodiversity conservation and hence they can be recognized as unit for studying species composition, diversity, regeneration, production, nutrient dynamics and resource management. Application of local knowledge systems and innovations in conservation programmes is of prime importance not only for developing countries but for the whole world heritage.

The sacred groves of Manipur falling within Indo-Myanmar hot spot of biodiversity are a prominent feature in its cultural landscape. In Sacred Groves of Manipur, there is prevalence of rich germplasm, regeneration of such species in the sacred groves is observed that are otherwise considered as threatened and nutrient conservation

through soil-litter system. There is a strong need to understand the scientific aspects of preserving biodiversity in sacred groves by knowing the ecological functions in terms of significant conservation and protection offered to valuable forest wealth.

12.5 ROAD AHEAD

It is imperative to evolve effective public and private sector partnerships and to undertake confidence building measures for development of technologies which are good both for public and the private sectors. The following measures are being proposed:

EVALUATION OF BIODIVERSITY AND CONSERVATION NEED

- Inventorization, documentation and qualitative and quantitative evaluation of Biodiversity and threats operating.
- Generate manpower for handling these tasks.
- Seek international cooperation in monitoring and checking the spread of invasive alien species.
- Possibilities of inclusion of some of these hot spots in the existing protected area network.
- Establish (where possible) biological corridors for inter linking the smaller hot spots
- Monitor the populations of “vulnerable and rare species” and through biotechnological tools multiply and rehabilitate in their original habitats.
- Workout strategies for ‘Bio prospection” and sustainable utilization of bio resources.

SUPPORTING NATIONAL BIODIVERSITY ACTION PLAN

- Accelerate effective actions at the central, state and local levels to implement provisions under the Biological Diversity Act 2002 and its Rules 2004.
- Review enabling policies to prevent the transfer of prime agricultural land to non-agricultural purposes, and promote sustainability of agricultural lands
- Develop consortium of lead institutions engaged in conservation providing linkage and networking across public and private sectors.
- Promote application of biotechnology tools for conserving endangered species.
- Encourage DNA profiling for assessment of genetic diversity in endangered species to assist conservation.
- Strengthen participatory appraisal techniques and encourage formation of local institutional structures for planning and management of natural resources, ensuring participation of women.

- Preserve and strengthen traditional, religious, ritualistic, ethical and cultural methods of conservation
- Strengthen manpower, infrastructure and other pertinent capacities including upgradation of skills to address new and emerging requirements in field of biodiversity conservation and management.
- Develop a system of natural resource accounting reflecting the ecological as well as economic values of biodiversity, with special attention to techniques of green accounting in National Accounts and estimation of positive and negative externalities for use of various types of natural resources in the production processes as well as in household and government consumption.
- Support projects and pilot studies aimed at validating methods of valuation of bio-resources.

Section IV



Affordable and Clean Energy Policy

13.1 INTRODUCTION

Energy is considered to be one of the important drivers of economic development of a country. The growth of a developing economy depends on the growth of energy availability and energy consumption. Just like a slogan “water to all” by the state and central government, “energy to all” is also another slogan of every government irrespective of their ability or inability to fulfil their promise. It is important to see how far the dream to ensure 24x7 electricity supplies to all sections of the society in Manipur is going to be a reality by the joint venture of the Government of India and Government of Manipur.

13.2 POWER SCENARIO IN INDIA

Access to affordable and reliable electricity is critical to a country's growth and prosperity. India has made significant progress towards the augmentation of its power infrastructure. In India, the installed power capacity had increased from 1713 MW (megawatts) as on 31 December 1950 to 3,60,456 MW (as on 31.07.2019) (Source: Central Electricity Authority (CEA)). Thermal power plants accounted for 70.8% of the total installed capacity. The share of hydro and nuclear energy was only 11.81% and 1.80%, respectively. The all-India gross electricity generation from utilities, excluding that from the captive generating plants, rose from 5107 GWh (gigawatt-hours) in 1950 to 12,35,358 GWh in 2016-17 (Energy Statistics 2018). Total electricity generation in the country from utilities and non-utilities during 2016-17 was 14,32,358 GWh. The estimated electricity consumption was 10,66,268 GWh during 2016-17. The industrial sector accounted for 40.01% followed by domestic consumption (24.32%), agriculture (18.33 %) and commercial sectors (9.22%). Per capita energy consumption in 2016-17 was 2,23,51 Mega Joules. The energy intensity is defined as the amount of energy consumed for generating one unit of Gross Domestic Product (at constant prices). The Energy Intensity (at 2011-12 prices) decreased from 0.2732 Mega Joules per rupee in 2011-12 to 0.2401 Mega Joules per rupee in 2016-17. The growth of electricity consumption over the past decades has, however, been slower than the GDP growth. This could be due to the high growth of the services sector and efficient use of electricity. However, it is a matter of concern that per capita consumption of electricity in India is among the lowest in the world. Moreover, the poor quality of power supply and frequent power cuts and shortages impose heavy burden on India's fast-growing trade and industry.

India produced 36.01 MT of crude oil during 2016-17. India is highly dependent on import of crude oil. Net imports of crude oil increased from 121.67 MTs during 2007-

8 to 213.93 MTs during 2016-17. The country currently imports 70% of its oil and this imports share is expected to exceed 90% by 2030. It began importing gas in 2004 and is projected to reach an import dependency of almost 40% in 2030. It has adopted a four-pronged approach to energy security, comprising of import source diversification and acquisition of equity oil, strategic oil stocks, increased domestic exploration and production, and fuel diversification. The oil refining capacity, on 31.3.2017, was 234 MMT (million metric tonnes) per annum. The production of petroleum products increased from 5.7 MT during 1970/71 to 110 MT in 2003/04. Still we need to import oil from other countries.

The energy–GDP elasticity, defined as the ratio of the growth rate of energy to the growth rate of GDP, captures both the structure as well as efficiency of the economy. The energy–GDP elasticity during 1953–2001 has been above unity. However, the elasticity for primary commercial energy consumption for 1991–2000 was less than unity (Planning Commission 2002). This could be attributed to several factors, such as demographic shifts from rural to urban areas, structural economic changes towards lesser energy industry, impressive growth of services, improvement in efficiency of energy use, and inter-fuel substitution.

COAL

India now ranks third amongst the highest coal producing countries in the world. Being the most abundant fossil fuel in India till date, it continues to be one of the most important sources for meeting domestic energy needs. It accounts for 55% of the country's total energy supplies. Power sector alone consumes 75% of the coal produced in the country. Through sustained increase in investment, the production of coal had increased from about 70 MT (million tonnes) in the early 1970s to 662.79 MT in 2016-17. Coal deposits are mainly confined to eastern and south-central parts of the country. The states of Jharkhand, Odisha, Chhattisgarh, West Bengal, Madhya Pradesh, Telangana and Maharashtra account for 98.20% of the total coal reserves in the country. As on 31.03.17, the estimated reserves of coal were 315.14 billion tonnes.

Natural gas: India will continue to depend on importing LNG in the short to medium term to bridge the demand gap even if we have domestic sources of natural gas.

Renewable energy: Renewable energy sources are clean and indigenously available and can play an important role in addressing the energy security concerns of a country. Today, India has one of the highest potentials for effectively using renewable energy sources. The country is the world's fifth largest producer of wind power after Germany, USA, Spain, and Denmark.

Despite the increasing dependency on commercial fuels, a sizeable quantum of energy requirements (i.e. 40% of total energy requirement), especially in the rural household sector, is met by non-commercial energy sources, which include fuel, wood, crop residue, animal waste including human and draught animal power. However, other forms of commercial energy which have higher quality and efficiency are steadily replacing the traditional energy resources being consumed in the rural sector.

13.3 POWER SCENARIO IN MANIPUR

Use of electricity started in Manipur way back in 1930 when two micro Hydel-stations having capacities of 100 Kw and 56 Kw were commissioned at Leimakhong. The power generated from these stations were mainly supplied to the load centres like the Palace compound and Bazar area of Imphal through a long 11 KV line. Overall management including operation and maintenance of the power supply was done by the then Manipur State Hydro Electricity Board. It was then transferred to Public Works Department, Govt. of Manipur. It started functioning independently as the Electricity Department, Govt. of Manipur in February, 1970. In order to meet the increasing power demand of the state, one 132 KV substation at Yurembam was commissioned in December 1981 to facilitate the purchase of power from Assam. Meanwhile, the Loktak Hydel Electric project of capacity 3X35 MW was also commissioned under central sector in 1984. Power generated from such regional projects are shared amongst the states in the region as per the allocations made by the Central Government. With effect from 1st Feb., 2014 the Electricity department, Government of Manipur has been restructured into two companies, the Manipur State Power Distribution Company Limited (MSPDCL) responsible for distribution and the Manipur State Power Corporation Limited (MSPCL) responsible for transmission and generation functions.

The state has recently seen tremendous advancement in power sector mainly in Transmission, Sub- transmission and distribution systems. Power Department has been able to provide electricity and its associated services to the satisfaction of its consumers. To meet the ever-increasing demand, the State Government has also given importance to the generation sector by trying to harness the available hydro power potential of the state. The hydro potential of the state in respect of large and medium range projects has been assessed as around 2200 MW. Out of this available potential, only 105 MW Loktak Power Station has been developed so far. The balance potential remains untapped.

The following table gives the details of 8 Hydropower Projects in Manipur which are in different stages of implementation.

TABLE 13.1 HYDROPOWER PROJECTS IN MANIPUR

SL.NO.	NAME OF PROJECT	AGENCY & STATUS	CAPACITY (MW)	REMARKS
1	Loktak Downstream HE- project	To be Implemented by NHPC & Manipur as Joint Venture	66	All Clearances such as TEC, Environment, Forest, Defence etc. already obtained.
2	Tipaimukh HE- Project	Implemented by NHPC, NEEPCO & Manipur	1500	Environment Clearance obtained, Forest Clearance denied by the Ministry of Environment & Forest. Options for reducing dam heights are being explored

SL.NO.	NAME OF PROJECT	AGENCY & STATUS	CAPACITY (MW)	REMARKS
3	Pabram HE- Project	Yet to be allocated	190	Pre- Feasibility Reports available.
4	Irang HE-Project	-Do-	60	-Do-
5	Tuivai HE-Project	-Do-	51	-Do-
6	Nungleiband HE- Project	-Do-	105	-Do-
7	KhongnemChakha HE- Project	-Do-	67	-Do-
8	MaklangTuyungbi HE project	-Do-	45	-Do-

The State is trying to develop its hydropower potential in a phased manner within the frame work of the State Hydro Power Policy namely “Manipur Hydro Power Policy-2012” which covers development of the Hydro Power Projects having capacities more than 5 MW. Projects having capacities of 5 MW and below are kept under the purview of Manipur Renewable Energy Development Agency (MANIREDA).

In view of the growing concern of climate change and other Environment issues associated with the large hydro projects, the state Government has given more thrust on the development of small hydro projects having capacities of 25 MW and below. Power Department has recently completed re-assessment of the small hydro power potential with the latest available technologies and identified 31 nos. of projects located in all the four basins of the state totaling capacity of more than 300 MW.

The details of the hydro projects which have been identified in the recent studies are shown in the table below:-

SL. NO.	BASIN-WISE NAME OF PROJECT	CAPACITY	SL. NO.	BASIN-WISE NAME OF PROJECT	CAPACITY
I.	BARAK BASIN		II.	LANIYE BASIN	
1	Nungbut	10 MW	1	ChammuTurel 1	2.39 MW
2	Barak 1	5.6 MW	2	ChammuTurel 2	1.65 MW
3	Barak 2	6 MW	3	ChammuTurel 3	5 MW
4	Barak 3	18 MW	4	Ther	7.8 MW
5	Barak 4	49.4 MW	5	Lainilok 1	2.27 MW

SL. NO.	BASIN-WISE NAME OF PROJECT	CAPACITY	SL. NO.	BASIN-WISE NAME OF PROJECT	CAPACITY
I.	BARAK BASIN		II.	LANIYE BASIN	
6	Ngehaki	5.2 MW	6	Lainilok 2	0.78 MW
7	Lnhuki	3 MW	7	Laniye river	14.6 MW
8	Sulenki	7.35 MW	8	Knobari river	2.7 MW
9	Irang 1	13 MW		S/Total:	37.19 MW
10	Irang 2	3.5 MW			
11	Irang 3	46.5 MW			
12	Ijai	28.7 MW			
	S/Total:	196.25 MW			
III.	MAKLANGKHONG BASIN		IV.	MANIPUR BASIN	
1	Sana lok 1	5.32 MW	1	Imphal HEP	28.3 MW
2	Sana lok 2	1.18 MW	2	Chakpi 1	0.509 MW
3	Mamikua	5.82 MW	3	Chakpi 2	2.306 MW
4	MAKLANGKHONG	5.6 MW	4	Chakpi 3	3.115 MW
5	Tuyungbiturel	9 MW	5	Khuga	0.442 MW
6	Nampanlok	5.44 MW		S/Total:	34.672 MW
	S/Total:	32.36 MW			
Total :			300.472 MW		

The hydro power sector may be considered as an industry which can transform the socio-economic condition of the state. The generated energy can not only meet the state's future demand but can earn huge revenue by marketing out the surplus energy outside the state through its strong existing and upcoming transmission network. It will also help in developing the remote villages located in the far-flung hilly areas of the state.

MANIREDA has concentrated on a wind solar hybrid system for supplying electricity to remote villages where the conventional electrical power cannot be supplied due to different factors. More than 12 wind solar hybrid system had been commissioned by MANIREDA in different villages such as Chawangking, Kotlane, Dolangkhou, Tingkai, Sankumai, Mao, ChorjengLunghar, Hongbel, Phungyar, Lamdan, Lamdangmei and Tegnoupal. Around 90 villages have given domestic lighting using solar energy.

TABLE 13.2: DISTRIBUTION SYSTEM OF MANIPUR (FY 2015)

PARTICULARS	UNIT	FY 2015
Consumers	Lakh	2.8
Peak demand	MW	150
Energy availability	MU	678
33/11 KV S/s	Nos.	59
DTR	MVA	469
HT Line	Kms	1221
LT Line	Kms	7498

Source : CRISIL 24x7 power For All(Manipur) p-23

24x7 Power for All is a Joint Initiative of Government of India (GoI) and State governments with the objective to provide 24x7 power to all households, industries, commercial consumers, public needs & any other electricity consuming entities and adequate power to agriculture farm holdings as per the policy of State government by FY 2018-19.

As per census 2011, there are 2379 villages in the state of Manipur. As on March 2016, 2178 villages have been electrified leaving a balance of 201 un-electrified villages in the state. Energy requirement of Manipur during FY 2015 was 705 MU with 3.8% of deficit. As per the 19th electric power survey forecast the total demand of energy will be 754, 1121, 2060, 2249 MU in 2016-17, 2020-21, 2025-26 and 2026-27. The state currently provides on an average 20 hours of power supply in urban areas to domestic consumers and 16-18 hours in rural areas. The average daily consumption of registered rural and urban domestic consumers were 1.00 kWh and 2.3 KWh in FY 2015.

Manipur does not generate enough power of its own. For current requirements, therefore, it heavily relies on the allocations of power from Central Generating Stations like NHPC (erstwhile National Hydroelectric Power Corporation), North Eastern Electric Power Corporation Limited (NEEPCO), ONGC Tripura Power Company (OTPC) Pallatana Unit I and Tripura based Baramura power plant to meet its electricity requirement. The total installed capacity available for Manipur including firm share in Central Generating Stations (CGS) as on 31st March 2015 (allocated capacity in state, private, joint and CGS) was 182 MW.

To meet the projected demand of 357 MW by FY19, the State has been allocated 45.29 MW from Central Generating Stations and 23.66 MW from Bhutan's hydro stations. The state has also planned to build 15 MW renewable plants comprising of solar PV and small hydro stations to meet the expected demand of the state in 2019. Still the state would have power deficit in FY19 and need to buy from other sources on short term basis.

With allocation from new generating sources such as NEEPCO Kameng HEP Stage I & II, Monarchak Gas Based Power Project, Punatsangchhu-II HEP, etc. the average

cost of power is expected to increase from Rs. 2.97/kWh to Rs. 3.46/kWh. The Inter-state power transmission is operated at 400 kV and 132 KV voltage system constituting the existing Dimapur Imphal and Leimatak-Jiribam 132 KV lines (126 Km) of Power Grid Corporation of India Limited (PGCIL) and 400 kV Silchar Imphal line (167 Km). Another inter-state transmission line i.e., Imphal – New Kohima – New Mariani 400kV D/C Line (230 km) is taken up by Kohima Mariani Transmission Limited (KMTL), a subsidiary of Kalpataru Power Transmission Limited (KPTL) under Tariff Based Competitive Bidding (TBCB) which will ensure stability and reliability in the entire region in the power supply system, more particularly the State of Manipur, from the 400 kV D/C ring main system comprising of Misa – Balipara –Bongaigaon – Azara – Byrnihat – Silchar - Imphal- New Kohima -Mariani - Misa. The line is scheduled to be completed by 30th June, 2020.

The peak demand of Manipur is 215 MW in FY 2018-19 against a projection of 303 MW by 19th Electric Power Survey of India conducted by CEA. As on 31st March, 2019 there is 1(one) nos. of 400/132 kV sub-stations at Imphal (PG) with 630 MVA capacity, 17 (seventeen) nos. of 132/33 kV sub-stations with 698 MVA capacity and 84 (eighty-four) nos. of 33/11 kV sub-stations with 596 MVA capacity in operation. Thus, the existing transmission system is adequate to meet the present peak demand of the state.

However, in view of anticipated increase in power demand as forecasted in the 19th Electric Power Survey of India conducted by CEA, it is imperative on the State to place adequate transmission infrastructure to meet the increased power demand. Towards this, MSPCL has 1 (one) 400/132 kV sub-station, 2 (two) nos. of 132/33 kV sub-stations (under NERPSIP: North Eastern Region Power System Improvement Project) and 21 (twenty one) nos. of 33/11 kV sub-stations (13 nos. under NERPSIP) under advance stages of construction which are targeted to be completed & commissioned by June, 2020 for providing grid power to all corners of the State. Once these ongoing works are completed, the total transformation capacity by 2020 would be 945 MVA at 400kV level, 934 MVA at 132kV level and 931 MVA at 33 kV level.

Increased demand has necessitated drawing of more transmission lines, but due to congestion it has become almost impossible to draw lines in the densely populated areas of the state. To avoid these ROW issues MSPCL has proposed for re-conductoring of the 132 kV Ring Main circuit of the State along with few important 33 kV sub-transmission lines supplying power to the Imphal area with High Temperature Low Sag (HTLS) conductors which will double the transmission capacities of the lines. The proposal has been included for implementation during the award period of the 15th Finance Commission (2020 – 2025). There is also plan to establish another 3 (three) 132/33 kV sub-stations at Maram, Khoupum & Kamjong and 40 (forty) 33/11 kV sub-stations at various load centers across the state. Appropriate renovation and modernization schemes are also being taken up to equipped the system with latest equipment and technology.

As mandated under the Electricity Act, 2003, the State Load Despatch Center (SLDC) has been operationalized at Yurembam enabling real time scheduling, dispatch and

management of power supply in the State which presently incorporates 11 (eleven) nos. of 132/33 kV sub-stations. Currently work is in progress to lay an extensive network of optical fibre of 571 km in length (365 km under NER Wide Band Expansion and 206 km under Power System Development Fund, PSDF) to link the existing 132 kV sub-stations across the state with SLDC, Yurembam. Another 1383 km of optical fiber to link 78 nos. of 33/11 kV sub-stations to the main control centre at SLDC is also being laid. This fiber optics network will act as a voice communication link as well as a medium for real time data acquisition from the sub-stations to the Main Control Centre at SLDC.

With considerable capacity addition and system strengthening initiatives taken up by MSPCL, the planned transmission system seems to be adequate to meet future load demand of Manipur for the next 15 years

The State needs to optimize its power purchase and should look forward to tie up additional power through short, medium and long term basis to meet its energy requirement. We should remember that per capita electricity consumption is one of the lowest in the country and within the country it is the lowest among the north eastern states.

13.4 DISTRIBUTION OF POWER IN MANIPUR

Population of Manipur had grown from 22.93 lakh in 2001 to 28.56 lakh in 2011 at an annual growth of more than 2%. Household electrification in the State as per the census 2011 was 69% which had increased to 76% by FY 15 leaving 1.5 lakh un-electrified households at end of March, 2015. The State has electrified around 72,849 households in past 5 years under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) and other state funded Schemes. As per census 2011, there are 2379 villages in the state of Manipur. As on March 2016, 2178 villages have been electrified leaving a balance of 201 un-electrified villages in the state. These villages are planned to be electrified by March 2018 under Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY). Under the flagship scheme of DDUGJY, rural households would be provided power round the clock.

Under the flagship scheme of DDUGJY rural households would be provided power round the clock. To electrify the un-electrified villages, the State has planned to use Central funded schemes and State Government funds wherever necessary. Electrification of 201 villages is currently being undertaken in Manipur under the DDUGJY/RGGVY 12th Plan. The State proposes to electrify a total of 52,000 households under RGGVY 12th plan scheme and 19,000 under recently approved DDUGJY. The state has also planned to undertake intensive electrification using State Plan funds which will cover 100 villages and help connecting 37,674 households by the end of FY 2019.

On 28 April 2018 Leisang, a nondescript village in Kangpokpi district 77 km away from Imphal became the last village in India to be 'electrified' through a tweet by the Prime Minister under the Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY).

In 2011 Leisang village had 12 families with 65 people. Leisang would manage with solar lights, or through power sourced from generators, brought across the border from Myanmar. A village is said to be electrified if at least 10% of its households, as well as public places such as schools, panchayat offices and health centres have access to electricity.

The Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA) was launched in Manipur in November 2017, by Union Minister of State (IC) for Power and New & Renewable Energy, Shri R.K. Singh and Shri N. Biren Singh, Chief Minister of Manipur. Saubhagya is a scheme launched to achieve universal household electrification in all parts of the country. A total of approximately 1.75 lakh households (1.62 lakh rural households and 0.13 lakh urban households) of Manipur are proposed to be included under the Scheme. It is the vision of the Prime Minister Shri Narendra Modi to provide electricity to every household of the country. Now the Government would come to people's doorstep to provide power connection to every household. This is such a scheme where the poorest of the poor can afford electricity in their homes. All States and Union Territories of the country are required to complete household electrification in their respective jurisdiction by 31st March, 2019.

Rural Electrification Corporation Limited (REC), a Navaratna CPSE under the Ministry of Power has been appointed as the nodal agency for coordinating the implementation of the scheme. The prospective beneficiary households for free electricity connections under the scheme will be identified using Socio Economic and Caste Census (SECC), 2011 data.

SOME OF THE ELECTRIFICATION CHALLENGES FACED BY THE STATE ARE AS FOLLOWS

1. Dearth of local contractors who can take up large scale works on EPC basis
2. Weak Financial Status of DISCOM who are not in a sound position to mobilize counterpart funding or invest in backend infrastructure
3. Lack of skilled manpower
4. High cost of material due to remote locations

PREPAID METERING PLAN

Manipur has successfully introduced the prepaid metering system. The MSPDCL has planned to cover all its consumers in valley areas along with District Headquarters in Hilly areas with prepaid meters to cover its 85% to 90% consumers under this plan. Installation of prepaid metering will help MSPDCL in reducing its AT&C losses and improve its realization. Some of the improvements that MSPDCL has observed while implementing prepaid metering are:

1. Drastic reduction in load demand
2. Improved Quality of power
3. Multi fold increase in revenue collection
4. 100% consumers satisfaction service delivery achieved

5. 100% collection efficiency and billing efficiency for prepaid consumers
6. Lower pilferage

13.5 RENEWABLE ENERGY SYSTEM IN MANIPUR

MANIREDA is the State Nodal Agency (SNA) of the Ministry of New and Renewable Energy (MNRE), Government of India and also Nodal Agency for Government of Manipur to develop and utilise renewable energy resources like solar, small Hydro and wind power. As per available data, state has more than 114 hydel power potential sites of plant capacity below 5 MW having estimated capacity of 109 MW and 10,630 MWe of solar power. MANIREDA has so far undertaken many projects having total capacity of 8.00 MW (both off grid=5.6MW & On-Grid=2.4 MW). MANIREDA has implemented 14 Wind Solar Hybrid Power Projects, each having a capacity of 10 KW at 14 different places. It has also implemented 5 Pico Hydel Project, each having a capacity of 5 KW and R&M of Gelnel Mini Hydel Project 2 x 150 KW capacity, under Small Hydro Power (SHP) Development Programme. MANIREDA has also distributed 27500 Solar Home Lighting Systems and 9000 Solar lanterns to far flung villages of the State which are not connected to the State Grid, under Remote Village Electrification (RVE) through solar.

MANIREDA has experimented with 3 Biomass gasifiers of 200 KW Capacity each at Tora, Damdei and Songtal.

The Ministry of New and Renewable Energy, Govt. of India, under its National Solar Mission has fixed a target of 105 MW installed capacity of grid connected solar power by the year 2022 for Manipur, comprising of 50 MW from rooftop systems and 55 MW from ground mounted and other mode of installations. Further, the State Regulatory Commission has specified the target for RPO (Renewable Purchase Obligation) as 21.00% of total energy requirement out of which 10.50% from solar and another 10.50% from Non-solar by the year 2022. The present rate of RPO FY 2019-20 of the state is 17.50 % consisting of 7.25% (solar) & 10.25% (Non-solar). Considering annual consumption of 1000 MU approx. of the state during FY 2015-16, the RPO requirement comes about 50 MU. The figure of RPO will increase from year to year as both consumption and rate of allocated RPO is increasing.

1. Installation of 3.4 MW aggregate capacity grid connected rooftop solar systems on Government Buildings: MANIREDA has identified 21 Government buildings for installation of grid connected rooftop solar systems. The MNRE has accorded sanction of Rs. 8.84 crore as CFA of the project. But due to the financial constraint of the state, MANIREDA could achieve only 700 kW in 9 different Government building/sites in the State.
2. Installed & Commissioned 200kWp capacity Grid Connected Solar Power Plant at 132/33KV Power Sub-Station, Khengjang, Churachandpur District, Manipur.
3. Installation work of 200kWp capacity each grid connected Solar power Plant at 132/33 KV Power Sub-Station, Yaingangpokpi, Ukhrul District and Jiribam.

PROPOSED ACTION PLAN OF MANIREDA

1. Implementation of 2.0 MW capacity demonstration grid connected solar power plant near the 33/11 KV Shinghat electrical sub-station, Churachandpur district. The Ministry of New and Renewable Energy (MNRE), GoI, has fixed a target of 55 MW capacity grid connected solar power plants for MANIPUR to be achieved within the year 2022.
2. Proposal for 100MW Grid Connected Solar Power Plant was submitted to 15th Finance Commission through Planning Department.
3. Implementation of 5 MW capacity Lokchao Hydroelectric Project, Sahei village, Moreh, Tengnoupal District near 33/11 kV Moreh electrical sub-station, Tengnoupal district.
4. Preparation of DPR by National Institute of Wind Energy (NIWE), Chennai, for implementation of 5 MW capacity grid connected solar power plant at Phangrei Range, Ukhrul District, Manipur, is under progress.
5. Installation of 10.0 MW capacity grid interactive rooftop solar systems for domestic and private sector buildings: The MNRE, GoI, has set a target of 40,000 MW of grid connected rooftop solar within the year 2022 and allocated target of 50 MW for Manipur. For promoting the sector, the Ministry is providing capital subsidy up to 70% of the benchmark cost for installation of such systems for power consumers under domestic and private parties/institutions. MANIREDA has fixed a target of 10 MW under the sector during FY 2016-20 and 5 MW was sanctioned during FY 2016-17 and 3 MW during 2019-20.
6. Installation of fifty thousand of 100 LPD solar water heaters: Considering geographical limitations and climatic condition of less sun-hours comparing to other western & other mainland states of the country, it will be technically & economically difficult to cope up with RPO only through RE power generation. Rather it will be more feasible to bring down consumption of electrical power/energy through application of RE devices and other energy efficient systems, wherever possible. MANIREDA has implemented about 3500 sets of 100 LPD (litres per day) capacity solar water heaters in recent years. The heaters work well in local conditions and have electric backup heater element for cold & non-sunny days. Installing such a heater is equivalent to reducing a connected load of 2.00 KW from the grid, which can save up to 1500 kWh and equivalent saving of 1.5 tons of carbon emission in a year. Since Central subsidy has been withdrawn, MANIREDA has proposed to UNDP for funding, if not materialise, State subsidy may be required to propagate this Solar thermal sector.
7. Solar Water pumps: Solar water pumping systems are useful for pumping of water for irrigation, water supply and farming applications especially in un-electrified/intermittent power supply areas. These pumps are a suitable and economical alternative in saving of HSD oil. Although such pumps have negligible operational cost, application of such pumps is restricted due to high initial cost. Under new scheme for replacement of diesel engine pump, the MNRE, GoI is providing capital subsidy @50% of the benchmark cost or the

tender cost, whichever is lower. The state Government has to give a financial support of 30% and the remaining 20% will be provided by the farmer. Bank finance may be made available for 10% of farmer's contribution so that farmer has to initially pay only 10% of the cost. Discoms /Agricultural Department/ Minor Irrigation Department/any other Department designated by State Government will be implementing agencies for the component. 2% of the eligible CFA will be provided as service charge.

DOMESTIC EFFICIENT LIGHTING PROGRAMME (DELP)

The service model enables domestic households to procure LED lights at an affordable price of Rs. 10 each and the balance on easy instalment from their electricity bill. DELP is under implementation in AP, Delhi, Rajasthan, UP, Himachal Pradesh, Maharashtra. EESL is providing to consumers at a rate of Rs. 10 each as against the market price of Rs. 200- 350. The average cost saving per LED for a domestic consumer is estimated between Rs. 160 – Rs. 400 (depending upon replacement of CFL or ordinary bulb) based on 4 hour use every day is more than the total cost of LED bulbs. The total cost charged to consumers by EESL is Rs. 95-105 (based of applicable VAT/Octroi in a state) and is less than the savings of 1 year. The bulb will function for at least 10-15 years and all savings after one year is of the consumer. The cost of LED bulbs and programme administration costs are recovered from consumers by deduction of easy instalments of Rs.10 every month for 8-12 months from their electricity bills.

STREET LIGHT NATIONAL PROGRAMME (SLNP)

MSPDCL has planned to replace 1908 streetlights with LED bulbs in Imphal city. MSPDCL has also planned to replace streetlight with LED in 12 divisions with 585 LED lights.

A SWOT analysis of the power sector of Manipur may be in order to place the recommendations in perspective.

TABLE 13.3: SWOT MATRIX OF POWER SECTOR IN MANIPUR

Strength <ul style="list-style-type: none"> • Small size • Subsidy support from State Government • Successful implementation of pre- paid metering 	Weaknesses <ul style="list-style-type: none"> • Poor financial position of DISCOM • Aged HT & LT distribution network leading to High sub transmission technical losses • Large gap in ABR and ACos • Difficult terrain • Very low population density • Unfavourable consumer mix
Opportunities <ul style="list-style-type: none"> • Surplus power in future • Upcoming central government funded IPDS and DDUJGY • Untapped latent demand in the state 	Threats <ul style="list-style-type: none"> • High cost of CGS contracted power • Non availability of loans from financial institutions/banks due to poor financial position of DISCOM

CONCLUSIONS

- MSPCL, MSPDCL and MANIREDA need to be strengthened so that clean and affordable 24x7 power be available to every household by 2030. The higher is the share of renewable energy, the better it is.
- Energy efficient equipments should be made widely available both in rural and urban areas at subsidized prices.
- If we want to implement the 24x7 power supply scheme across the state successfully and in a sustained manner, all stakeholders including consumers, have to collaborate and share information. For instance consumers should be made aware how their proper use of power will contribute to the provision of 24x7 power supply to everyone.
- Use of IT and capacity building of employees to take advantage of IT applications in Transmission & Distribution system is also necessary. It may include consumer grievance system, awareness regarding importance of working with safety, outage management system, demand side management etc.
- Since most of the power is planned to be obtained through sources outside the state, there should be strong focus on future system strengthening schemes. Large hydropower projects are no longer fashionable. Projects based on renewable resources and small-scale projects are going to be more practical.

14

Inequality

14.1 INTRODUCTION

Inequalities based on income, sex, age, disability, sexual orientation, race, class, ethnicity, religion and opportunity have persisted despite policies to reduce inequalities. The number of poor people in a country and average quality of life also depends on how equally income is distributed. We are concerned about inequality because it threatens long term social and economic development, dilutes the potential of poverty reduction and affects people's sense of fulfilment and self-worth. It excludes people from opportunities, services and the chance for a better life. Though inequality exists in many dimensions the focus is usually on inequalities in income or consumption expenditure. We seek to examine the trend in inequality in Manipur and deliberate on what can be done to take on inequality.

Reports of 68th round of NSS (2011-12) show Manipur as a state with low Lorenz ratio in both rural and urban (NSS Report no.555:41). The following table gives a comparative picture of Lorenz ratio-based inequality among the states in NER vis a vis All India.

TABLE 14.1: LORENZ RATIO OF RURAL AND URBAN DISTRIBUTION OF POPULATION BY MPCE; NER 2011-12

	RURAL			URBAN		
	MPCE _{URP}	MPCE _{MRP}	MPCE _{MMRP}	MPCE _{URP}	MPCE _{MRP}	MPCE _{MMRP}
Arunachal Pradesh	0.381	0.338	0.346	0.342	0.325	0.365
Assam	0.221	0.213	0.221	0.350	0.350	0.326
Manipur	0.210	0.195	0.211	0.202	0.201	0.174
Meghalaya	0.195	0.209	0.190	0.233	0.230	0.226
Mizoram	0.257	0.246	0.240	0.252	0.246	0.233
Nagaland	0.204	0.193	0.192	0.262	0.229	0.232
Sikkim	0.203	0.194	0.197	0.220	0.197	0.213
Tirpura	0.214	0.209	0.219	0.290	0.293	0.297
All India	0.307	0.284	0.283	0.385	0.372	0.363

Source : NSS Report no.555:43

Inequality as measured by Lorenz ratio based on three estimates of MPCE using different reference periods shows that inequality in Manipur is substantially lower than inequality at all India level. However, it is found to be increasing. Lorenz ratio

rose from 0.158 in 2004-5 to 0.210 in 2011-12 in rural Manipur while in urban Manipur also it rose from 0.175 to 0.202 during the same period.

TABLE 14.2: AVERAGE MPCE OF MANIPUR IN ₹

YEAR	RURAL		URBAN	
	CURRENT PRICE	1987-88 PRICE	CURRENT PRICE	1987-88 PRICE
1993-94	300	170.21	320	184.71
1999-00	533	196.68	708	253.76
2004-05	614	192.48	726	214.79
2011-12	1281	220.86	1393	232.55

Rural average MPCE rose from ₹ 300 in 1993-4 to ₹ 1281 in 2011-12 and urban average MPCE rose from ₹ 320 to ₹ 1393 in current prices. When the current values are deflated using national rural and urban deflators to show the trend in real values, the real value of MPCE is found to decline in 2004-5,. it shows that the wellbeing of people in Manipur has, instead of showing an improving trend , fluctuates. This is consistent with extensive urban poverty, and high urban unemployment rate.

TABLE 14.3: REAL AVERAGE MPCE: ALL VS. 40% BOTTOM

YEAR	RURAL		URBAN	
	ALL	4 TH DECILE	ALL	4 TH DECILE
1993-4	170.21	114.27	184.71	145.79
2004-5	192.48	153.04	214.79	176.86
2011-12	220.86	159.90	232.55	164.99

TABLE 14.4: COMPARATIVE GROWTH OF REAL AVERAGE MPCE AND AVERAGE 4TH DECILE MPCE: MANIPUR

PERIOD	RURAL		URBAN	
	ALL	4 TH DECILE	ALL	4 TH DECILE
1993-94 to 2004-05	13.08	33.93	16.28	21.31
2004-05 to 2011-12	14.74	4.48	8.27	-6.71

During 1993-4 to 2004-5 wellbeing of the 4th decile or bottom 40 % of the population grew faster than that of all both rural and urban. However, during 2004-5 to 2011-12 the growth rate of the well-being of the bottom 40% both rural and urban were much lower than that of all. In urban Manipur, the growth rate of standard of living indicated by average MPCE of the bottom 40% became negative. In other words the comparative picture of the growth rates of these two measures of average MPCE shows that growth during the first period was much more inclusive, however, it is no longer so inclusive in the second phase. Sharing of prosperity has not been sustained. The problem is more acute in urban areas.

TABLE 14.5: GROWTH IN THE SHARE OF BOTTOM 40 PERCENT

YEAR	RURAL		URBAN	
	SHARE	GROWTH IN SHARE	SHARE	GROWTH IN SHARE
1993-94	26.85		31.57	
2004-05	31.80	18.43	32.94	4.322
2011-12	28.96	-8.94	28.38	-13.84

It is clear that the goal of ending poverty by 2030 cannot be reached at current levels of economic growth. In addition to higher growth, the income distribution must improve where there are many poor people, relatively large inequality levels and weak economic growth.

14.2 HILLS VS. VALLEY

Manipur has experienced a marked disparity in terms of economic development between the hills and valley over the past several decades. This has been a serious socio-economic-political issue in Manipur over the decades. Agricultural development in the hills has been largely neglected and marginalised. The state has remained industrially backward because of many reasons. Lack of real investment and lack of industrial base have resulted into low level of development in Manipur. Some key reasons are also due to lack of adequate resources to establish medium and large scale industries, lack of skilled and trained human resources, and law and order problems. While the industrial sector remains backward, the agricultural sector is reverted towards stagnation. There is unequal distribution of income showing that the gap between the rich and poor is widening. It may be said that the high incidence of poverty in Manipur State is the accumulated result of the economic backwardness, widespread unemployment, discrimination, rising population, poor infrastructure, and ineffectiveness of various development schemes.

It may be observed from table 14.6 that there is inequality between the hills and the valley districts of Manipur State in terms of population, area, sex ratio, literacy rate, infant mortality rate, expectancy of life at birth, poverty, per capita income, forest cover, electricity consumption and road length. It is believed that population of a country is its most important asset and demographic indicator. The table shows that Imphal East, Imphal West, Thoubal and Senapati district recorded the highest number of population as compared to the rest of the districts of Manipur. Manipur State constitutes 0.7 per cent of the total area of the country. It is situated in the North-Eastern border of India. The State ranks 20th among the States in India. The area in terms of square km is found to be highest in the five hill districts of Manipur as compared to valley districts. Sex ratio is the number of females per thousand males. The four valley districts of Manipur accounted for highest sex ratio as compared to five hill districts.

TABLE 14.6: DATA ON DISTRICTS OF MANIPUR

DISTRICTS	POPULATION (LAKH PERSONS)	AREA (IN SQ. KM)	SEX RATIO	LITERACY RATE	INFANT MORTALITY RATE	EXPECTANCY OF LIFE AT BIRTH (1991)	HOUSEHOLDS BELOW POVERTY LINE	PER CAPITA INCOME AT CONSTANT PRICES	FOREST COVER	ELECTRICITY CONSUMPTION (MU)	ROAD LENGTH (IN KMS.)
		2	3	4	5	6	7	8	9	10	11
1 Senapati	4.79	3, 271	937	63.6	46	57.8	11,362	9,650	66.55	36.28	76.99
2 Tamenglong	1.41	4, 391	943	70.05	42	56.3	4,395	11,695	85.49	2.32	70.9
3 Churachandpur	2.74	4, 570	975	82.78	28	57.5	9,881	11,419	93.98	46.73	66.08
4 Chandel	1.44	3, 313	933	71.11	45	55.4	4,180	12,332	84.73	11.41	60.14
5 Ukhrul	1.84	4, 544	943	81.35	42	54.6	6,240	15,434	77.95	4.77	76.18
6 Imphal East	4.56	709	1017	81.95	30 ¹¹	59.9	17,651	11,145	36.17	99.44	383.89
7 Imphal West	5.18	519	1031	86.08			21,438	24,002	10.02	111.69	
8 Bishnupur	2.37	496	999	75.85	28	59.6	10,298	16,225	4.23	33.9	246.7
9 Thoubal	4.22	514	1002	74.47	44	56.9	16,955	12,532	19.46	38.59	454.37

Source: Compiled from various sources.

Column 6, 8 & 11 are taken from Manipur State Human Development Report, P.203

Column 1, 2, 3, 4, and 5, 9, and 10: Economic Survey 2016-17, Directorate of Economics & Statistics, Government of Manipur.

Column 7: Annual Administrative Report, 2007-08,, Department of Food & Civil Supplies, Government of Manipur

According to Census, a person aged seven years or more who can read and write with understanding in any language is called a literate person. It is a good indicator of social development of a place. It may be observed from table 14.6 that all the districts of Manipur with the exception of Senapati district, have performed better in terms of literacy rate. The infant mortality rate (IMR) is the number of deaths of infants under one year per 1,000 live births. This rate is often used as an indicator of the level of health in a country. There is an improvement in the infant mortality rate in valley districts of Manipur as compared to hills. Life expectancy at birth is defined as how long, on average, a newborn can expect to live, if current death rates do not change. It is one of the best frequently used health status indicators. The nine districts of Manipur show uniformity for both hills and valley in its life expectancy at birth. Gains in life expectancy at birth can be attributed to factors, including rising living standards, improved lifestyle and better education.

Poverty leads to deprivation, social exclusion, malnutrition, and alienation. The eradication of poverty has been an integral component of the strategy for economic development. Imphal West, Imphal East, Thoubal, Bishnupur and Senapati districts recorded the highest number of households below poverty line in Manipur. Per capita income or average income measures the average income earned per person in a given area during a year. It is calculated by dividing the area's total income by its population adjusted to price indices. While the Imphal West district registered the highest per capita income, Senapati district recorded the lowest per capita income. Per capita income for the rest of the districts has almost remained similar. Forest products are the most important natural resources for environmental protection and maintaining ecological balance.¹² Basically, forest plays threefold activities viz. protection, productive and aesthetic, each being equally important. Based on the legal status, forest can be divided into reserved, protected and un-classed forests. The forest cover of hill districts of Manipur is found to be large as compared to the valley districts. Electricity consumption per capita measures the average kilowatt-hours (kWh) of electrical power consumed per persons in a particular country or region. A low consumption per head means that many inhabitants do not have access to electricity. In terms of electricity consumption, Imphal West district performs better whereas Tamenglong, Ukhrul and Bishnupur districts have poor electricity connection. Road transport is the most dominant mode of transport in Manipur. There is consumers' preference for this mode of transport as it has advantages of timeliness in the movement of goods and passengers. Imphal West, Imphal East, Thoubal and Bishnupur districts in the valley have done better in terms of road length as compared to hill districts. The increase in the road length indicates the expansion of the State. A well developed transport system in the State will play a vital role in ensuring sustained economic growth.

14.3 DEVELOPMENT: SOCIAL, ECONOMIC & POLITICAL INCLUSION

Developments in economic and social organization over the last decade suggest that transformations are taking place in the nature of poverty and deprivation¹³. In India, social groups play an important role in determining the vulnerability of the households. Studies show that households belonging to ST and SC groups have higher chance of being in poverty, irrespective of location and holding other factors constant. Thus, social order matters for reducing poverty. There had been a decline in the vulnerability to poverty among all social groups in India and in most of the states during 1980s and 1990s. However, disparities across social groups are found substantial and continue to be significant even after providing different kinds of positive action for their upliftment. Moreover, the recent surge in the economic growth seems to be bypassing the deprived social groups. Further, the relative position of socially deprived groups has not changed at all in most parts of the country. Manipur needs to formulate an inclusive policy to achieve an egalitarian society in the near future.

Political inclusion is the recognition and practice of right to participate in the political decision making institutions and process by the individuals (Singh, N. Somorendro 2013). The right may be to contest or hold political offices or be a member of the representative bodies like Parliament, State Assembly or local Self –Governing Bodies. It is also the right to vote in the elections of people's representatives.

According to the study by Singh, N. Somorendro (2013), it is found that there are number of social categories that are being deprived of political inclusion in practice. Even today in Manipur women, smaller tribes/ethnic groups etc are largely being deprived of their right to be elected due to cultural and other factors.

Therefore, some Constitutional amendments like reservation of seats for women in Parliament and State Assemblies are required for political inclusion. In case of Manipur, ensuring representation of women, smaller tribes and common people in the Autonomous District Councils in the hill areas like reservation of seats or rotation system is required. In addition good, governance, improvement in education and economic development are crucial for political inclusion in Manipur.

SOCIAL PROTECTION POLICIES

Some of the key social protection policies include Public Distribution System (PDS), Mahatma Gandhi National Rural Employment Guarantee scheme (MGNREG), Indira Awaas Yojana (IAY), and Indira Gandhi National Old Age Pension Scheme (IGNOAPS) among others. Social protection system helps to absorb the shocks and minimize its adverse impact on the vulnerable and poor and helps to make growth more pro-poor (Sharma & Arora 2011).

Manipur State needs to strengthen the State sponsored promotional measures of social protection (PDS, education, employment and productivity enhancement) so it benefits trickle down to overwhelming majority of workers.

DISCRIMINATORY LAW

The State Government of Manipur may take up stringent steps to reduce discrimination in a workplace based on age, sex, qualification, disability, pregnancy, national origin, race/ colour, religion, sexual harassment, equal pay or compensation, region/place of origin, Caste and ethnicity.

TRANSACTION COSTS OF MIGRANTS

Manipur State needs to devise an effective mechanism to quantify the stock of migrants in the State so their remittances to native home are accountable. The issue of migrants has always been an emotive issue in the northeast. It will enable us to monitor and evaluate the flows of remittances by the stock of migrants.

14.4 POLICY PERSPECTIVE AND RECOMMENDATIONS

- **Pre-schools for Early childhood development (ECD)**
Better quality pre-school through experienced and incentivized teachers will enhance outcomes among the disadvantaged children.
- **Universal health care**
Universal health care constitutes a promising strategy to reduce health inequalities, raise the human capital of the poor and contribute to increasing future earnings and narrowing income gaps simultaneously.
- **Achieving education for all**
There should be universal access to quality education.
- **Investing in rural infrastructure**
Good connectivity including road, railway, air and digital.

14.5 CONCLUSION

To attain an egalitarian society as a part of the sustainable development goals (SDGs), Manipur needs heavy investment in health sector, roads, education and power. Poverty eradication programmes need to be strengthened and employment opportunities should be created for educated unemployed youth. Tourism should be promoted. Culture of the land should be further developed in a sustainable way. Development policy should be framed based on ethnicity and topography. The growing gap between growth rates in the country as a whole and much of the North Eastern Region can be bridged by a massive increase in the flow of financial resources to the region, exponentially larger than the current or presently envisaged flow.

There are three critical non-economic requirements that will condition economic performance on the ground: (1) Law and order, especially internal security and (2) Good governance, including governance at the grassroots through institutions of local self-government. It is needed to ensure adequate flow of resources of public investments in infrastructure, implementing a framework for private participation in augmenting infrastructure and creating an enabling environment for the flow of investments to harness the physical resources of the region for the welfare of the people. It is important to develop sectors with comparative advantage mainly agro-processing industries, modernisation and development of sericulture, investment in manufacturing units based on the resources available in the region, harnessing the large hydroelectric power generation potential and focus on developing services such as tourism that will help to accelerate development and create productive employment opportunities. In order to work on the growing inequality and division of limited resources amongst a growing population, Manipur needs to enact a law to regulate the influx of migrants in the State. It is necessary not only to keep a tab on their remittances but also to ensure that their contributions to our society are recognized and they complement our labour market.

15.1 URBAN TRENDS, PATTERNS AND LEVEL OF URBANIZATION IN MANIPUR

The growth of urban settlements in Manipur dates back to the formation of the Meitei kingdom in the Central valley wherein 'Kangla' was the central point of the kingdom from 33 AD to 1949 AD. 'Kangla', a fortified and the palace site of the Meitei rulers provided the foremost urban nucleus in Manipur. Historical evidences suggest that urban characteristics were slowly added to Imphal during the early centuries. The oval shaped Imphal valley covers an area of 1,843 sq. km approximately and is situated 2567 feet high above the mean sea level. The area of Imphal Valley after the deduction of 600 sq. km of Loktak Lake is 1243 sq. km which is less than that of Delhi with an area of 1,484 sq. km.

Imphal city is the major urban centre where the population as well as facilities are concentrated. With the increase in population due to natural growth as well as migration from rural areas, there is a great pressure on the infrastructure of Imphal city. Imphal city is now facing a myriad number of problems - traffic congestion, lack of parking space, flooding due to bad drainage, lack of water supply, lack of sewerage system, environmental degradation etc.. Possibility of the occurrence of flood several times in a year is the biggest worry of a majority of people in Imphal city and other areas of the valley.

There has been a sizeable urban population in Manipur since 1901. Urban population increased from 72,234 persons in 1901 to 8,34,154 persons in 2011. Manipur was in fact more urbanized.

TABLE 15.1: GROWTH OF URBANIZATION IN INDIA AND MANIPUR, 1901-2011

YEAR	INDIA		MANIPUR	
	URBAN POP (MILLIONS)	% TO TOTAL POP.	URBAN POP	% TO TOTAL POP.
1901	25.7	18.85	72234	25.39
1911	26.6	10.29	74650	21.56
1921	28.6	11.18	80003	20.83
1931	33.8	11.99	85804	19.26
1941	44.3	13.86	99716	19.47
1951	62.7	17.38	2862	0.49
1961	78.9	17.97	67717	8.69

YEAR	INDIA		MANIPUR	
	URBAN POP (MILLIONS)	% TO TOTAL POP.	URBAN POP	% TO TOTAL POP.
1971	109.11	19.91	141492	13.19
1981	159.50	23.32	375460	26.42
1991	217.61	25.72	505848	27.53
2001	285.35	27.78	575968	25.11
2011	377.00	31.16	834154	32.45

Source: Census of India, 1991 and 2011

Urban population of the state registered 3.70 percent urban growth rate. Overall, the net increase in urban population took place with the notification of many new towns and expansion of urban areas in the state. It must be noted that this increase in urban population is rarely in response to any remarkable change in the pace of economic development in Manipur.

TABLE 15.2 INDIA AND MANIPUR: DECADAL GROWTH RATE OF POPULATION, 1901-2011

YEAR	INDIA (IN %)			MANIPUR (IN %)		
	TOTAL	RURAL	URBAN	TOTAL	RURAL	URBAN
1901	-	-	-	-	-	-
1911	0.56	0.62	-0.39	2.5	2.5	0.33
1921	-0.31	-0.13	0.79	0.53	1.1	0.69
1931	1.05	0.95	1.76	1.5	1.7	0.70
1941	1.37	1.12	2.81	1.4	1.3	1.51
1951	1.25	0.84	3.52	1.21	3.4	-29.88
1961	1.98	1.89	2.37	3.05	2.2	37.12
1971	2.24	1.99	3.36	2.24	2.7	7.65
1981	2.25	1.81	3.88	2.85	1.12	10.25
1991	2.11	1.78	3.12	2.6	2.1	3.02
2001	1.99	2.24	2.79	2.3	2.6	1.32
2011	1.28	0.75	2.45	2.28	2.7	3.70

Sources: Statistical Abstract of Manipur, 2005 and Census of India, 2011

The inter-district variation in the growth patterns between 1971 and 2011 reveals that four of the hill districts - Senapati, Tamenglong, Churachandpur and Ukhrul have experienced no urban growth at all. But the remaining five districts are found with annual growth with a decreasing trend in the last four decades. However, Imphal East and Imphal West districts in the Central valley showed an increasing

trend, because Imphal city and its satellite towns have experienced higher urban growth.

TABLE 15.3 MANIPUR: INTER-DISTRICT VARIATION IN URBAN GROWTH RATE, 1971-2011 (IN %)

DISTRICTS	1971	1981	1991	2001	2011
Senapati-U	-	-	-	-	-
Tamenglong-U	-	-	-	-	-
Churachandpur-U	-	10.81	2.91	-	-
Chandel-U	-	-	2.30	4.36	1.18
Ukhrul-U	-	-	-	-	-
Imphal East -U	5.16	6.56	3.81	3.56	5.25
Imphal West-U	3.92	6.78	3.58	1.33	2.69
Bishnupur-U	-	11.32	3.13	1.52	1.57
Thoubal-U	-	16.37	3.79	2.00	1.42
MANIPUR-U	7.65	9.7	2.98	1.21	3.70

Source: Statistical Abstract of Manipur 2005 and Census of India, 2011.

Urban population in three districts namely Bishnupur, Thoubal and Churachandpur districts have shown higher urban growth recording above 6 percent though much slower in 2011. This clearly shows a prolonged tendency of under-urbanization and early stage of urbanization. As a matter of fact the two districts- Imphal East and Imphal West districts have shown a clear sign of greater urban momentum. The hill districts are characterized by stunted urban growth whereas the plain districts, excepting the two are still lagging as far as urban growth is concerned. Inadequate transport network, Jhuming and poverty in the hills are some of the factors behind very slow process of urbanization in the hill areas of the state.

As far as urban population growth is concerned, both the rural and urban areas are interrelated. When the increase in rural population exceeds that of the total population, the rate of urban population growth is usually low. Higher rate of urban growth in the country is largely fuelled by an influx of rural population to cities in search of work. Table-15.2 shows that the decadal growth of total and rural population is lower than the urban growth rate. In Manipur similar growth patterns are observed from 1971 onwards which is possible due to accelerated rural to urban migration unlike in the past. However, in the plain areas notification of new towns and up-gradation of notified small towns to municipality status and declassification of existing hill towns resulted in large-scale alterations to urban proportion in the total population of different districts.

15.1.1 PACE OF URBANIZATION

In Manipur, the pace of urbanization is comparatively slow reflecting overall low level of economic development.

TABLE 15.4. LEVEL OF URBANIZATION IN NORTH EAST INDIA, 1971-2011(%)

STATE	1971	1981	1991	2001	2011
Arunachal Pradesh	3.70	6.56	12.80	20.75	22.67
Assam	8.82	9.88	11.10	12.90	14.08
Manipur	13.19	26.42	27.52	25.11	32.45
Meghalaya	14.55	18.07	18.60	19.58	20.08
Mizoram	11.36	24.67	46.10	49.63	51.51
Nagaland	9.95	15.52	17.21	17.23	28.97
Sikkim	9.37	16.15	9.10	11.07	24.97
Tripura	10.99	10.99	15.30	17.00	26.18
India	19.91	23.34	25.70	27.81	31.16

Source: Census of India, 2001 and 2011

When compared with the trend of urbanization among the eight states of the Northeast, Mizoram has experienced the highest increase in urban population i.e. from 11.36 percent in 1971 to 51.51 percent in 2011. The above Table reveals that Manipur follows Mizoram in its urbanization level followed by Nagaland and Tripura with 32.45, 28.97 and 26.18 percent in 2011 respectively. All the states of the North East are in the initial stages of urbanization as each state has urban dynamic features confined largely to their capitals. Among the 35 states and Union territories of the country, the eight states of the North Eastern Region have urbanization level higher than Himachal Pradesh and Bihar. Natural population increase (higher birth than death) and rural to urban migration are the significant factors contributing to the growth of cities of India. The case is the same with Manipur. Natural increase is fuelled by improved medical care, better sanitation and improved food supplies, which reduce death rates and cause population growth. In Manipur most people move into the urban areas because they are 'pushed' by factors such as poverty, environmental degradation, food insecurity and lack of basic infrastructure. They are 'pulled' into the urban areas by the advantages and opportunities of the city including education, electricity, and water etc. though in many urban areas only a few jobs are indeed available.

TABLE 15.5: MANIPUR – INTER DISTRICT VARIATION IN URBAN PERCENTAGE, 1971 TO 2011

DISTRICT	1971	1981	1991	2001	2011
Senapati-U	0.00	6.19	0.00	0.00	7.57
Tamenglong-U	0.00	6.87	0.00	0.00	24.78
Churachandpur-U	16.21	18.66	19.11	0	12.70
Chandel-U	0.00	13.60	13.62	12.64	21.52
Ukhrul-U	0.00	7.02	0.00	0.00	26.34
Imphal East -U	13.89	20.27	22.94	27.43	57.37

DISTRICT	1971	1981	1991	2001	2011
Imphal West-U	31.73	50.10	56.68	55.51	76.68
Bishnupur-U	13.94	33.21	34.94	35.87	53.93
Thoubal-U	7.86	31.72	36.55	36.05	52.78
MANIPUR-U	13.19	26.44	27.69	25.11	32.45

The above table shows the distribution pattern of urbanization level at the district levels. Declassification of towns was undertaken in 1991 as well as in 2001 particularly in the hill districts. In 1971, distribution of urban population was concentrated only in the valley districts and it has further strengthened by the year 2011 where over half of the population now lives in urban areas. The five districts in hill areas have less than a quarter of their population living in urban areas in 2011.

15.1.2 DISTRIBUTION PATTERN

Imphal had grown to the status of class I town while five class V and two class VI towns came into being in 1971. In the next decade, the state experienced further increase in the number of towns with 24 new towns emerging with a total of 32 urban centres in 1981. But in 1991 and 2001, the number of urban centres in the state remained static at 30 and 33 though the urban population increased over 150 percent within two decades. In 2001, except for Moreh, the border town, all the hill towns were derecognized as they lacked significant urban characteristics widening the disparity between the hills and the plains. Even within the plains, towns are largely concentrated in the Central valley mainly due to advantages of road and communication. Number of urban centres increased to 51 in 2011. The phenomenal growth of urban population was largely due to extension of municipal town area limits and villages being added to them. There was a sudden increase in the number of class-V and VI towns. This increase in the number of lower order towns in the state is not due to investment in industry. The urban structure is skewed as the state is missing the second order (Class-II) towns (50,000-99,999 population size). The population of Class-I i.e. Imphal city in 2011 was above 2.5 lakh which is unlikely to induce regional development impulses to its satellite towns since no lower order towns are able to receive and distribute the impulses.

TABLE 15.6: MANIPUR: CLASSES OF URBAN CENTRES, 1901- 2011

CLASS	I	II	III	IV	V	VI	TOTAL
1901		1	0	0	0	0	1
1911		1	0	0	0	0	1
1921		1	0	0	0	0	1
1931		1	0	0	0	0	1
1941		1	0	0	0	0	1
1951		0	0	0	0	1	1

CLASS	I	II	III	IV	V	VI	TOTAL
1961		1	0	0	0	0	1
1971	1	0	0	0	5	2	8
1981	1	0	2	4	9	16	32
1991	1	0	3	4	19	4	31
2001	1	0	4	8	15	5	33
2011	1	0	6	12	24	8	51

Source: Census of India, 1991, 2001 and 2011

The existing Class-III towns in the state are below the population size of 50,000 persons. As such, no harmonic progression is indicated as there has been gap between the first order and the lower order towns. The state does not have any intermediate town to counterbalance Imphal city. Moreover, the continuing urban development projects in and around the city under JNNURM and other city development initiatives have magnified the attraction of rural folks and even from smaller towns. Eventually, lower order towns in the Valley areas could not grow; they remained completely dependent having less secondary and tertiary economic activities.

15.1.3 HILLS AND VALLEY

As revealed in table-15.2,15.3 and 15. 5, the state has had a peculiar experience as far as its level of urbanization is concerned. There have been phases of negative growth in the level of urbanization. The plain areas, in Imphal East, Imphal West, Bishnupur and Thoubal districts have witnessed remarkable change in the growth of number of towns, i.e. from one urban centre in 1901 to 44 urban centres in the year 2011. Every decade has added more to its urban population in these districts to varying degrees. Out of the four districts in the plain areas, Imphal West has much higher share of the urban population adding 2, 77,196 persons to its existing population in 2001. Though Imphal East district has 15 urban centres the increase in urban population is much less spectacular (21.96%) as many of these urban centres belong to Class-V and VII category.

Sharp contrasts exist between the valley and the hill as far as urbanization is concerned, revealing even more sharply the development disparity between the physical regions of the state. Churachandpur was the only town in 1971 located in the hills but was declassified in 2001. In 2011 the town area has been divided into three census towns. Similarly, Ukhrul, Senapati and Tamenglong were hill towns representing respective headquarters of the districts but were declassified according to the wisdom of local inhabitants who wanted autonomy for hill areas and rural infrastructural support. However, Moreh in Tengnoupal District, the border town located near Myanmar in the east has been a town since 1981.

Hence it is not real but administrative measures that made hill areas of Manipur experience negative growth in urbanization. This is clearly visible from the change in number of urban centres from one to nine between 1971 and 1981 then declined to one in 2001 and then rose to seven towns in 2011 contributing 10.69 percent of urban population.

In more recent years, between 2001 and 2011, the state as a whole experienced a phenomenal 69.04 percent increase in its urban population. The hill areas experienced only 16.76 percent increase while the plain areas registered 75.20 percent increase in its urban population. This shows that the state is urbanizing at a faster rate in recent years notwithstanding wide regional disparity in urbanization. Within the hills, Chandel has registered 88.81 percent increase in its urban population which is the highest in the entire state, largely due to the growth of Moreh town which is a flourishing centre for trade and commerce located in Indo-Myanmar border connecting Indian markets in the west and South East Asia markets in the east. India's Act East Policy has given much emphasis for the development of this town. The remaining four hill towns being headquarters of the districts have also potential for future urban growth.

The Valley portions of the state have been progressing gradually and have recorded 75.70 percent of increase between 2001 and 2011. Many of the towns located along the transport routes-National Highways and State Highways have got the opportunity to develop infrastructure for distribution of goods and services, thus there is an increase of above 50 percent. However, Bishnupur district has recorded 8.53 percent change in the last decade. There is further evidence to the disparity in urbanization process overtaking the hill and plain areas. More than 85 percent of urban population is concentrated in the Central valley (table-8). This skewed pattern of urbanization is likely to continue because of varied topographical features, resources, communication and ethnic composition of the two areas. Even within the valley, urban development was confined to two districts of the Central Valley in 1961 due to the presence of Imphal city in the Valley since 1901. Economic development in the entire state was restricted to a small enclave. The process of urbanization spread to other areas in the valley with the development of transport network and agriculture and retail markets in the next decade with seven urban centres in 1971. Only one urban centre sprang up in the hill areas that accounted for 90 percent geographical area. By the year 1981 urbanization process had a greater spatial spread with 32 urban centres, though far more confined to districts headquarters where many of the government offices including medical, education, PWD, agriculture etc. were located. Of the total, 28.12 percent of the urban population was living in hills, which was the highest proportion till date. Primacy of the Imphal city is quite evident.

It is clear that Imphal West district of the Central valley registered comparatively high level of urbanization in the last four decades. Nearly four-fifths of the Imphal city area of 32 km² belongs to this district where more than 20 wards out of 27 (now 28)

wards are located. The proportionate share of the urban population and the spatial distribution pattern at the district level as seen in table-7 suggests that there is a heavy concentration of urban population in the four districts of the Central valley areas and the least concentration of urban population is in the hills. This uneven urban growth is likely to bring about social difference in the two areas.

15.1.4 IMPHAL CITY

Imphal is the state capital city and has been experiencing rapid urban growth and construction of buildings in the surrounding agricultural and marshy land since the 1980s. The city has about 33 sq. km area with more than 2.5 lakh population in 2011 and sprawls haphazardly forming an incoherent landscape and the Imphal Urban Agglomeration covers an area of about 55.60 sq.km. Imphal Urban Agglomeration has an average altitude of 790 m above MSL with the extension of 24° 44' 59" N-24° 50'30"N latitudes and 95° 53'4" E-93° 53'59" E longitudes.

From 33A.D., Imphal has been the center of administration. It was at the site of 'Ima'market where inhabitants gathered and formed 'Khwaairamband Keithel' (Khwaairamband Bazaar) with barter system which started to show the characteristics of township by that time. Topographically, the surrounding of 'Kangla 'was plain and low-lying areas inhabited by villagers at Yaiskul, Thangmeiband, Khagempali, Sagolband, Uripok, Khurai, Wangkhei – Nongmeibung etc. and its source of water was the North-South running Imphal river, Kongba river, Nambul river and Naga streams. Modern amenities arrived at the town only when British ruled the state. Imphal Municipality has 28 wards with about 33 sq km and it has been upgraded to a Corporation in 2011.

15.2 PROBLEMS IN RELATION TO IMPHAL URBAN LAND USE

The present environment of Imphal city is the composite effect of terrain, drainage, water bodies including public ponds modes of transport, density of buildings, commercial areas, institutions of health and education, government departments, residential areas etc. In relation to the infrastructure available in the city, the daily commuters overcrowd the urban area. The dual facet role of urban environment is the increasing population growth in the last few decades. The problems of traffic congestion, sewerage system, frequent flood during rainy season, urban wastes, water pollution etc. have started threatening the existence of urban dwellers as well as daily commuters. So far, there is no final solution for a waste disposal scheme or adequate drainage facility for Imphal city. In some localities – such as Sagolband, Kwakeithel and Uripok – urban floods menace two to three times in a year has become common. The 33 Sq. km area of Imphal Municipality is fragmented into many divisions by the Imphal river, the Nambul river, Naga Nullah and many other smaller streams which flow to south to join either Loktak lake or the Imphal river. In addition to blocking of the drainages by the construction of individual buildings,

criss-crossing urban roads and lanes create unmanageable additional problems of mud and potholes during the rainy season. The tendency of filling up marshy land wherever such land is available by government and individuals for construction of building or offices has further aggravated the situation. The recent idea of saving Lamphel pat, though reduced nearly by more than half of its original size is encouraging. Similarly, Porompat in the east, is fully packed with government buildings of institutions, hospital and various offices. The core of the city - Thangal Bazar, Paona bazaar, BirTikendrajit Road, Dharmashala, Khuyathong, Naga mapal, PologroundManing , Masjid Road, WahengLeikai to Keishammpat Point, is the commercial hub and is found to be very busy right from morning until night. Moreover, there is no proper vehicle parking space in the city core area, with temporary arrangements most of the time. Urban wastes increases the water and air pollution as there is no proper Solid Waste Management system in the state.

15.2.1 LAND USE OF IMPHAL UA BASED ON 2007 DATA

Private land occupies about 70.00 percent of the total area of Imphal urban agglomeration (Annexure-I). Because, the city has been the center of administration right from the beginning except "Kangla", Khwairamband Bazaar, Pologround, Paona and Thangal Bazaars, the rest is residential area. Its compactness increases with the increase of population. About 26.84 sq. km, is occupied by settlement category in which 15.23 sq. km is in urban fringe. The density of population is nearly 4,500 persons per sq. km in 2001 and the majority of people belongs to the Hindu Meitei community. Temples, football grounds, clubs, public ponds , private schools, community halls and recreation grounds are the important features found amidst the urban localities which are divided into 27 wards(now 28 wards) for the Imphal Municipality area. Nagarum, Dewlaland, Newcheckon, New Lambuland, Kukiveng, Mahabali, Kakhulong, Majorkhul, Mujikhul, Tarungkhul-Laimanai, Sanakheithel, Chingmeirong, Sangaiparou etc. are urban pockets within 2 km. radius, where Nagas and Kukis settle with less than 80,000 population. Haptalocality to the east of 'Kangla Fort' is a Muslim populated locality in Imphal.

Agricultural land and water body can keep the city environment in better shape. Agricultural land (6.58 sq. km.) has been declining every year as immigrants from rural as well as hills purchase the land and convert it to homestead land. Water body and marshy/swampy lands (12.91 percent) are also being converted to concrete surface and buildings without proper guidance of urban planning bodies of the government. For construction works on private land, nobody thinks about the sustainable urban life. Basically, government land is scarce, of the total 22.18 sq.km, offices and educational institutions occupy only 13.62 percent of the Imphal UA area. The low lying areas of Lamphelpat , Takyelpat , Akampat, Porompat, KhumanLampak, Firing range and Lei-ingkhul farm at Chingmeirong are gradually occupied for accommodating various government institutions and organizations. Practically, no space is available within the Municipal limit for new avenues. This has increased traffic congestion, blocking of drains, occurrence of urban flood, shortage of water supply and power in the city. Apart from the main market of Imphal, there

are more than ten suburban markets mainly on the border of Municipality limit. Roads (National highways, State highways, PWD roads and urban roads) which connect Imphal with all the district headquarters of the state and cities of the country, do not use large area but less than one and half square km of the total urban land. The progress of widening of NH's and State highways for making four lanes and two lanes are going on.

Urban forest is visible only at the Langol hill for a small area as the present Municipality limits touches southern parts of Lamphel hill. The foothill circles around this hill may be proposed for immediate expansion of Imphal city. Three hillocks are found at Chingmeirong, Chinga and Pishum which are already used for different purposes without vegetation cover practically. Area for educational institution occupied by D.M. College Campus, G.P Women college, and higher secondary schools namely T.G., Johnstone, Churachand, Ibotonsana, Raja Dumbra and many other high schools and lower schools of government and private is 6.18 percent to the total area. Sports complex at Khuman Lampak, SAI complex at Takyel and Bus terminus at Chingmeirong are notable though the space covered is below 5.00 percent.

15.2.2 CHANGE IN URBAN FRINGES OF IMPHAL CITY

The fringe areas of Imphal city have a mixed land use pattern of paddy fields and settlements. Majority of residents belong to Meitei community whose occupations are chiefly agriculture. The transition zone is well marked by agriculture fields which has been declining every year due to new construction. By 2007, the agricultural land in the Imphal UA was 6.58 sq. Km. On an average 1-2 hectares of fertile paddy field every year get spoilt by converting to urban built up land. The state has already met the shortage of rice for the existing population. The outward expansion of Imphal city on agricultural land may after a few years will be a irreparable loss to the state causing more scarcity of staple food of the inhabitants. So, impact of urban expansion on agricultural land is observed with sporadically in the city. There is considerable scattering of new residences occupied by migrants from hills and rural areas. It is observed that those non-farm residences have become urban as the city influence infiltrate the area and social transformation takes place. On the fringe, incoherent landscape appears because of this haphazard sprawls that exhibit a wide mix of land use of a variety of commercial development of retail shops, hotels service centers, markets etc. Along the lines of communications there is intermingling of various individual enterprises and intruded residential development.

15.3 CHALLENGES OF URBAN DEVELOPMENT IN MANIPUR

Urbanization in Manipur is in the incipient stage. JNNURM (2007-2012/3), the SMART Cities Mission, the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and the Prime Minister's Pradhan Mantri Awas Yojana are important programmes being implemented. A clear Smart Solutions of retrofitting or redevelopment or green

field city is not noticed in Imphal. Problems faced by people in traffic congestion, sanitation, parking, drains, floods, shortage of potable water, pollution of air and water, garbage solution etc are aggravating more and more. The challenges of urban development in this land-locked state in relation with the nature of institutional, physical, social and economic infrastructure of the state are as follows:

1. No proper plan for land development –land configuration and terrain in relation to potentiality of water (amount of rainfall and accumulation of water by streams).
2. Urban planning was not properly done keeping in view of urban land use for functional allocation and the spatial relationship between urban, peri-urban and rural areas. None of the basic urban facilities were integrated.
3. Water and transportation problems –drinking water shortage in hill towns and Imphal city and inadequate road linkages, lack of public transport integration.
4. Heavy concentration of urban infrastructure in the capital city, Imphal and stunted growth of its satellite towns.
5. No proper waste management system, no proper drainage and sanitary arrangement.
6. Lack of coordination among various urban service providers
7. Unsustainable conceptualization of projects, poor execution and very slow implementation,
8. Overconcentration of population in Imphal city and lack of population projection so vital for urban planning.
9. No proper sensitization of general public and administrators to the need of healthy environment and sustainable towns /city.
10. Haphazard growth and arrangement of urban functions, no adequate parking space for vehicle, insufficient public toilets, flood risk in Imphal city.
11. Inadequate arrangement to safeguard Imphal river bank which drains the city north to south and no cleaning plant of polluted Nambul-Naga rivulet which also passes through the busy city, Imphal.

The targets for achieving urban environment in Manipur which is inclusive, safe, resilient and sustainable to all communities have to factor in the following points.

A. PLAN FOR EXPANSION OF IMPHAL CITY

- i. The haphazard development of Imphal city should be controlled by adopting decentralization of urban functions in the state and at the same time, the city has to expand at some suitable adjoining areas or within the sphere of economic influence.
- ii. Just to the north of Imphal city, a hill with an average elevation of 900 m above the sea level, stretches from Khonghampat to Lamphel over 10 km north-south; its foot hill must have more than 20 km long and the area available for extension of urban area is about 20,000m X 300m= 60,00,000 sq. meters. The proposed area is flood free zone and surrounded by NH 2 in the east and Khonghampat

–Lamsang road in the west and is well accessible if a ring road around the foothill with connecting / approach roads are constructed. Water supply facility from the Imphal river is feasible at Koirengei and Khonghampat to provide water to almost the entire extended urban areas. The slope of foothill would give the excellent sites for construction of public offices and service centres and upper parts of the hill can be made a dense forest which will provide the source of many small perennial streams in western and eastern hill sides to facilitate the down slope areas. Villages of Khonghampat, Kameng, Khaman, Loitang, MayanglIngkhol, Lamsang, Lamlongei, Luwangsangbam can get the taste of urbanisation gradually. The present Bungalows of VIP's including Governor and Chief Minister, Secretariat office, Accountant General office and various government organizations located within two km radius of CBD Imphal city should be shifted to suitable sites. The foothills around the Khonghampat to Langol stretch will be the only alternative choice for future urban expansion. Shifting of these buildings will also reduce the intensity of traffic congestion of city. Buildings should be properly designed as the entire North east India is earthquake prone.

- iii. Conversion of paddy fields in and around the city to non-agricultural use cannot be altogether stopped. As a sub-scheme of AMRUT, Town Planning scheme launched by Ministry of Housing & Urban Affairs, GoI wherein green development is envisaged.
- iv. Many pockets of urban marshy land have been converted to build up land to accommodate increased population and opening of government offices; instead water bodies should be preserved to sustain the city environment.
- v. A benchmark survey is highly necessary to know the elevations of each part of the city above the sea level. By knowing the contours everywhere in the city it will be easy to check water logging, flood and drainage system.
- vi. The main drainages for rain water are the Nambul, Naga Nallah and Waisel Streams, all joining Loktak Lake in the western part and Kongba and Heingangkhong streams, tributaries of Imphal river, in the eastern part of Imphal city. As and when the levels of water of the Lake and the Imphal river are high, sluggish movement of drainages cause water logging in the city area. Thus, flow channels of smaller drains should not be obstructed. Since the city is in the low-lying areas, the existing agricultural land and marshy lands should not be disturbed and future expansion should be on the adjoining foot hill sites.
- vii. As the connecting drainage and the receiving end of water flow are controlled by the topography that has the final outlet at the Sugnu hump, about 80 kms to the south. roads and lanes in urban area of Imphal are badly drained always, and inundated roads cannot bear the pressure of passing vehicles for long, thus muddy and broken macadam roads appear here and there in the city area. The condition is worsening due to soft sedimentary rocks underneath. Therefore, foothills are the best choice.

B. MITIGATION AND ADAPTATION TO CLIMATE CHANGE

To mitigate and adapt the global warming trend in the urban environment of hills and valley in Manipur, urban dwellers should know the gravity of prevailing situation. Burning of wood and charcoal for household purposes, hotels and small industrial units are common in the towns. The following measures are necessary to reduce emission of greenhouse gases.

- i. Every house needs to have solar energy installation with solar panel on roof and roof terrace.
- ii. Smokeless cooking devices with lower firewood & charcoal consumption are to be used at home, hotels and community gatherings.
- iii. Old vehicles should be gradually withdrawn from the city roads. Vehicles run with CNG device on urban roads should be encouraged.
- iv. roadside plantations and gardens in urban localities will be helpful in checking pollution.
- v. Hillocks and parts of hill (about 1391 hectares including Iroisemba and Langol Hill areas) in urban areas should be protected as urban forest zones.
- vi. Wet lands, swampy & marshy lands in and around the towns and city are to be kept as water bodies. In addition, individual ponds and community ponds should be preserved.

C. SUSTAINABLE AND RESILIENT BUILDINGS BY UTILIZING LOCAL MATERIALS

To ensure access for all to adequate, safe and affordable housing among the urban residents in Manipur, houses should be constructed using the locally available materials such as wood, bamboo, reeds, brick, sandstone etc. Since the state is in an earthquake prone zone with soft rocks (mostly sedimentary types) underneath, multi-storey buildings (more than G+2) should be discouraged. The Prime minister's Pradhan Mantri Awas Yojana should be leveraged to take care of the poor. In case of RCC buildings and apartments of government, private bodies and individuals, modern architecture should be used at the time of construction for sustainability and resilience.

D. ERADICATION OF URBAN POVERTY

Manipur is a poor state wherein urban dwellers in most of the small towns are dependent on agriculture sector. The secondary and tertiary sectors are important only in Imphal city and Moreh town. In both hills and valley, towns came into existence as outgrowth of villages. Urban residents are surrounded with minimum local resources and many of them belong to BPL households. These poor families may be given subsidized loans for starting industrial units using locally available raw materials.

E. DECENTRALIZATION AND DEVELOPMENT OF LINKAGES BETWEEN URBAN, PERI-URBAN AND RURAL AREAS

Imphal, the capital of State has become a primate city by centralizing functions and essential infrastructure and it does not allow satellite towns to grow up well. In order to counterbalance the city, there should be decentralization of urban functions by shifting certain government offices to the towns located at the district headquarters mainly. The following steps are to be considered.

- i. While making proposal for markets for Imphal and other town provisions for informal sector (like vendors) should also be made.
- ii. To reduce congestions and over-crowding in Imphal city, satellite towns are proposed to be develop, which can act as counter-magnet to draw away economic and service activities from Imphal.
- iii. There should be policy to have decentralized urbanization away from Imphal having functional and spatial linkages with Imphal, the state capital. The intervening area between Imphal city and the proposed medium size towns should be preserved and conserved for primary sector activity such as agriculture, forestry, animal husbandry and related economic activities.
- iv. As a part of decentralization, public passenger buses should ply all the time linking hill towns and valley towns which will reduce disparity facilitating inter community interaction. For the ring road along the foothills, LRT or trams should be introduced.
- v. A uniform land tenure system should be put into practice in the state, so that economic development through utilization of land resources can be optimally utilized by people in both hills and valley.
- vi. Two border towns, Moreh and Jiribam should be given due importance for trade and commerce and the required infrastructure should be made available.

F. TRANSPORT SYSTEM, TRAFFIC CONGESTION, CONSTRUCTION OF OVER-BRIDGE IN IMPHAL CITY

In Manipur, road transport is the basic infrastructure for overall economic development. Valley is better connected than the hill areas. All the roads from different directions converge to the centrally located Imphal city, as a result there is increasing traffic congestion whereas the rest 50 towns do not face such chaotic situation. There is an urgent need to take up the urban planning from a new perspective. The new perspective is to take a holistic view of the Imphal valley as a whole with its surrounding foothills for urban and regional planning. From this perspective, the urban centres can be located on the foothills, where the fertility of the soil is low. The central valley can mostly be reserved for agricultural and allied activities. The location of growth centres on the foothills has the advantage of unlocking a vast untapped potential- irrigation, power, water supply, tourism, industrial growth centres etc.

For location of urban growth centres on the foothills, a roadway cum Tramway, aka (Light Rail Transit) LRT link should run along the foothills connecting the whole valley and the existing urban centres. LRT is an efficient, aesthetic, durable and modern mass transport resource for medium-sized Indian cities. Metro or mass rapid transit is not an appropriate choice. It is consistent with the view that a transport network not based on oil will have a decisive advantage in the near future. Cities with 300,000 to 1,000,000 inhabitants are the best suited for the implementation of a tram network. 40 to 80 thousand passengers per day can be handled by 30 metres long trams. Multi community planned townships can be developed on the foothills along this link. Mini storage dams can be constructed at various locations on the foothills all along the link. There are many natural water storage points on the foothills which can be used for irrigation, water supply, mini hydro power plants and tourism. Various industrial growth centres can also be located along this link. The various advantages of such a plan can be :

1. Solving the traffic congestion in Imphal city.
2. Providing the much-needed irrigation to the agricultural land and hence increasing the agricultural and farmland productivity
3. Saving/reclaiming of the agricultural lands and wetlands in the valley which is a necessary condition for progress and development of Manipur,
4. Developing a drainage plan for Imphal city to solve the endemic flood problem
5. Increase in power production
6. Increase in drinking water supply
7. Growth in tourism,
8. Developing an organic relationship amongst hill and valley people through the development of multi community townships,

There can be disadvantages also as any development has a trade-off. But advantages can outweigh the disadvantages. It is expected to solve the endemic flood problem of the Imphal valley. In order to decongest in transport system in the city, an area of 8 km radius with smart transport system should be developed. This should be accompanied by:

- a. Road sides with dedicated spaces for cyclists, pedestrians, children, old age and disabled persons.
- b. Over bridges at the appropriate locations in the city after checking the intensity of traffic volume especially the daily commuters, vehicles and goods from the surrounding areas and also after adopting decentralization of urban planning.

G. HEALTHY URBAN ENVIRONMENT, INTEGRATED AND SUSTAINABLE URBAN SETTLEMENT PLANNING

The horizontal and vertical expansion of urban settlements are the result of socio-economic dynamics of the urban residents as well as urban and rural continuum for which transport linkages play a great role in transforming the entire urban landscape. It is the cultural environment which exposes the true sense of human efforts and

economic activities. In order to have and maintain healthy environment in the city and town, environmental sustainable development plan is proposed by development of Green Belts at the periphery of the city.

The suggestions for attaining sustainable urbanization are as follows;

- i. Urban Population distribution should be guided towards the medium size city by strengthening their economic base, creating employment opportunity in secondary and tertiary sectors and also investing in economic activities having potential for further development to strengthen the economic base of the medium size urban centers.
- ii. A clear cut housing policy has to be formulated by which all the citizens would have access to homestead land.
- iii. The drainage and sewerage system should be planned to avoid endemic flooding and water logging in the city and its environ. Adequate surface drainage should be able to clean and flush out the waste and dust of urban areas.
- iv. Parking spaces should be developed in urban areas and use of private vehicles may be discouraged by charging higher parking fees. Violations of parking rules should be dealt with firmly.
- v. The urban dwellers should be provided adequate power and safe drinking water through the prepaid system.
- vi. All waterbodies including marshes in and around Imphal should be preserved. This should be supplemented by afforestation programmes on the slopes of hills around which urban centres are going to be developed.
- vii. Trams should be introduced along the foothills connecting Imphal with decentralized urban centres.
- viii. There should be investments to attract major manufacturing industries which may be located in the decentralized points along the foothills.
- ix. Imphal urban agglomeration must have developed inter-linkages among the decentralized urban centres.
- x. Urbanization should extend to the foothills without upsetting the ecological balance.
- xi. There should be urban Solid waste management policy including hospital waste management.
- xii. Due important should be given to historic sites and precincts located in urban areas.
- xiii. while constructing Hospitals, Public Buildings, Malls, Institutions etc. expert advice should be taken for fire safety and other possible natural and man-made calamities.
- xiv. Policy for Protection of Imphal river embankments and also towns located in hills and plain areas from the hazards of landslides and floods should be framed and implemented.

- xv. Use of plastics and non-biodegradable materials should be banned in and around the urban settlements and there must be water cleaning plant for Nambul-Naga rivulet
- xvi. There must be concerted effort to make the people understand their role in sustainable urbanization using mass media and educational curricula. Nothing can be achieved without the support of the people.

TABLE 15.7. MANIPUR: INTER-DISTRICT VARIATION IN INCREASE OF URBAN POPULATION, 2001 TO 2011

DIST.	2001	2011	% INCREASE
Senapati	-	7476	-
Tamenglong	-	19363	-
Churachandpur	-	18357	-
Chandel	14962	16847	88.81
Ukhrul	-	27187	-
Hill Area	14962	89230	16.76
Imphal East	108310	183207	76.40
Imphal West	246683	322879	59.11
Bishnupur	74741	87505	8.53
Thoubal	131272	151333	86.74
Valley Area	561006	744924	75.20
Manipur	575968	834154	69.04

Source: Census of India, 2001 and 2011

TABLE 15.8: MANIPUR: NO. OF TOWNS AND PERCENTAGE, 1961-2011

DISTRICT	1961	1971	1981	1991	2001	2011
Senapati	-	-	3 (9.37)	-	-	1(1.96)
Tamenglong	-	-	1(3.12)	-	-	1(1.96)
Churachandpur	-	1(12.5)	3(9.37)	1 (3.22)	-	3(5.88)
Chandel	-	-	1(3.12)	1(3.22)	1(3.03)	1(1.96)
Ukhrul	-	-	1(3.12)	-	-	1(1.96)
Hill Area	-	1(12.5)	9(28.12)	2(6.45)	1(3.03)	7(13.72)
Imphal East	(23.67)	1(12.5)	2(6.25)	3(9.67)	6(18.18)	15(29.41)
Imphal West	1(76.33)	1(12.5)	7(21.87)	10(32.25)	11(33.33)	13(25.49)
Bishnupur	-	3(37.5)	6(18.75)	7(22.58)	7(21.21)	7(13.72)
Thoubal	-	2(25)	8(25)	9(29.03)	8(24.33)	9(17.64)

DISTRICT	1961	1971	1981	1991	2001	2011
Valley	1(100)	7(87.5)	23(71.87)	29(93.54)	32(96.96)	44(86.27)
Manipur	1(100)	8(100)	32(100)	31(100)	33(100)	51 (100)

Source: Census of India, 2001 and 2011

Source: From Table 15.1 to 15.8, N.Deva Singh & Diana Naoroibam, "Urban Growth and Patterns of Urbanization in Manipur", Hill Geographer, Shillong, Vol. 31 No.1, 31-42 (2015).

TABLE 15.9: LAND USE OF IMPHAL URBAN AGGLOMERATION, 2007

CATEGORY	IMPHAL MUNICIPALITY AREA IN SQ. KM.	URBAN FRINGE AREA IN SQ. KM.	TOTAL AREA IN SQ. KM.
Settlement	11.61 (35.63%)	15.23 (66.00%)	26.84 (48.87%)
Agricultural land	4.23 (12.99%)	2.35 (10.16%)	6.58 (11.83%)
Water body	5.57 (17.18%)	1.61 (6.98%)	7.18 (12.91%)
Forest	0.06 (0.18%)	--	0.06 (0.18%)
Hills	0.04 (0.12%)	--	0.04 (0.12%)
Rivers	0.78 (2.02%)	--	0.78 (2.02%)
Govt. offices	3.63 (11.15%)	0.51 (2.21%)	4.14 (7.44%)
Govt. land	1.04 (3.20%)	----	1.04 (3.20%)
Educational Inst.	1.54 (4.72%)	1.90 (8.23%)	3.44 (6.58%)
Community land	1.21 (3.71%)	0.40 (1.73%)	0.61 (1.09%)
Market place	1.51 (4.63%)	--	1.51 (2.57%)
Roads	1.27 (3.89%)	--	1.27 (2.28%)
Bus Terminus	0.40 (0.12%)	--	0.40 (0.12%)
SAI & Sport Complex	---	1.04 (4.5%)	1.04 (4.5%)
Church	---	0.02 (0.09%)	0.02 (0.09%)
Total	32.54 (100)	23.06 (100)	55.60 (100)

NB: Data of each category is generated from the IKONOS 4 m multispectral data of 2007, Imphal city area. Source: N.Deva Singh and Th. Janaranjan Singh, "Land Use of Imphal Urban Agglomeration and its Future Planning", Geographic, Aizawl, 7 June, 1-12(2012)

16

Sustainable Consumption and Production

The United Nations Universal Declaration of Human Rights affirms that “everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food clothing housing and medical care and necessary social services.” Oxford Advanced Learner’s Dictionary defines consumption as “act of using energy, food or material”.

Consumption is an important component for the sustenance of life. Without it life would not be possible for the living beings particularly the mankind. The UNDP in its human development report of 1998 tries to link consumption to the expansion of the human capability to live longer in a sound condition. This means the wellness of the human life is strongly connected to consumption. The report also highlights certain areas of consumption as utmost survival such as food, shelter, water and sanitation, medical care and clothing while education for a meaningful access to and absorption of knowledge and information and finally transport and energy for anything. The report also mentions more succinctly “Consumption clearly contributes to human development when it enlarges the capabilities of people without adversely affecting the well-being of others, when it is as fair to future generations as to the present ones, when it respects the carrying capacity of the planet and when it encourages the emergence of lively and creative communities.” Further UN sustainable consumption and production has been defined as “the use of services and related products which respond to basic needs and bring a better quality of life, while minimising the use of natural resources and toxic materials as well as the emission of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations” (ISSD 1994).

Despite the importance basic needs of consumption there arises issues of too much consumption and to less consumption around the world. Those in the developed world consume a lot more than what the developing world is consuming. This disparity produces a wide base of debate. The developed world while in their process and progress of development attained a high level of consumption while the developing world is lagging much far behind in the level of development. When these countries are on the development path and when they are trying to attain the level of consumption as that of the developed countries the world’s resources may not be able to support. In other words, the carrying capacity of the earth does not increase. Therefore, there arises the question of judicious consumption by this generation. The dilemma here is of two-prong: (i) the larger size of population of the developing countries and (ii) non-satiable consumption pattern of the developing countries.

In terms of population as of now nearly 82 percent of world population is residing in the developing countries compared to 18 percent in the developed countries of the

world. But it is also true that a large part of the world's resources is controlled and consumed by the population of the developed countries. As recorded in the HDR 1998 by the turn of 20th century the world level of consumption was estimated to a level of 1.5 trillion dollars. But by the time when the report was published the world consumption level reached the mark of \$24 trillions. According the World Bank the consumption expenditure has risen to \$55trillions by 2015. Despite the debate, commonly agreeable to all the stakeholders is that so long as the consumption expands the human capabilities and functioning consumption should not be curtailed. Consumption expenditure accounts for about 75 per cent of the total GDP of the world as a whole. This figure varies and for a typical developed country like USA the consumption expenditure makes up 84% while India has about 70%.

16.1 CONSUMPTION EXPENDITURE IN INDIA

The national sample survey organisation (NSSO) of India has been collecting and publishing information on various aspects of socio-economic data since its inception.

TABLE-16.1: AVERAGE MONTHLY EXPENDITURE PER PERSON ON DIFFERENT GROUPS OF ITEMS OF CONSUMPTION INDIA IN ₹

CONSUMPTION ITEMS	1968-69 23RD	1977-78 32ND	1987-88 43RD	1999-2000 55TH	2011-12 68TH
	Rural				
Food	24.7	44.33	101.1	289	756.49
Pan tobacco & intoxicants	1.02	1.99	5.1	13.97	45.93
Fuel and light	1.94	4.13	11.9	36.56	114.11
Clothing	1.94	5.99	10.6	33.27	85.68
Footwear	0.21	0.51	1.6	5.37	14.61
Misc.goods and services	2.71	7.12	22.9	92.86	338.48
Rent	0.07	0.19	0.0	1.89	6.5
Taxes	0.02	0.02	0.0	0.8	3.53
Durable goods	0.64	4.82	4.9	12.72	64.64
Non-food	8.59	24.77	56.9	197	673.47
Total consumer expenditure	33	69	158	486	1430
	Urban				
Food	30.58	57.67	250.5	410.86	1120.88
Pan tobacco & intoxicants	1.29	2.34	10.5	16.23	42.3
Fuel and light	2.71	6.17	30.2	66.25	175.86

CONSUMPTION ITEMS	1968-69 23RD	1977-78 32ND	1987-88 43RD	1999-2000 55TH	2011-12 68TH
Clothing	2.2	6.78	21.5	51.71	141.09
Footwear	0.26	0.59	4.1	10.05	26.34
Misc. good and services	6.6	14.05	126.0	224.89	798.13
Rent	2.01	3.67	0.0	38.16	164.17
Taxes	0.1	0.18	0.0	5.86	21.54
Durable goods	0.28	8.55	15.1	30.85	139.36
Non-food	15.46	42.33	207.5	444	1508.77
Total consumer expenditure	46	100	458	855	2630

The consumption data for Manipur is presented in Table 16.3. Among the food items rice takes the major share in all the rounds included here. Leaving aside rice as the main staple food item some items have emerged as important components among the food items. These components are the meat, fish and egg; vegetables, spices and beverages. They occupy a unique place among the food expenditure in the state. In case of the non-food items expenditure is incurred mainly on the miscellaneous goods and services followed by fuels and lighting. In recent time expenditure on clothing is becoming prominent. A huge amount is also spent on pan, tobacco and intoxicants but the major chunk is shared by pan and tobacco together because of the consumption of tobacco laden pan (*jarda* in local lexicon).

TABLE 16.2: AVERAGE MONTHLY EXPENDITURE PER PERSON ON DIFFERENT GROUPS OF ITEMS OF CONSUMPTION MANIPUR IN ₹

	1968-69	1977-78	1986-87	1999-2000	2011-12
Rural	23 rd	32nd	42 th	55 th	68 th
Cereal	19.98	29.71	71.23	205.3	297.37
Pulses	0.57	1.37	5.84	10.5	20.28
Milk & Milk Products	0.21	0.97	2.72	5.5	20.53
Edible Oil	0.73	1.78	4.39	10.8	35.54
Meat, Egg Fish	2.89	6.89	14.04	33.8	156.21
Vegetables	1.9	4.4	8.63	33.6	108.36
Fruits And Nuts	0.07	0.28	1.32	4.7	22.59
Sugar	0.14	0.41	2.25	5.4	9.41
Salt	0.09	0.29	0.55	1.8	3.37
Spices	0.73	1.28	3.03	11.4	43.04
Beverage	0.29	0.83	3.16	16.4	96
Food	27.6	48.21	117.49	339.2	812.78

	1968-69	1977-78	1986-87	1999-2000	2011-12
Pan, tobacco & intoxicants	1.21	2.46	6.66	16.2	58.87
Fuel and lighting	2.58	6.28	12.62	51.4	140.73
Clothing	1.14	2.37	6.14	23.5	78.49
Footwear	0.1	0.45	5.6	7.7	20.77
Misc. good and services	1.5	6.2	10.98	81.9	350.48
Durable goods	0.02	1.58	2.5	14.1	38.17
Non food items	6.55	19.34	44.5	198.0	689.14
Total	34.15	67.55	161.99	537.2	1501.89
Urban					
Cereal	20.12	30.48	65.69	218.1	269.96
Pulses	1.03	2.21	7	12.6	21.2
Milk & milk products	0.44	1.04	3.86	14.0	30.2
Edible oil	1.17	2.46	5.62	15.2	40.1
Meat, egg fish	3.8	6.81	15.13	47.0	144.38
Vegetables	2.06	3.73	8.93	34.7	104.3
Fruits and nuts	0.21	0.54	1.3	6.8	21.2
Sugar	0.51	1.15	2.42	6.0	8.1
Salt	0.1	0.28	0.54	2.4	3.21
Spices	0.72	1.55	3.15	12.1	37.46
Beverage	1.55	2.53	3.51	26.9	38.78
Food	31.72	52.79	117.5	395.51	777.64
Pan	2.01	3.38	7.91	20.5	39.27
Fuel and lighting	3.29	7.43	13.76	52.6	147.36
Clothing	1.47	4.28	8.18	26.6	81.31
Foot wear	0.38	1.66	6.84	8.8	18.8
Misc good and services	3.81	8	16.24	180.4	383.11
Durable goods	0.2	3.05	1.31	15.5	25.51
Non food items	11.16	27.8	54.24	309.0	705.03
Total	42.88	80.59	171.74	704.5	1482.63

Table-16.2 provides the trend and levels of the consumption expenditure in Manipur. But this does not give information for the comparison purpose because they are not at constant price. Therefore, for making a meaningful comparison the same table is reproduced in the form of the percentage distribution and presented in Table-16.3.

TABLE 16.3: PERCENTAGE OF AVERAGE MONTHLY EXPENDITURE PER PERSON ON DIFFERENT GROUPS OF ITEMS OF CONSUMPTION MANIPUR TO THE TOTAL CONSUMPTION EXPENDITURE

	1968-69	1977-78	1986-87	1999-2000	2011-12
	23rd	32nd	42nd	55th	68th
Rural					
Cereal	58.51	43.98	43.97	38.21	19.80
Pulses	1.67	2.03	3.61	1.96	1.31
Milk & milk products	0.61	1.44	1.68	1.02	1.37
Edible oil	2.14	2.64	2.71	2.01	2.37
Meat, egg fish	8.46	10.20	8.67	6.29	10.40
Vegetables	5.56	6.51	5.33	6.25	7.21
Fruits and nuts	0.20	0.41	0.81	0.87	1.50
Sugar	0.41	0.61	1.39	1.01	0.63
Salt	0.26	0.43	0.34	0.34	0.22
Spices	2.14	1.89	1.87	2.13	2.87
Beverage	0.85	1.23	1.95	3.05	6.39
Food	80.82	71.37	72.53	63.14	54.12
Pan	3.54	3.64	4.11	3.01	3.92
Fuels	7.55	9.30	7.79	9.57	9.37
Clothing	3.34	3.51	3.79	4.37	5.23
Foot wear	0.29	0.67	3.46	1.43	1.38
Misc. good and services	4.39	9.18	6.78	15.25	23.34
Durable goods	0.06	2.34	1.54	2.62	2.54
Non-food items	19.18	28.63	27.47	36.86	45.88
Total	100.00	100.00	100.00	100.00	100.00
Urban					
Cereal	46.92	37.82	38.25	30.95	18.21
Pulses	2.40	2.74	4.08	1.79	1.43
Milk & milk products	1.03	1.29	2.25	1.98	2.04
Edible oil	2.73	3.05	3.27	2.16	2.70
Meat, egg fish	8.86	8.45	8.81	6.67	9.74
Vegetables	4.80	4.63	5.20	4.92	7.03
Fruits and nuts	0.49	0.67	0.76	0.96	1.43
Sugar	1.19	1.43	1.41	0.85	0.55

	1968-69	1977-78	1986-87	1999-2000	2011-12
Salt	0.23	0.35	0.31	0.34	0.22
Spices	1.68	1.92	1.83	1.71	2.53
Beverage	3.61	3.14	2.04	3.81	6.54
Food	73.97	65.50	68.42	56.14	52.45
Pan	4.69	4.19	4.61	2.92	2.65
Fuels	7.67	9.22	8.01	7.46	9.94
Clothing	3.43	5.31	4.76	3.78	5.48
Foot wear	0.89	2.06	3.98	1.25	1.27
Misc good and services	8.89	9.93	9.46	25.60	25.84
Durable goods	0.47	3.78	0.76	2.19	1.72
Non food items	26.03	34.50	31.58	43.86	47.55
Total	100.00	100.00	100.00	100.00	100.00

In Manipur also there has been a substantial change in consumption expenditure on both food and non-food items. Examining the percentage distribution, it is found that the expenditure on cereal has been declining over time since 23rd round till the latest round. This decline is almost one-third and the decline is substantial during last 10 years since 1999-2000 (almost half). The perceptible change among the food items is in case of beverage steadily over time. Now it is important to see where the non-food expenditure has changed. Consistent expenditure is made on pan, tobacco and intoxicants. Clothing has improved slightly but the greatest change is observed in case of the miscellaneous goods and services. As recorded above the shares of education, health care, toilet products and conveyances have risen much higher. In the urban and rural areas of Manipur the proportion of expenditure on cereals has declined. In the 68th round notable proportions are meat, egg, and fish, beverages and expenditure on vegetables. The expenditure on miscellaneous goods and services has witnessed a great jump since 1999 and 2012.

Table-16.5 explains the changes of the cereal consumption in terms of the physical quantity. It is evident that over time in both rural and urban consumption of cereals has hardly changed. In rural areas higher percentile group of the monthly per capita expenditure group consumption of cereals has fallen slightly but this is not so in case of the lowest consumption expenditure group. But in case of urban areas the decline in per capita consumption level does not change much. In other words, it implies that the necessary consumption of energy remains more or less stable. Even when comparing between the expenditure groupings also there is hardly any change in quantity of cereal consumption in both rural and urban areas of India. This pattern remains almost the same in case of Manipur (not shown in table). Looking into the trend and level of consumption pattern it is reasonably safe to mention that consumption in Manipur in the next 10 years may remain stable at the current level.

A bird's eye view of Table 16.5 (next page) can highlight the 68th round NSS differential consumption expenditure pattern for the different per capita monthly expenditure. This also clearly shows that expenditure on cereals declines as the MPCE rises in both rural and urban areas. But among the food items egg fish and meat and beverage items increase over the MPCE class. Overall consumption expenditure on food items also declines over the MPCE. Among the non-food items consumption expenditure consistently increases on pan and intoxicants, education, consumer services, conveyance and durable goods in both rural and urban areas. This clearly shows that services have attracted more consumption expenditure in the state. However, items like fuel and light, footwear, and clothing have also witnessed a declining trend with higher class of expenditure. The NSSO report also highlights the fact that the cereals consumption in Manipur in both rural and urban areas has slightly increased about a kilogram per person per month from the lowest to the highest MPCE. This implies cereal consumption in quantity does not differ much across the expenditure classes. For the desired structure of the future consumption pattern of the state the NSS estimates of consumption expenditure will be adopted on the basis of modified mixed reference period (MMRP). On the basis of this both quantity and value of consumption items will be highlighted.

RECOMMENDATIONS

- The households of the lowest level of MPCE must rise up to the consumption level of higher level of MPCE.
- Material consumption must be judiciously chosen with the idea that the present consumption is not the last consumption of humankind.
- Manipur must try to reduce food wastage to almost zero level.
- The public distribution system must be efficient by 2030 so that all the inventory of food grains and other items must be kept at the lowest possible level.
- All the lighting system must be converted to the most efficient system of lighting using LED based equipment. The present scheme of solar power grid must reach at least half of the housetops of the total housing units of the state by 2030.
- Improve the public transport system in the state and by 2030 at least three-fourth of the transportation conveyance must be made using the public transport system.
- Inefficient use of chemical fertilizer, pesticides and weedicides must totally be over by 2030 for which the extension service of the agriculture department must be made responsible. The organic movement should be roped in to minimise the use of various chemicals in agriculture.
- Water must be consumed judiciously. Most of the drinking water in Manipur comes from the untreated sources. This needs to be given proper attention so that every household has access to adequate potable water.
- Enforcing appropriate land laws, at least one-third of the hills of the state should be used for growing vegetables and extracting wood/timber.

Climate Change

Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and will affect even more tomorrow. There is a significant impact of climate change, which include changing weather patterns, rising sea level, and more extreme weather events. The greenhouse gas emissions from human activities are driving climate change and continue to rise. They are now at their highest levels in history. Without action, the world's average surface temperature is projected to rise over the 21st century and is likely to surpass 3 degrees Celsius this century—with some areas of the world expected to warm even more. The poorest and most vulnerable people are being affected the most. Affordable, scalable solutions are now available to enable countries to leapfrog to cleaner, more resilient economies. The pace of change is quickening as more people are turning to renewable energy and a range of other measures that will reduce emissions and increase adaptation efforts. But climate change is a global challenge that does not respect national borders. Emissions anywhere affect people everywhere. It is an issue that requires solutions that need to be coordinated at the international level and it requires international cooperation to help developing countries move toward a low-carbon economy.

17.1 CLIMATE ACTION: WHY IT MATTERS

Taking urgent action to tackle climate change and its impacts is the need of the hour. Climate change is caused by human activities and is threatening the way we live and the future of our planet. By addressing climate change, we can build a sustainable world for everyone. But we need to act now. If left unchecked, climate change will undo a lot of the progress made over the past years in development. Doing nothing will end up costing us a lot more than if we take actions now that will lead to more jobs, greater prosperity, and better lives for all while reducing greenhouse gas emissions and building climate resilience. We can definitely address climate change, but we have to vastly increase our efforts. The world must transform its energy, industry, transport, food, agriculture and forestry systems to ensure that we can limit global temperature rise to well below 2 degrees, maybe even 1.5. We also need to anticipate, adapt and become resilient to the current and future impacts of climate change.

The UN continues to encourage all stakeholders to take action toward reducing the impacts of climate change. Journey towards bold climate action is at a critical moment. The India Climate Statistics Report (2015) published by the Central

Statistics Office (CSO), Government of India signals possible climate changes in the North Eastern region as a whole. As visualized in the National Action Plan on Climate Change (NAPCC), the Directorate of Environment, Government of Manipur, as a Nodal Agency and in collaboration with 20 line Departments/Agencies of Government has prepared the State Action Plan on Climate Change (SAPCC) with an objective: "To address the existing as well as the future challenges of climate change and reduce the associate risks and vulnerabilities in the state". The SAPCC, Manipur focuses on understanding of climate change, adaptation, migration and natural resource conservation.

TABLE 17.1: IDENTIFIED STATE MISSIONS OF MANIPUR SAPCC UNDER THE AMBIT OF NAPCC

SL. NO.	MISSIONS OF SAPCC	OVER-ARCHING NATIONAL MISSION
1	Ecosystem, Biodiversity & Livelihood Sustainability	Sustaining the Himalayan ecosystem Sustainable Habitat
2	Water Resource	National Water Mission
3	Sustainable Agriculture Practices	Sustainable Agriculture
4	Health	Sustainable Habitat
5	Forest Resources Conservation	Green India Mission
6	Enhanced Energy Efficiency and Conservation	National Solar Mission Enhanced Energy Efficiency in Industry
7	Urban Planning	Sustainable Habitat
8	Climate Change Strategic Knowledge and Information	Strategic Knowledge for Climate Change

17.2 STATE MISSION FOR ECOSYSTEM, BIODIVERSITY AND LIVELIHOOD SUSTAINABILITY

Ecologically, Manipur state has two distinct features viz. valley (10% of TGA) and hills (90% of TGA) with altitudes ranging from 1500m to 2000m above msl. The mountains of the state enjoy sub temperate to temperate climate, while the valley has sub-tropical to subtemperate climate with distinct winter, warm and humid rainy seasons. Manipur comes under two of the global bio-diversity "hotspots" viz. Himalayan Biodiversity Hotspot and Indo-Burma Biodiversity Hotspot characterized by eco-systems which are rich in biodiversity and possess rare and/or endangered species. The conservation of ecosystem is vital to the ecological security of the state landscape in terms of restoring forest cover, maintaining the sources of perennial water required for drinking and irrigation purposes and sustaining agriculture which in turn is linked to the livelihood of the people. The sustainable management of ecosystem, biodiversity and livelihood requirements must go hand in hand with climate friendly practices and adaptations to the dynamic situation.

17.2.1 KEY STRATEGIES UNDER ECOSYSTEM BIODIVERSITY & LIVELIHOOD SUSTAINABILITY SECTOR

- Appropriate policy for mountain farming especially
- Inclusion of multipurpose tree like Alder (*alnus nepalensis*) in jhuming cultivation, which provides timber, fuel wood and fixes nitrogen
- Integrated pest management, mixed farming,
- Conservation of native crop varieties with scientific approach at community level,
- Market institutionalization at district level & inter districts marketing network,
- Paddy-cum-pisciculture at hill regions,
- Medicinal plants and farm production through community with qualification & scientific definition of the species;
- Promotion of Indigenous Traditional Knowledge (ITK) with skill development & HRD;
- Promote sustainable livelihood through promotion of ecotourism and non-timber forest products [NTFPs];
- Development of market strategies for vegetations.

17.3 STATE MISSION ON WATER RESOURCES

According to India's first climate change science assessment report from INCC (Source: 4x4 Climate Change Assessment report 2010, INCCA), Manipur is vulnerable to water induced disasters because of its location in the eastern Himalayan periphery, fragile geo-environmental setting and economic under-development. Most of the surface water resources in the state are currently witnessing threats from heavy siltation rate, uncontrolled quarrying activities in the catchment areas, increasing pH at wetlands, etc. which are leading to water quality deterioration. The trend in precipitation in the north eastern region including Manipur and the projected patterns of precipitation and evaporation predict considerable spatial variability in water yield in the 2030s. In the last decade, the State has seen increased extreme events sometimes causing flash floods thereby damaging the available agricultural lands and habitats. Although rivers, streams, wetlands, and lakes cut across the state there is a need for appropriate measures, in order to mitigate adverse impacts of climate change on agriculture and water security for the people. Therefore, it is essential that Manipur formulates a coherent adaptation strategy that can protect its citizens from these climate risks.

KEY STRATEGIES UNDER WATER SECTOR

- Reduction / minimization of distribution loss of water supply and efficient demand side management including water budget auditing;
- Enhancement of water sources /catchment / forests & improvement of river / stream basin health on priority basis with peoples participation;
- Averting disasters due to heavy precipitation and increase in extreme events like flood, draught, etc;

- Policy, regulatory, delivery options, technologies, R&D & HRD, Survey & monitoring for adapting the impacts of higher or shortage annual rainfall;
- Watershed management, water harvesting [including rainwater] at community level;
- Conservation of water resources [Wetland, lakes, rivers, major water bodies] and encouragement of indigenous & community pond / lake through PPP model.

17.4 STATE MISSION ON SUSTAINABLE AGRICULTURE

Manipur's economy is primarily agrarian. Agriculture and its allied activities are highly sensitive to climate change and weather variability. Extreme weather events such as droughts, floods, tropical cyclones, heavy precipitation events, heat and cold waves have significant negative impacts on agricultural production and livelihoods of the farmers as agriculture forms the backbone of the state economy. Crop simulation analysis performed by INCCA suggests that the rain-fed rice (like in Manipur) yields are likely to vary from –35% to 5% in A1B 2030 climate scenarios across the region. As per the study by IISc Bangalore rice yield is projected to decrease in seven out of nine districts of Manipur viz. Chandel and Thoubal by 3% and between 0.4 to 0.1% in Imphal (East & West), Senapati, Ukhrul and Tamenglong by the year 2050. Further rice yield is projected to increase in only two districts viz. Bishnupur and Churachandpur. The Projected impact of climate change on the Agriculture and its allied sectors viz. Horticulture, Livestock and Fisheries are as follows:

- Decreased crop production as well as shortening of crop growing period
- Crop failure due to high rainfall variability & increased crop water needs
- Increased incidence of pests and diseases
- Occurrence of late monsoon, unpredictable seasonal rainfall and drought resulting into delay in rice seedling and transplanting;
- Water inundation due to heavy rainfall during the Panicle Initiation (PI) Stage of Rice;
- Natural occurrence of extreme events like flood, drought, etc.
- Creeping soil acidity problems;
- Temperature changes will cause a shift in the range of fish species (in different geographical areas) and a disruption to the reproductive patterns of fish.

KEY STRATEGIES UNDER AGRICULTURE AND ITS ALLIED SECTOR

- Rainfed agriculture with climate [flood, drought] & pest resistant crops varieties through farmers capacity building & skill development;
- Application of modern scientific approach in agriculture & horticulture with different crop varieties & organic farming / Macro Management mode of Agriculture with top-to-bottom approach i.e. from agronomist to farmer level;
- Encouragement of indigenous fish culture & climate resistant breed at fishermen level;

- Encouragement of indigenous & climate resistant livestock R&D, HRD, more information, new technology including monitoring on agriculture & allied activities.

17.5 STATE MISSION ON HEALTH

Manipur is a high risk area for climate sensitive vector borne diseases, viz. malaria, Japanese encephalitis, dengue, etc. As per the scientific consensus weather variability due to climate change may proliferate some of the sensitive diseases and other health related risks envisioned as follows:

- Increase incidence of vector borne (malaria, Japanese encephalitis, dengue, kalaazar, Chicken Guinea etc.) diseases due to increase in temperature, relative humidity and change in the rainfall pattern.
- Increased risks of water borne diseases like diarrhoea, generally incident from water contamination after flooding.
- Heat strokes and associated mortality from heat waves.
- Higher risk of mortality from the impact of large-scale loss of livelihoods, deterioration in nutritional health arising due to loss of rain fed crops and reduced cereal yields.

KEY STRATEGIES UNDER HEALTH SECTOR

- Outbreak investigation and response (early warning signals of impending outbreaks of epidemic prone diseases and help initiate an effective response in timely manner);
- Integrated Diseases Surveillance Programme (IDSP), nutrient survey for base line nutritional status and subsequent impact & its mitigation;
- Control of malaria and other climate variability related vector borne diseases including sentinel Surveillance of Dengue, Japanese Encephalitis, Chicken Guinea, Scrub Typhus, Rabies, host agents, water borne diseases, air borne diseases;
- Diarrhoea Diseases Control Programme;
- Setting up of State Level High Tech Entomological Research Laboratory, operational research on geographical areas based on epidemiological data, extent of vulnerability to adverse impacts of climate change, high resolution health impact model, etc.
- Develop climate friendly State Health Policy.

17.6 STATE MISSION ON FORESTS RESOURCES CONSERVATION

The climate change impacts on forests have implications on livelihood of the people dependent on forest resources. About 76.54 % of the total geographical area (TGA) of

the state is under forest cover (FSI 2011), whereas recorded forests area by legal status is about 78.01% of TGA. Total volume of growing stock of Manipur is estimated as 81.569 million cum (SFI 2011). The INCCA reported that nearly 68% to 77% of the forest grids are likely to be impacted by climate change leading to shifts in forest types. Even though the forest types are unlikely to be impacted by climate change under A1B scenario by 2030s, the forest could be vulnerable due to other factors such as fragmentation, forest degradation and forest conversion. A Composite Forest Vulnerability Index (CFVI) was calculated for each district, for two scenarios i.e. current & future to estimate the climate change impact on the forests of Manipur, and it is reported that the forests of 5 (five) districts viz. Bishnupur, Churachandpur, Senapati, Tamenglong and Chandel along with Jiribam have high overall vulnerability. To reduce vulnerability and mitigate climate change, quality of forests need improvement.

KEY STRATEGIES UNDER FORESTS SECTOR

- Enhancing quality of forest covers and improve ecosystem service through GIM, NAP and CAMPA, etc.
- Conservation of forest through Communities, i.e JFMC, etc.
- Rehabilitation of shifting cultivation through eco-restoration, HRD & skill development activities.
- Promotion Agro forestry & Social forestry in rural areas and Urban forestry to enhance Carbon Sinks.
- Forest Fire Management to prevent, detect, report and control forest fires.
- Promoting Rural Households to adopt fuel wood efficient devices like Improved Chulas, Biogas, etc.
- Promoting livelihood improvement activities among forest dependent communities for enabling adaptation to climate variability through Biomass and NTFP, etc.
- Strengthening of Forest Department (Infrastructure, Capacity building etc).
- Research and technology development on changing scenario & adaptation measures.

17.7 STATE MISSION ON ENHANCED ENERGY EFFICIENCY AND CONSERVATION

The power supply in the state is heavily dependent on the Central Sector Generating Stations located in the North Eastern Region. The projected impacts due to climate change are envisioned as follows.

1. The power generation sector in the state (as well as at the regional level) is mainly hydro dominated which is likely to be affected under the projected climate change impact. The hydel power sector in Manipur is crucially dependent on rainfalls, which may be erratic in coming years. This scenario might disrupt the power generation and intensify power deficit.

2. Increased intensity and frequency of severe weather event may adversely impact the existing energy infrastructure, for instance, power plants, transmission lines, power lines, etc. and thus cause asset loss and service disruption.
3. Firewood forms the main energy source for household cooking. About 67% of population in rural areas is dependent on firewood followed by LPG. The climate extremes are likely to impact the natural forest vegetation with a shift in forest types with consequent change in forest produce. The reduction in yields of forest biomass will enhance the dependency on the other GHG emitting sources of power causing adverse impact to climate change scenario.
4. The state has been experiencing a rapid rise in the number of diesel vehicles, old public vehicles etc. including 2- & 3- wheelers which are contributing to GHG emission in an alarming rate.

KEY STRATEGIES UNDER ENERGY SECTOR

- Promotion of grid interactive power generation option using renewable energy
- Promotion of off-grid intervention of solar energy technology;
- Promoting small and medium hydro power project;
- Drafting of State Energy Policy;
- Reduction of AT&C losses;
- Facilitating development and propagation of non-conventional renewable energy usage;
- Promoting Energy Efficiency Practices in the State;
- Promoting fuel conservation in transport sector;
- Promoting Demand side energy efficiency and management measures;
- Capacity Building of the Energy Sector towards promotion of EC measures

17.8 STATE MISSION ON URBAN PLANNING AND SUSTAINABLE HABITAT

Urbanisation in the districts of Manipur has been skewed. Share of urban population in the Manipur state in 2011 was around 30.21%, of which Imphal West was highest at 61.90% whereas the corresponding figure for Imphal East was 40.28%. The rising urban population has also given rise to increase in the number of urban poor. Projected increase in temperature and precipitation will affect certain components of human settlement especially in urban sectors. The likely scenario will be shortage in safe drinking water, repeated flash floods, increase in prices of food commodities, health risks, etc. It is also worthwhile to mention that energy consumption for domestic heating and lighting, accumulation of solid waste, use of old vehicles with adulterated fuel, etc. are the major contributors of Green House Gas (GHG) emission to the atmosphere. Increase in temperature and subsequent change in precipitation will affect certain components of human settlement especially in urban sectors, like shortage in drinking water, repeated flood & draught like situation, increase in prices of food & fuel, health risk. Flash flood

occurred almost every year during rainy season due to poor drainage condition. The primary causes of flood in Manipur Valley are heavy runoff and less infiltration in degraded watersheds in the upper reaches of the rivers during rainy seasons. Moreover, the total number of registered motor vehicles has increased with the two-wheeler segment comprising of motorcycles, scooters and mopeds growing most rapidly amongst personalized modes of transportation which is emitting maximum Carbon Dioxide (CO₂) and Carbon Monoxide (CO) which add to the pool of GHG in atmosphere.

KEY STRATEGIES UNDER URBAN SECTOR

- Improvement of waste management including waste to bio-energy like domestic waste to bio-gas, electricity, etc.
- Encouragement of climate sensitive architectural urban infrastructures [water distribution system, lighting at street, public places, offices, etc.] and public transport system including green and low carbon foot-print pathway;
- Encourage green buildings - Leadership in Energy and Environmental
- Design (LEED) in the line of India Green Building Rating System for Construction;
- Implementation of Rain water harvesting as part of building by-laws;
- Policy for Decentralize action of urban;
- Capacity building & HRD of ULBs on climate change strategies, CDPs (City Development Plan), existing master plans, etc
- Improvement of drainage system;
- Infrastructure improvement of Rural – urban connectivity;
- Development of Zoning of industrial sites [zoning atlas] & Shifting of industrial units to the industrial sites not in the city area;
- Encouragement of public transport system including trams, non-motorised transport system & cycle tracks;
- Development of green belts in the cities.

17.9 STATE MISSION ON CLIMATE CHANGE STRATEGIC KNOWLEDGE AND INFORMATION

The main objective of the Mission is the institutionalization of knowledge network and human resource development among the existing regional stakeholders in the state. The set of key adaptation and mitigation actions planned under each identified sector are analysed to arrive at a set of key priorities. Two major cross cutting areas as an integral part of the mission design and implementation are identified like Building human and institutional capacity at various levels and Engaging and benefiting from global / national / regional collaboration in scientific research & technology development. The nodal officer of the line departments / agencies in collaboration with the identified local experts will frame a strategic knowledge information network on climate change issues in the state in their own sectors. Under this mission, priority is given in setting up of

an effective mechanism for certain basic climate change database on Meteorology, Land Surface, Hydrological, Agriculture, Socioeconomic, Health related matters.

KEY STRATEGIES UNDER STRATEGIC KNOWLEDGE & CLIMATE CHANGE INFORMATION SECTOR

- Activities aimed at mapping of the knowledge base and data resources relevant to climate change for the mobilization of state specific strategic knowledge. Identification of the institutional support to be provided for the formation of statewide knowledge network and networking of the state level institutions leading to development of an extensive database on research in related matter.
- Performance monitoring of ongoing related activities for feasibility assessment and also the budget analysis for the current and the following five-year plan;
- Protecting the vulnerable sections of society through participatory resource management strategies and development of livelihood options;
- Enhancing ecological sustainability through development of human resource, deployment of technologies and promotion of community-based management measures;
- Activities to promote proper land use planning with traditional knowledge. This can be achieved through promotion of Indigenous Traditional Knowledge (ITK), ecotourism, non-timber forest products (NTFPs) and development of market strategies for vegetations.

17.10 Manipur State Action Plan To Combat Climate Change and Its Impacts During 2017 – 2030

TABLE 17.2: INTEGRATING THE GOALS FOR SUSTAINABLE DEVELOPMENT (SDGS)

RELATED INTERVENTIONS OF MISSION MODE SAPCC	SHORT TERM ACTION FOR 3 YEARS BY 2020	MID TERM ACTION FOR 7 YEARS BY 2024	LONG TERM ACTION FOR 15 YEARS BY 2030
1. State Mission for Ecosystem, Biodiversity & Livelihood Sustainability	<ul style="list-style-type: none"> • 3 (Three) Eco-Model Village • 5 (Five) Eco-Clubs in Schools/Colleges • Creation of 1 (One) Indigenous Knowledge Centre 	<ul style="list-style-type: none"> • 7 (Seven) Eco-Model Village • 10 (Ten) Eco-Clubs in Schools/Colleges • Traditional and Modern Climate Change Adaptation 	<ul style="list-style-type: none"> • 1(One) Eco-Model Village each in every District • Research Projects in Colleges/Universities related to Climate Change Issues

RELATED INTERVENTIONS OF MISSION MODE SAPCC	SHORT TERM ACTION FOR 3 YEARS BY 2020	MID TERM ACTION FOR 7 YEARS BY 2024	LONG TERM ACTION FOR 15 YEARS BY 2030
2. State Mission for Water Resource	<ul style="list-style-type: none"> Conservation of Main Selected Community Ponds (District wise) Small Check Dams + Kangla Moats Restoration and Conservation of 3 Wetlands Water Resource Development through Rainwater Harvesting 	<ul style="list-style-type: none"> River Health Management & Conservation Plantation of Trees in the Catchment Areas of the Rivers Water Resource Development Through Rainwater Harvesting 	<ul style="list-style-type: none"> Loktak Lake Management and Conservation in Collaboration with LDA Manipur River Basin Management Conservation of Important Wetlands of Manipur Research Projects related to Water Resource
3. State Mission for Sustainable Agriculture Practices	<ul style="list-style-type: none"> Rapid Screening and Strategy Assessment of State Agriculture Practices Training and Capacity Building on Climate Resilient Agriculture in 15 Villages 	<ul style="list-style-type: none"> Developing Integrated Watershed Development in Rain-fed Areas Capacity Building and Training Exclusion Programmes at 30 Villages Developing People-Centric Integrated Watershed Management in Rain-fed Areas 	<ul style="list-style-type: none"> Implementation of Climate Smart/ Resilient Agriculture Research Projects on Climate Change Impact on Orange and other Citrus Fruits; Breeding Studies on Major Crops for Climate Resilient Agriculture, Pest Monitoring and Surveillance
4. State Mission for Health	<ul style="list-style-type: none"> Surveillance of Malaria and Japanese Encephalitis and other Climate Variability Related Vector Born Diseases at 15 Selected Villages 	<ul style="list-style-type: none"> Surveillance of Malaria and Japanese Encephalitis at 30 Villages Early Warning System and Awareness Programmes 	<ul style="list-style-type: none"> Setting up of State Level High-Tech Entomological Research Laboratory High Resolution Health Impact Model Strengthen Adaptive Capacity to Climate Related Diseases

RELATED INTERVENTIONS OF MISSION MODE SAPCC	SHORT TERM ACTION FOR 3 YEARS BY 2020	MID TERM ACTION FOR 7 YEARS BY 2024	LONG TERM ACTION FOR 15 YEARS BY 2030
5. State Mission for Forest Resources Conservation	<ul style="list-style-type: none"> Activities under Green India Mission 	<ul style="list-style-type: none"> Activities under Green India Mission 	<ul style="list-style-type: none"> Activities under Green India Mission
6. Ecosystem, Biodiversity and Livelihood Sustainable	<ul style="list-style-type: none"> 3 Eco-Model Villages Creation of Indigenous Knowledge Centre at 2 Villages 	<ul style="list-style-type: none"> 6 (Six) Eco-Model Villages Creation of Indigenous Knowledge at 4 (four) Villages 	<ul style="list-style-type: none"> 1 (One) Eco-Model Village Each at Every District Modern Climate Adaptation Practices
7. State Mission for Urban Planning	<ul style="list-style-type: none"> Pilot Project on Waste to Energy 	<ul style="list-style-type: none"> Clean Technologies Green Buildings 	<ul style="list-style-type: none"> Towards Green City Convergence into CNG
8. State Mission for Climate Change Strategic Knowledge and Information	<ul style="list-style-type: none"> Training and Capacity Building to the Nodal Officers for Planning and implementation of the State Action Plan on Climate Change Capacity Building to the media for reporting on Climate Change State Level Climate Information System 	<ul style="list-style-type: none"> Climate Change Vulnerability Studies Training to all Sectors/ Stakeholders Regional Climate Information System Research Activities 	<ul style="list-style-type: none"> Evaluation and Monitoring of State Action Plan on Climate Change

Integrating Climate Change Mitigation and Adaptation into Development Processes

1. Need to understand integration of climate change and development as the existing departments, schemes, policies pursue varied development objectives
2. Not to reinvent the wheel and urgently identify the linkages across objectives
3. Focus should be on multiple objective based approach to integrate climate change
4. Greening and increase in forest cover will help achieve other goals.
5. Climate concerns should be integrated in the Environmental Impact Assessment process.
6. Some of the gaps like Knowledge and institutional capacity need to be bridged.

7. State Action Plans should be revised and new knowledge on climate change, vulnerability assessment and greenhouse gas emissions should be incorporated to make them robust.
8. Educational curricula should include State Action Plans, SDGs and other interventions to deal with climate change.
9. Agro-forestry for farmers should be promoted.
10. Vulnerability assessment at State Level should be done.
11. capacity building at state level for formulating quality projects.
12. Technical advisory committee should be formed.
13. Objectives of all state government departments should be integrated in the state action plans on climate change.
14. Research needs to be done on the state action plans on climate change (SAPCC).
15. State of Environment Report should be synchronized with o How they meet Intended Nationally Determined Contributions
16. The solutions should be economical, technologically feasible and politically acceptable.
17. A dedicated department should be established to study the real cause of environmental degradation.
18. A dedicated body should be assigned to look after research, adaptation and mitigation plans.
19. Universities, research organizations etc doing research on climate change should come together on a platform.
20. NITI Aayog should streamline a process-based approach.
21. Clear guidelines & processes for measuring ecological accounting & ecological footprint should be made available.
22. Scientific excellence can be achieved through collaborations with universities and research organizations.
23. Review SAPCC along state line department budgets for all departments.

**FIGURE 17.1: MEAN MAXIMUM TEMPERATURE IN MANIPUR
(JANUARY 1954 – DECEMBER 2011)**

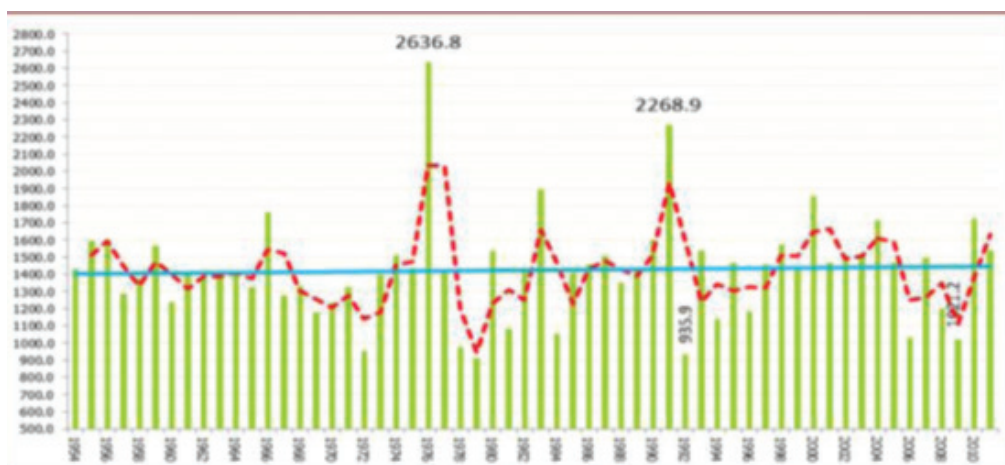


FIGURE 17.2: ANNUAL PRECIPITATION AT IMPHAL, MANIPUR

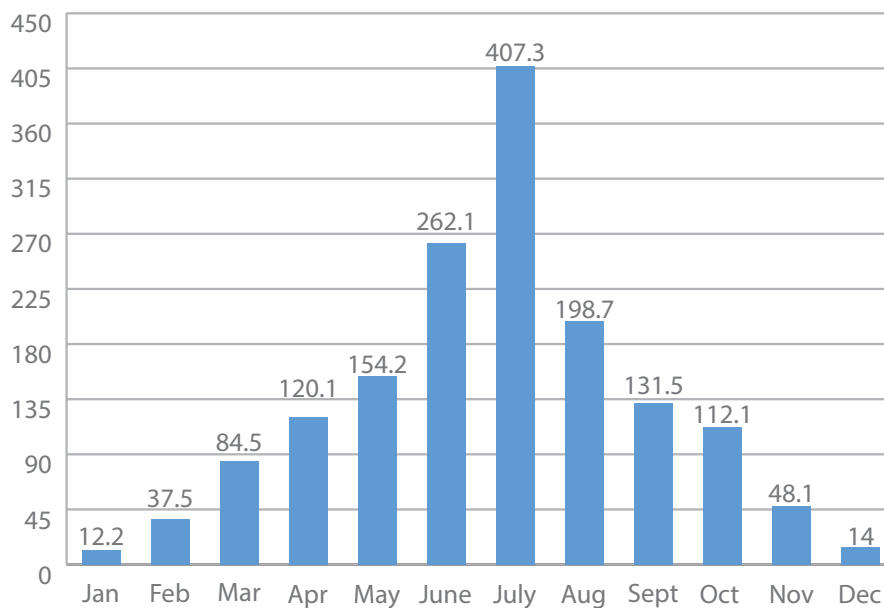
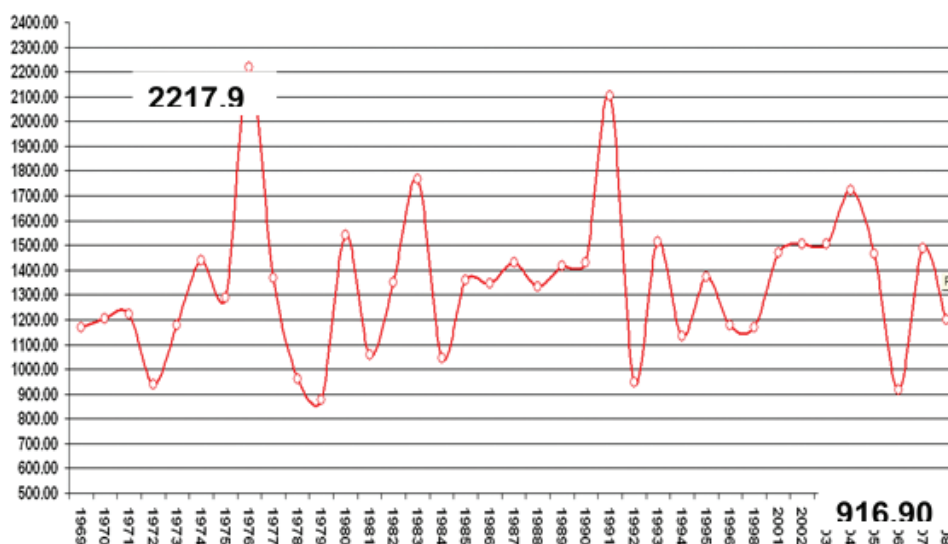


FIGURE 17.3: TOTAL RAIN FALL IN MANIPUR (1969 – 2008)



Courtesy: Manipur State Action Plan on Climate Change (March, 2013), Govt. of Manipur, Directorate of Environment, Porompat, Imphal

Section V



Biodiversity in and under Water for Sustainable Development in Manipur

18.1 FRESH WATER ECOSYSTEMS

Fresh water bodies are one of the most productive ecosystems in the biosphere and play a significant role in the ecological sustainability of the region. Their ecosystem service functions are equally important in terms of sustainable economic development. Aquatic macrophytes stand out as one of the main primary producers of shallow aquatic ecosystems, both in lentic environments and in low turbulence areas of lotic environments. Their high production rate contributes to a large storage of nutrients in the biomass, playing a fundamental role in the cycling of matter and energy flow. Environmental conditions in their surroundings such as temperature, salinity, oxygen, acidity, alkalinity, productivity, water circulation and general water quality may affect their occurrence adversely and hence impact on sustainable livelihood of local populace depending on such aquatic diversity. Data on fresh water ecosystems inhabiting life forms, species distribution and richness along with comprehensive taxonomical and ecological information are needed to assess the impacts of development activities on freshwater.

18.2 NORTH EAST INDIA AS HOTSPOT OF DIVERSITY

The North-East India has the distinction of being included under the Biologically Sensitive Areas (Hot-Spots) of the World (Indo-Burma Hot-Spot). The region also falls in the bio-geographic tri-junction of the Indian, the Himalayan and the Oriental landmass. This active centre of speciation is a centre of gene diversity for domesticated crops and a secondary centre for several economically important plant and animal species. The North East region is one of the richest assemblages of fish faunal element in the Indian sub-continent.

As the species are bearers of genetic diversity and building blocks of ecosystems, information on their status, distribution and conservation status is fundamental to taking competent decision about protection of diversity from the local to global scales. Efficient conservation of biological diversity requires well-prepared programmes, which should involve proper studies, protection measures, recovery and management of species and their habitat programmes.

Manipur is a small state with numerous hill ranges surrounding a central valley along the North-eastern frontier of India adjoining Myanmar. The water bodies of the state consists of a number of lakes, rivers, marshes, low lying paddy fields, ponds, tanks, canals, reservoirs, etc.

18.3 RIVER SYSTEMS OF MANIPUR

Manipur represents a peculiar physiographic situation in the eastern Himalayas and watershed area of two great river basin systems i.e. the Brahmaputra and Irawaddy. This results in difference in species composition of fish fauna as well as differences among populations in different parts of the territory. The hydrographic network of Manipur state belongs to two drainage systems viz, the Chindwin and the Barak river systems.

The drainage system in the state is attributed to and connected with various streams which belong to three river systems. The Manipur river has important tributaries like Imphal, Thoubal, Nambul, Khuga and Sekmai rivers. These rivers, Loktak Lake and other associated lakes constitute the main water resources of the central valley with the catchment area of 6,332 sq.km. constituting 28.4% of the valley. The second river system is formed by Barak river and its tributaries namely, Irang, Maku, Tuibai, Jiri and their associated streams which drain in the northern and western hill areas. The rivers have a catchment area of 9,042 sq.km. accounting for 40.5% of the state. In the eastern hilly slopes of the state a number of small streams join the Chindwin River in Myanmar. The important river in this system is Akonglok River and its tributaries viz. Chamu and Chingai. The other important river is the Yu River with its tributaries like Maklang, Tuyungbi, Taretlok, Lokchao and Tuiyang. These rivers, flowing sub-parallelly in the steep valley, finally culminate in the Chindwin River in the Kabaw valley in Myanmar. The total surface water resource of Manipur has been estimated to be 1.85 million hectare meter per annum.

18.4 INDICATORS OF STRESS AND THREATS

Endowed with an enormously diverse heritage of wetlands which are subjected to a number of environmental threats like artificial eutrophication and encroachments, these wetlands are subjected to a number of physico-chemicals stress viz. intermittent flooding, siltation, lack of oxygen (anoxia) and consequent chemical depletions in the soil.

18.4.1 WATER QUALITY

The people of Manipur depend on both lotic and lentic water bodies for their water requirements. According to a survey (1995-1996), 37.20% of households depend on tanks/ ponds for drinking purposes; 24.80% depend on tap-water whereas 22.60% of the households depend on "other-sources".

Nambul river water has more organic and biological load compared with Imphal and Iril rivers. This is mainly from domestic waste, dumped filth and debris; causing an increase in acidity and bio-chemical oxygen demand. Physico-chemical characteristics of river water show their values within permissible limits. However, the recent disturbing trend of commercial expansion triggers the danger of huge accumulation of solid waste.

Reckless disposal of human and animal wastes contributes to surface water pollution leading to the spread of water borne diseases. According to 2011 census out of the 5,55,713 households only 24.5% had tap water from treated sources as main source of drinking water. Only 23.5 % of the households in Manipur have access to toilet facility linked with septic tank. Unauthorized and unhygienic tapping from the pipes for water needs is contributing to health hazards. Increased use of fertilizer & insecticides in agriculture leads to chemical contamination of food and water.

TABLE 18.1: MAIN SOURCES OF DRINKING WATER, CENSUS 2011

TOTAL NUMBER OF HOUSEHOLDS 2011 CENSUS	MAIN SOURCE OF DRINKING WATER									
	TAP WATER FROM TREATED SOURCE	TAP WATER FROM UN-TREATED SOURCE	COVERED WELL	UN-COVERED WELL	HANDPUMP	TUBEWELL/ BOREHOLE	SPRING	RIVER/ CANAL	TANK/ POND/LAKE	OTHER SOURCES
5,54,713	1,37,048	78,207	14,892	27,378	32,988	1,925	41,197	77,237	1,26,612	17,229

18.4.2 LAKES AND WETLANDS

The wetlands of the state comprise of large as well as small lakes in the southern portion of the Manipur valley. There are 17 lakes and 2 oxbow lakes in the state. About 134 waterlogged marshy and swampy wetlands are in different districts which are low lying areas situated either in the peripheral area or vicinity of the lakes.

Loktak lake is the most important fresh water lake not only in the state but also in the North-East India, other important lakes in the state are Waithoupat, Lousipat, Kharungpat, Sanapat, Utrapat, Hidampat, Poiroupat, Yennapat, Laisoipat, Hidangkonpat, Oinampat etc. which are facing the problems of eutrophication and encroachment for cultivation and fish farming. Highly degraded lakes in the state are Kharungphat, Khoidumpat, Pumlen, Lokoipat, Sanapat, Yaralpat and Poiroupat due to encroachment, pisciculture and cultural eutrophications (Sharma, 1999). Therefore, monitoring, status assessment, threat evaluation and remedial measures are necessary for the conservation of freshwater biodiversity.

18.4.3 MACROPHYTES IN LAKES, WETLANDS AND PADS

Floristic composition provides a reliable information about species diversity in a community as each species has got its own specific ecological amplitude and the same indicates the ecological nature of the habitat.

However, it was observed that changes in the water depth determined the occurrence of various macrophytic groups for example shallow regions occupied by submerged vegetation was replaced by floating leaved plants on change

of water level. Similarly floating leaved plants in open water were invaded by emergent vegetation because the anthropogenic changes leading to shift in habitat conditions like enhanced sedimentation due to organic debris accumulating causing replacement of vegetation and onward succession. The macrophytes are categorized into four groups viz., free floating, rooted, submerged and emergent, of which emergent group was found to be dominant. The macrophytes found in the region were categorized into five life forms viz. 1. Chamaephytes (Ch) 2. Errant Vascular Hydrophytes (EVH) 3. Geophytes (G) 4. Hemicryptophytes (H) and 5. Therphytes (Th). The emergent vegetation dominated over the floating community. However, macrophytic communities were observed in heterogenous composition and there were no distinct zonation of floating, submerged and emergent species in some lakes.

18.5 DRIVING FORCES OF ENVIRONMENTAL STRESS

18.5.1 DRIVING FORCES

The growth and distribution of plant species have deteriorated significantly due to encroachments. The growth of the economic plants has been much disturbed and as result, their production has decreased significantly. The population of endemic fish in the Loktak Lake is on the decline.

Natural aging is product of natural eutrophication processes, however fast untimely degradation threatening the life of these lakes is noteworthy due to artificial or cultural eutrophication. The causes for degradation and pollution of the lakes can be grouped into factors as follows:

Catchment areas

- i. Massive deforestation
- ii. Human encroachments

Lake boundaries, low lying and peripheral areas

- iii. Encroachment for paddy cultivation.
- iv. Conversion of the low lying areas into fish farms and horticultural farms.

Pressure exerted on the lakes

- v. Disposal of untreated domestic garbage into the lakes.
- vi. Leaching of chemical fertilizers, insecticides, pesticides due to agricultural and piscicultural activities.
- vii. Misuse of toxic chemicals like DDT, BHC, Aldrin, Endolan, Endosulfan, Rogo etc. for catching fish.
- viii. Overexploitation of wetland resources due to poverty.
- ix. Impact

In conclusion it can be said that the rich growth of emergent species indicates the enhancement of eutrophication indicating predominance of anthropogenic activities like pisciculture, use of inorganic fertilizers, misuse/overuse of pesticides, insecticides and weedicides in the cultivated area of the land. Therefore it is high time to check the enhanced eutrophication of the lentic ecosystem taking proper remedial action to protect the water bodies from further deterioration; formulate and implement conservation measures for protecting the lentic ecosystems.

Loktak Lake

The vegetation in the lake is classified as Phumdi (floating mat) and non-phumdi (clear water) species. Altogether 86 plant species have been reported, 13 belonging to the non-phumdi area while 73 to the phumdi areas of the lake. The phumdi (floating mat) with its appearance in 3 distinct vertical zones, the uppermost 0-15 cm thick, the next mat zone from 25-65 cm thick and the lowermost peat zone 10-25 cm thick. Analysis of a number of physico-chemical parameters like pH, dissolved carbon-dioxide, dissolved oxygen content, turbidity etc. in the water samples from various sites in the lake reveals growing degradations in the quality of water. The phumdi has got its own unique composition with characteristic species of plants and animals.

Impact

The growth and productions of Trapanatans fruit (Heikak):- Production of the edible fruit and rhizome (Thamchet and Thambou) of lotus plant has decreased to a great extent. The growth and production of the edible fruit of *Euryale ferox* (Thangjing) has also decreased by 40% and also many people who earn their livelihood have suffered to a considerable extent.

In recent past capture fishes provided most of the fish needed in the state. The major fish species, which contributed to the catch, were *Labeopangusia*, *L.bata*, *L.calbasu*, *Cirrhinusreba*, *Banganadero*, *Osteobramabelangarius*, *Clariasbatrachus*, *Channa sp.*, *Eutropichthysvacha* etc. However, since the construction of Ithai barrage, their migratory routes from the Chindwin river system to the lakes of Manipur valley have been blocked.

Due to the introduction of the carp species and the disturbance of the breeding grounds of the local fish species, fishes like *Osteobromabelangeri* (pengba), *Channaorientalis* (Meitei ngamu), *Colisasota* (Phetin), etc. are declining gradually. Important birds of the lake are increasingly threatened. Degradation in water quality coupled with indiscriminate poaching of wild life has repelled the seasonal visit of the Siberian cranes and other birds in last few years.

Keibul Lamjao National park

The Keibul lamjao, the only natural abode of Sangai (Brow-antlered deer) is a continuous vast expanse of floating mat (phumdi) located on the Southern side of the lake. A number of local fish species have comfortable breeding grounds under the phumdi. Thousands of people in and around the lake earn their living through

economic activities viz. fishing, collection and selling of vegetables, medicinal plants, reeds and fodder grasses. Due to the commissioning of Loktak project by the National Hydro-Electric Power Corporation (NHPC) in 1983, the level of water has been raised to 769 m permanently with the help of the Ithai barrage for generating electricity. This has caused a number of hydrological changes affecting the natural floating and sinking cycle of the phumdis (floating mats) over the last few decades. As a result the phumdis are always floating and getting thinner due to the depletion of nutrients. A sharp decrease in the population of a number of major food plants of Sangai like *Zizania*, *latifolia*, *Carex species*, *Coix species*, *Narenga* and other useful plants (*Saccharum species*, *Setariapumila*, *Alpinianigra*, *Hedychiumspicatum* etc) is observed. With thinning of phumdis, fragmentation occurs resulting in drowning of the deer.

Poaching of Sangai, fishing activity, burning of grassland as an annual activity, collection and overexploitation of useful biomass of Keibul Lamjao National park area disturb the ecological balance and adversely affect the lives of Sangai.

Loktak Development Authority (LDA)

Mention also may be made of the Manipur Loktak Lake (Protection) Acts, 2006. This is a new institutional initiative for restriction on the indiscriminate utilization of the lake resources. As Loktak Lake became a Ramsar Site in 1990, a joint venture with Wetlands International-South Asia (New Delhi) started working on a 5 year Research Project on Sustainable Development and water Resources Management of the lake. Conservation measures were initiated.

Ichthyofauna

It is estimated that the ichthyofauna of the state comprises some 190 freshwater fish species including 14 of non-native species of which eight species have become more or less established. Applying the criteria published by IUCN (1999) and CAMP (1997), about 30 species have become alarmingly threatened and one species has disappeared from its natural habitat and categorized as extinct in wild. Some fishes are yet to be given any status.

However, to date, no recovery programme of these species has been taken up. Furthermore, the chances of restoration of some species such as *Wallagoattu*, *Mystusmicrophthalmus*, *Aorichthysaor*, *Eutropiichthysvacha* etc. are very low.

Small indigenous fishes traditionally occupy an enviable position with an inseparable link with life, livelihood, health and the general well being of the rural masses, specially the poor. These freshwater fishes from flood plain, rivers contribute to the everyday diets in fresh or processed forms for the people of Manipur and serve as good sources of protein and essential source of mineral elements and may be further exploited for commercial purposes.

Species important in aquaculture

Indigenous fish species such as *O.belangeri* (Pengba), *L.pangusis* (Ngatin), *L.fimbriatus*, *Tor tor* (Ngara), *T.putitora* (Ngara), *Wallagoattu* (Sareng). *Channasps* can be utilized for

culture purposes. Some of the fishes mentioned above are still found in the water bodies of Manipur. However their population are alarmingly decreased. There are reports on breeding of some of these fishes artificially by inducing with ovaprim, HCG and carp pituitary. A well-planned stocking of appreciable number of seeds of these species into natural waters can avert their becoming an endangered species.

Most of fish species have a gradual decline in the state because of multiple reasons. *O.belangeri* form an important capture fishery in the recent past, however, this fish is fast disappearing from its natural habitat of Manipur. Artificial stocking is perhaps the only way to help endangered fish species as opined by many fisheries biologists. Concerted efforts have been made by researches in Manipur University (Basudha, 1995; Basudha and Vishwanath, 2002), State Fishery Department and some private fish farms to raise the fish in ponds. However, efforts for recolonizations of its population in their natural habitat are not yet succeeding.

Intensive fishing and damming of the river played an important role in the reduction of migratory fish species like *E.vacha*, *Mustussps.*, *Aorichthysaor*, *Wallagoattu*, *Bagariusbagarius*, *O.belangeri* etc. Construction of barrier led to the loss of many spawning habitats of fishes and consequently dwindled their stocks. Eutrophication in many lakes has also caused detrimental effects on spawning conditions of many fish species such as *Labeosps.* *Banganadero*, *C. reba*, *Tor sps* etc.

Some exotic varieties have been successfully introduced e.g. IMC, Chinese carps, tilapias etc. but this has usually been at great cost, most often expressed through the demise of indigenous species and spread of diseases (Cowx, 1997, 1998a). Other introduction has been disastrous with whole ecosystem change and loss of species.

Conservation strategies

The indigenous fishes of the state are probably the most threatened yet they have been neglected to date in conservation strategies. As most of such species are small, little commercial importance is attached to these fishes. Conservation strategies should be as follows:

- Development of a network of conservation areas that include key aquatic systems for fish conservation.
- Sufficient funds should be made available to allow urgent research projects, detailed field surveys and related management actions to proceed.
- Molecular studies can be taken up to asses the impact of stocking on the loss of genetic diversity.
- Information on genetic variability can also be used to define population under threat and those, which are most appropriate in correctly, planned restocking programmes.
- Data on fresh water ecosystems inhabiting life forms, species distribution and richness along with comprehensive taxonomical and ecological information are needed to assess the impacts of development activities on freshwater.
- Rice and fish are the two basic diets of the Manipuri people. For 95% of the

State's population fish is the source of protein. The State currently produces about 31.9 thousand tonnes of fish from all sources annually as against an estimated annual demand of 42.78 thousand tonnes. Total wetland area estimated is 63,616 ha that is around 2.85 per cent of the geographic area. These fisheries resources contribute to the production of freshwater fish in the state and become livelihood for many people in the state. Although aquaculture has been practiced for well over 60 years in Manipur, the production of fish in the state is still low. Some farming practices have already been established using fishes like, Indian major carps and exotic carps which can easily be disseminated to the local conditions for marginal fish farmers for income generation.

- For sustainable aquaculture development in the state, all the current issues relating to fisheries and aquaculture practices in relation to the ecology of their situations, environmental concerns and details are needed to be discussed.
- The possibility of aquaponics as an alternative integrating farming approach towards food security and sustainability is to be explored commercially.
- The main safeguard for environmentally smart livelihood is the balance of the rational use and preservation of natural & cultural heritage in the presence of conflict of interest, including various local users of the same resources; political interests in the same natural and cultural resources and preservation and promotion versus eradication of natural and cultural heritage.
- Preparing a list of local Indigenous organisations with interests in land management issues in the region including recognition of Indigenous cultural interests in water management, e.g. wetlands, fishing and environmental flows.
- Recognising the need for protection of Indigenous cultural heritage places as part of Indigenous Natural Resource Management.
- To undertake capacity building programs recognising and including Indigenous peoples' traditional ecological knowledge and land management practices and establishment of effective extension and education program

Planning

There is a need for a dedicated State Watershed Program to assist with natural resource planning, management efforts, monitoring and coordination of watershed and springshed management in Manipur.

To ensure an Integrated Natural Resources Management approach, a key, high-level personnel must be made in-charge of coordinating and integrating resource projects and identifying regional IRM efforts.

The Deptt. of Planning in coordination and consultation with state line deptts, should update the Environmental Goals and Policy Report which could serve as a platform and vehicle for discussion and further development of Vision 2032 across state agencies and clearly set state's priorities for environmental investment ,biodiversity conservation and sustainable development.

Education and Capacity Building

Educational materials or educational opportunities should be supported and expanded in order to educate people about their “watershed address” (which watershed they are part of and a working knowledge of its assets and threats) and on the general importance of watershed protection and their personal and community role in those efforts.

Technology Trends

- There is an urgent need to establish mechanism for periodic monitoring of natural resources in the state using remote sensing data. Capacity building in the area of integrating resource characterisation, biodiversity and biogeochemical cycling etc. using modern techniques such as remote sensing, GIS besides conventional methods is required to be developed.
- Geospatial techniques for preparation of ecological restoration plans of natural resources and spatial modelling of physical, biological and socio-economic criteria for conservation and management need urgent consideration of planners, managers and stakeholders.
- Studies using geoinformatics should be conducted for rejuvenation of water bodies and wetlands in the country.
- Action Plans for all Ramsar sites, notified wetlands, sanctuaries and national parks should be prepared using remote sensing, GIS and related techniques such as GPS.

18.6 CONCLUSION

There is acknowledgement that the availability and productivity of the state’s biodiversity is limited, precious and face growing threats. Climate change, growth, and increased competition for these resources require a new era of strategic thinking, leadership, and unifying policies and actions designed to preserve and restore our biodiversity for long-term sustainability and for the benefits of all citizens. Biodiversity Management is the framework under which this new system of aquatic resource stewardship must move forward.

19

Means of Implementation and Global Partnership for Sustainable Development

19.1 INTRODUCTION

In the year 2000 a group of 189 countries of the United Nations came together and adopted what is known as Millennium Development Goals. It was a set of eight achievable goals aimed at eradicating poverty and improving quality of life that were to be achieved by the year 2015. It was a giant step especially on the part of developed countries as they would be committing a substantial amount of resources for the less fortunate countries. The developing countries especially in sub-Sahara and south Asia where millions of people were suffering from poverty, hunger and malnutrition would be playing a no less important role as their commitment to uplift the standard of living of their people will be tested.

The broad eight development goals are given below. Each goal consists of a number of achievable sub goals.

- Goal 1:** Eradicate extreme hunger and poverty
- Goal 2:** Achieve universal primary education
- Goal 3:** Promote gender equality and empower women
- Goal 4:** Reduce child mortality
- Goal 5:** Improve maternal health
- Goal 6:** Combat HIV/AIDS, malaria and other diseases
- Goal 7:** Ensure environment sustainability
- Goal 8:** Endure a global partnership for development

More than sixteen years have passed since their adoption and a relook at the achievements can be a proud moment of international cooperation. It is true that the targets look daunting as the goals set were high in an effort to quickly eliminate poverty and hunger. The Millennium Development Goals Report 2015 which was published by the UN (2015:4) to make an assessment of the achievements rightly pointed out "As we reach the end of the MDG period, the world community has reason to celebrate. Thanks to concerted global, regional, national and local efforts, the MDGs have saved the lives of millions and improved conditions for many more".

Despite tremendous progress made in achieving MDG, the report also acknowledged that all goals could not be attained. In fact, poverty and inequality still exists, global warming is a challenge and spread of diseases need to be contained. As a follow-up of

the MDGs the UN General Assembly met and adopted the Sustainable Development Goals which are adoption of a broader development agenda consisting of economic, social and environmental agenda. These goals consist of 17 targets which consists of altogether 169 targets which is to be achieved by the year 2030.¹⁴

The focus of this chapter is the achievement of Goal 17 which is to **“Strengthen the means of implementation and revitalize the Global Partnership for sustainable development”**. Partnership in realizing SDGs has increasingly been recognised as a means of implementation. The main aim would be to highlight ways to raise additional resources and how various stakeholders can work together to achieve the SDGs that aim to end poverty, tackle inequalities and combat climate change. Goal 17 also covers technology, capacity- building, trade, systemic issues such as policy and institutional coherence, multi-stakeholder partnerships and data, monitoring and accountability. The Addis Ababa Action Agenda adopted during the Third International Conference on Financing for development in July 2015 outlines a comprehensive financing framework to advance sustainable development and the implementation of the 2030 Agenda. The enormity of the SDG financing challenge calls for strong partnership among governments, civil society, scientists, academia and the private sector. The challenge is how to mobilize and channel finance and technology towards sustainable development. It is more so if we are to fulfil the aspirations of “leaving no one behind” as well as pursue the call for “reaching the furthest behind first”. It is beyond the capacity of any one organisation. It is estimated that the financial shortfall in India would be Rs. 36 lakh crores per annum over the mandated 15 years for achieving SDGs¹⁵. The annual financial gap in achieving SDGs is ¼ of the GDP of India, 2014-15. Quantifying the needs for such a wide range of targets is not simple because many indicators in the targets are not yet quantified or quantifiable and for many financial assessment methodologies are not available. It will require a step change in the levels of public and private investment. Multistakeholder partnerships have to be worked out to leverage the inter-linkages between the SDGs to enhance their effectiveness. It involves mobilising and sharing knowledge, expertise, technology and financial resources. Since both public and private finance may be inadequate to meet the gap, there is a need to look at the issue from a perspective of innovative policy strategies. The available literature talks about mutual assistance mainly at the country level and less on sub national level where we are currently focused at.

19.2 A LOOK AT THE FINANCIAL SITUATION OF MANIPUR

Manipur is a poor state and about 90 percent of its revenue comes from the central government largely in the form of share in central taxes and central grants - both

14 Resolution adopted by the General Assembly on 25 September 2015, Seventieth session. Agenda items 15 and 116. See UN (2015) A/RES/70/1

15 Bhamra, Anshul, H. Shanker & Z. Niazi (2015) *Achieving the Sustainable Development Goals in India : A Study of Financial requirements and Gaps Technology and Action for Rural Advancement*, Delhi

centrally sponsored schemes and gap filling grants (Table 19.1). Tax effort of the state which is measured by tax revenue as a percentage of GSDP comes out to be hardly 2 percent as against 7 to 8 percent of some developed states. With the exception of SGST and VAT other sources yield very little or no revenue to the government. Given the present scenario it will be very difficult for the state to allocate higher resources for achieving the goals until the central government allocates more transfers. The state in future perhaps have to explore means to generate larger revenues with special attention given to non-tax revenues as the tax base is not likely to increase significantly in the near future.

TABLE 19.1: COMPOSITION OF REVENUE RECEIPTS (₹ MILLION)

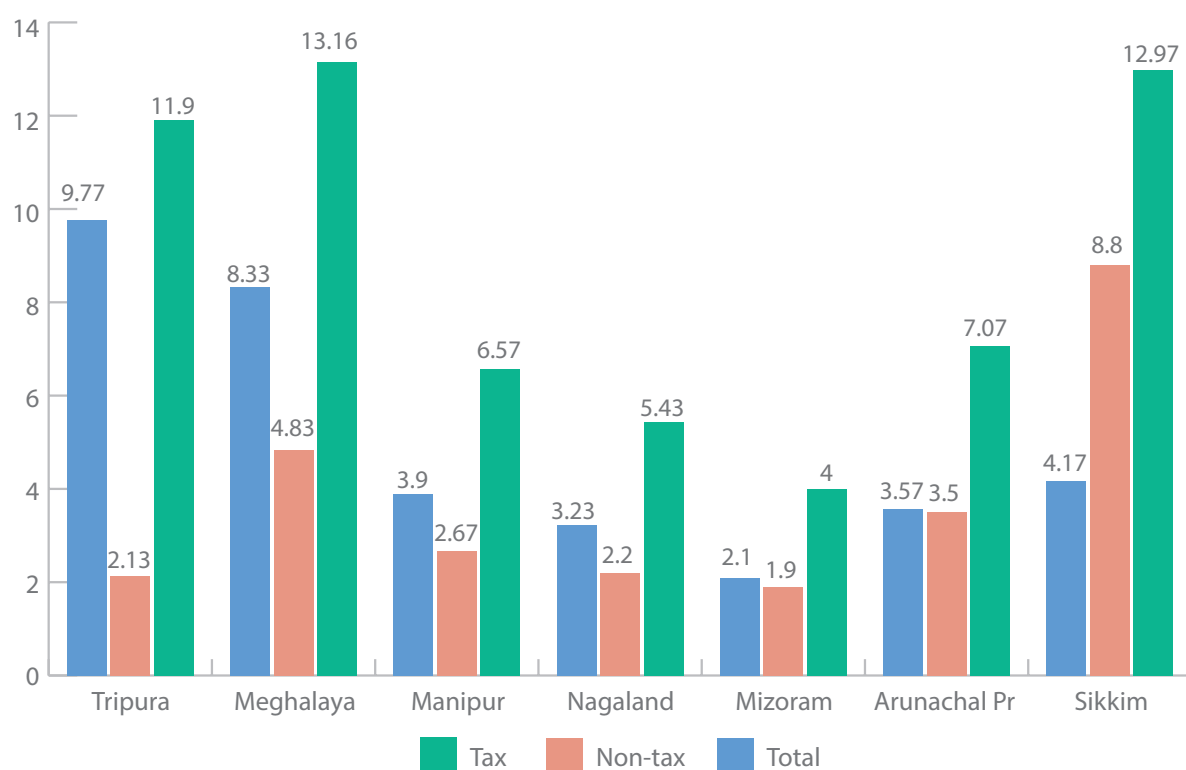
	2011-12	2012-13	2013-14	2014-15
Own tax revenue	3680.7 (6.51)	3328.3 (4.88)	4727.3 (6.49)	5168.4 (6.46)
Central tax transfers	11540.3 (20.41)	13178.3 (19.32)	14387.9 (19.76)	15268.8 (19.09)
Own non-tax revenue	3115.3 (5.51)	2317.8 (3.40)	2606.7 (3.58)	1837.3 (2.30)
Central grants	38199.2 (67.57)	49373.2 (72.40)	51106 (70.07)	57708.2 (72.15)
Revenue receipts	56535.5 (100.00)	68197.6 (100.00)	72827.9 (100.00)	79982.7 (100.00)

Source: RBI: State finances-A study of budgets (various years)

Note: Figures in bracket represent percentage of revenue receipts

MANIPUR IN COMPARISON WITH OTHER STATES OF THE NORTH-EASTERN REGION

Tax and non-tax revenues of the north-eastern states without Assam which is a big state are given in the Fig.19.1. The bar graphs are arranged from left to right based on the descending order of population size. What we find here is that the performance of Manipur in terms of revenue generation is not very encouraging as smaller states like Arunachal Pradesh and Sikkim generate more own tax and non-tax revenues. To see the reasons for the poor generation of revenues, a picture of the own tax and non-tax collections of four states which generate more revenue than Manipur are given in Table 19.2. Meghalaya which is very similar to Manipur in terms of geographical and population size generate larger revenues on its own from sales tax, CST and forestry and wildlife. Sikkim has been declared a surplus state along with Assam by the Thirteenth Finance Commission and no longer receives gap filling grants. It generates large revenue from lottery and power sector.

FIGURE 19.1: TAX AND NON- TAX REVENUES OF NE STATES IN 2014-15 (. MILLION)


Source: RBI (2017): State finances a study of budgets of 2016-17

TABLE 19.2: REVENUE FROM SELECTED SOURCES IN 2014-15 (₹. MILLION)

	MANIPUR	MEGHALAYA	SIKKIM	TRIPURA
State VAT	4333.3	6625.2	2535.9	9068.4
Central sales tax	0	601.2	285.1	29.7
State excise	93.2	1511.4	1313.6	0
State lottery (for Manipur there was no lottery in 2014-15 and inflow is from miscenerals services including agency charge)	1324.8	0	4186.4	0
Power	1.0	0	1135.6	0
Forestry and wildlife	46.2	719.9	114.5	98.3
Total	5798.5	9457.7	9571.1	9196.4

Source: RBI (2017): State finances a study of budgets of 2016-17

WHERE IS THE MONEY BEING SPENT?

An analysis on how money is being spent needs careful scrutiny to ensure that the scarce resources yield maximum benefits. Cutting down unproductive expenditure will release resources which then can be spent in a more productive way. This is not only a problem that concern Manipur state alone but is a global problem. In this regard, Ke-young et al (1995) make an estimate of the extra revenue that would be released simply by cutting unproductive expenditure: "Reducing unproductive public expenditures worldwide would yield a large increase in available resources. Based on the assumption that aggregate world GDP was some \$30 trillion as of the early 1990s, with public expenditures accounting for 30 percent of the GDP, the immediate and direct effect of a 1 percent increase in public expenditure productivity would have an increase in public expenditure productivity of 90 billion in resources available for additional public investment, social programs, or deficit reduction". For a state with less revenue on its own should give more emphasis on more productive use of scarce resources. The World Development Report 2004 (World Bank 2003) has given many possible ways of improving public service delivery as well. For example, just taking the education sector, two simple suggestions can be made for increasing delivery of more quality education especially to the poor:

- Student teacher ratio is very low in certain areas. Is it not better to establish boarding schools in Manipur just like the Jawahar Navodaya Vidyalayas instead of having many schools with low infrastructural facilities and very less number of students?
- Should we increase allocation of funds at the school level and reduce spending in higher education?

The Raghuram Rajan Committee report for financing development programs classified Manipur as a less developed state and not a least developed state. It was on the basis of a composite index of development where many social sector development indicators were incorporated. Statistics regarding population per doctor, literacy rate, infant mortality rate, sex ratio, etc. of the state are all above the national average. On the other hand, the economic situation of the state is well below the national average. The per capita income of the state, the proportion of population below the poverty line, unemployment rate, etc. of the state is not very good and hence needs special attention. But a careful look at the expenditure pattern of the state seems to be lopsided in favour of social and general services while economic services which is vital in terms of better roads, electricity, irrigation facilities, etc. is quite low (Table 19.3). The areas where the state should be focussing on are as follows:

- employment generation
- infrastructural development
- reduction of poverty
- provision of better irrigation facilities

PUBLIC- PRIVATE PARTNERSHIP

Public -Private Partnership (PPP) is new technique of providing public services to the people in collaboration with the private sector. The basic aim is to reduce government expenditure or improve quality of service or both. In Manipur, some progress has been made in city administration. Cleaning of Imphal city, garbage collection, management of vehicle parking and collection of parking fees, etc. are some areas where PPP model seems to be doing with good results. This has saved precious money for the government which could be spent for other purposes. There are many areas where the model can be introduced. For example, the highway linking Imphal- Mao can be entrusted to the private sector for construction and management. They can collect fees from vehicles plying in the road as a result of which it can be maintained easily without any cost to the government and road connectivity in the state will be improved.

FOREIGN FUNDING AND TECHNOLOGICAL ASSISTANCE

There are many foreign institutions like the World Bank, Asian Development Bank, JICA, etc. which give funding to countries and states in their development efforts. In Manipur, this is not a new thing as the state has taken assistance from international donor agencies. For example, JICA financed sericulture project and World Bank gave assistance for enhancing electricity supply in Manipur. The state should always look for such assistance.

ROLE OF NGOS

Non-governmental organisations or NGOs in short play a very important role in the socio-economic development of the state. NGOs in Manipur are receiving funding not only from within the country but also foreign agencies as well. NGOs provide loans through self-help groups, takes up rural development works, help to control spread of infectious diseases like HIV by spreading awareness about it, etc. The greatest strength of the NGOs is the capability to work in close contact with the population which in turn increases the welfare level of the people. They have great success in bringing peace and harmony among the various sections of the society.

FINANCING THE SDGS

The domestic investment needs cannot be met through domestic resources mobilisation and central grants alone. We need to find ways to catalyse other sources of finance from the local and international private sector. There are two aspects –rationalising public expenditure to make it as productive as possible and use of innovative financial instruments. Both will contribute in financing the SDGs. Use of bicycles in the city should be encouraged. It will reduce traffic congestion, reliance on fossil fuel and promote a healthy lifestyle. It will provide clean air and reduce our carbon footprint.

Since private sector is expected to play a major role in this effort constraints to private sector investment should be properly understood. Constraints to private sector

investment are linked to economic and political instability, crime and corruption, weak institutions, domestic tax structure and restrictive regulations. There is also weak capacity to identify, develop and implement high quality bankable projects. These are issues related with governance.

The development of new and complex innovative finance instruments such as blended finance, green bond, guarantees, diaspora financing, local currency financing, impact investing, GDP-indexed bonds and countercyclical loans etc has led to new opportunities to mobilise additional funds and to use these in more effective ways¹⁶. New partnerships are emerging rapidly.

Guarantees for development are a form of insurance to help a borrower obtain financing at cheaper rates that would be possible without the guarantee, the risk of non-compliance by one of the two sides in a transaction is taken on by a third party. It offers coverage against all risks. Some risks are difficult to assess and hedge against due to incomplete information and inherent political uncertainty. It can help crowd in other funding sources for the specific project. The largest country issuers of guarantees for development are the U.S.A., France, Austria and Sweden. Guarantees are associated with bonds, loans, equities and insurance. Its use needs to be a part of a broader effort to build the capacity of lenders and borrowers.

Blended finance refers to a financing system comprising of concessional funding provided by development partners and commercial funding provided by co-investors. It is one of the most dynamic fields in the financing for development field. It is increasingly seen as an opportunity to scale up both public and private financing for development. It can provide financial support to a high-impact project that would not attract funding on strictly commercial terms because the risks are considered too high and the returns are either unproven or not commensurate with the level of risk. In blended finance aid or philanthropic funds are mixed with other public or private development finance flows. A large amount of capital that could be deployed for projects in emerging markets is not flowing because its providers require risk mitigation, facilitation or partnerships with other capital providers. Concessional financing can help to mitigate real or perceived risks which often lead to higher costs, delay or prevent a transaction from happening. It can help bridge gaps and address market barriers that prevent private sector development in areas of strategic importance and high development impact.

A green bond is a bond where the money raised is earmarked for financing green projects i.e. assets that are environment friendly. Its advantage is that there is an increasing focus of foreign investors towards green investments and some of them invest only in green projects. Yes Bank was the first bank in India to come out with issue of green bonds. These funds can be invested in renewable and sustainable energy such as wind and solar energy, clean transportation, sustainable water management, climate change adaptation, energy efficiency, sustainable waste management and land use and biodiversity conservation. Green bonds are

16 UNDP (2015) *Financing the SDGs in the Least developed Countries (LDCs): Diversifying the Financing Tool-box and Managing Vulnerability*

the perfect tools to finance railways, roads, airports, buildings, energy and water infrastructure.

Local currency lending is growing due to higher awareness of the risk of borrowing in foreign currencies. It can stimulate and encourage the development of local capital markets. State authorities and private sector borrowers often have limited access to international or local capital markets. It will be more effective in combination with technical assistance and capacity development support from development partners.

Small Island Developing States (SIDS) provide many lessons for states like Manipur. Remoteness, small population size spread over very large ocean stretches, difficult access to natural resources, isolation from trade routes, lack of economies of scale and high vulnerability to environmental impacts are shared characteristics. This group has developed its roadmap known as the Samoa pathway which underscores the importance of close cooperation between donors and recipients so that both understand each others expectations and constraints and the specific knowledge needed to adjust to local circumstances.

Though this region has contributed minimally to the greatest crises of the past decades, affected the most through climate change, we have to share the burden. Cooperation and partnership are vital to tackling common challenges and common threats. We have learned that close cooperation provides the cornerstone for successful sustainable development. We can have a steering committee on partnerships for NER because of our first hand experience with the vulnerabilities associated with being an NER state. The responsibility of the steering committee will be inter alia to follow up on sustainable development commitments and showcase best practices and identify new challenges. Success will depend on our willingness to work together at every level and form partnerships that reflect our shared goals.

We can use different financing instruments in smarter ways to simultaneously deliver benefits across multiple sectors.

19.3 CONCLUSION

Though the financial requirement may be huge, rationalisation of public expenditure and use of innovative financial instruments will enable us to bridge the resource gap. The main focus of public expenditure should be in reducing poverty, unemployment, inequality and regional imbalance. The state should very much look for foreign aid/ investment as they also bring technical knowhow and expertise. Capacity building will enhance productivity of public expenditure. All the stakeholders including people, government, NGOs, etc. should come together and work in achieving the sustainable development goals.

POLICY RECOMMENDATIONS

For three years

1. Higher fund allocation should be made by the respective local governments along with a serious attempt to plug in the leakages.
2. Initiate policies to identify additional items of resource mobilisation by re-examining resource base of the state.
3. Transfer of funds from the central government should be hiked.
4. Role of NGOs needs to be stressed. The service of performing NGOs should be utilised to coordinate at the ground level.
5. Revamp the finance department to tap the innovative financial instruments. It should also consider issues of resource mobilisation and develop as a nodal centre for the State and Union Finance commission.
6. Research in science & technology in research institutions in the state should be deposited in a central place to facilitate the search for appropriate technology. This may be entrusted to the Directorate of Science & Technology.
7. Data base of the state should be strengthened as it has been a major weak spot in policy making. It should not be left with Directorate of Economics & Statistics in the business as usual mode. An expert committee should assist the Directorate in strengthening the data base of the state.
8. A SDG cell should be established to coordinate and monitor the implementation of SDGs in the state. It is necessary as most of the goals are interconnected. Such an institution is necessary to ensure smooth passage to post 2030 agenda.
9. SDG literacy of the people should be taken up with a sense of urgency by the SDG cell for seven years
10. Making public expenditure more productive
11. More public private partnership
12. Foreign aid as well as technology transfers should come from countries and donors
13. Frequent reviews of achievements by various implementing agencies and explore rooms for cooperation among various agencies Fifteen years
14. A research institute dealing with the socio-economic issues of the state should be established. It should be responsible for maintenance of data base, coordination and implementation of SDGs also.
15. Trade should be free.

Conclusion

We have spelt out the Vision and also examined each of the 17 goals to see where we are in the broadest sense. The SDG index of NITI Aayog has made our work more focused by reducing the 169 universal targets to comparable and meaningful indicators as national indicators. The concluding chapter spells out the policy measures to develop an environment where through their explicit and implicit interlinkages the state will be launched on a self sustaining cumulative growth trajectory.

Hunger, the top priority of the people of Manipur, can be banished by ensuring access to adequate and nutritive food. The supply side can be handled by enhancing our agricultural productivity and awareness of nutritive values of food items. The constraints to agricultural productivity should be taken care of. Farmers' income will be doubled by 2022. In terms of productivity of foodgrains it amounts to tripling the foodgrain productivity in Manipur. The enhanced awareness of nutrition will lead to diversification in our food baskets. The preponderance of rice in our food basket will have implications for the nutritive value of the food we consume. The demand side should be handled by making available, as much as possible, decent jobs. So that our workers may give their best, they should be well-trained and healthy. This is possible when there is a functional education system which is sensitive to requirements of the labour market and a health care system where quality health care is accessible to all. This matrix can be efficient when our society is peaceful and inclusive. Justice should be accessible to all and there should be effective, accountable and inclusive institutions at all levels. The other goals seek to provide an environment where every factor of production can realise its potential fully. Increasingly, hunger is related to how we use land, water and energy. The growing scarcity of these resources puts more and more pressure on food security. Sustainable agricultural and food systems can address the vicious cycle of hunger, food insecurity and malnutrition. This calls for self confidence and belief in what we can do. As Dr. A.P.J. Abdul Kalam, former President of India said "the most important task before the country's leaders is to bring together all the people who can change the country and make them work towards this goal together and with great urgency."

THE STRATEGIES ARE AS FOLLOWS:

AGRICULTURE

1. Adopt area based approach for farming systems.
2. Conserve and develop land and water resources through a participatory approach.

3. Put in place integrated farming systems based on cluster approach in line with the Guidelines provided in the National Mission for Sustainable Agriculture.
4. Promote Farmer's Producer Organizations, Co-operatives and Companies as nodal agencies through which small-holder farmers are more efficiently organized for developmental State interventions, aggregation and market participation.
5. Co-ordination, convergence and leveraging of investment from other related schemes/missions.
6. Adopt a State Land Use Policy that judiciously balances the demands of agricultural and non-agricultural use.
7. Evolve a Land Reforms Measure that is socially acceptable and economically viable.
8. Constitute a State Advisory Committee on Agricultural Production responsible for fine-tuned inter-departmental co-ordination and for formulating Policy Documents.

EDUCATION

- Introduce vocational education from class IX onwards by setting up Vocational Education Cell for skill development.
- Ensure that all learners acquire the knowledge and skills needed to promote sustainable development through education and sustainable lifestyles, human rights, gender equality, promotion for a culture of peace and non-violence and appreciation of culture diversity by incorporating them in the curriculum.
- Education facilities should be child, disability and gender sensitive and should provide safe environment, inclusive and effective learning environment for all.
- The supply of qualified teachers should be substantially increased through proper training. All teachers should be adequately trained for their responsibilities. Trained and motivated teachers can make up to a large extent the inadequacy of infrastructure in any environment.
- The existing infrastructure of all aged school buildings should be improved, upgraded or reconstructed. The role of functional infrastructure in developing a conducive environment for learning should be recognised. For this in addition to public private partnership, partnership with local institutions should be encouraged.
- Modern technologies for teaching and learning in schools should be incorporated by digitalization of class rooms: e-classroom and related ICT infrastructure for all schools.

HIGHER EDUCATION

- All institutions of higher education should be accredited by NAAC and should participate in NIRF.

- Teachers should attend refresher courses to update their skills and knowledge periodically throughout their career.
- All teaching should be done with modern teaching aids. Teachers should be made to learn IT with proper incentives.

HEALTH SECTOR

- All major equipment in a public hospital should be kept functional at all times and maintained properly.
- Provide access to health facilities and services – 24X7.
- ASHAs and other health volunteers should be engaged in teaching personal hygiene in remote areas.
- School curriculum also should have lessons in personal hygiene.
- Encourage doctors to work in rural areas, proper health infrastructure and accommodation should be provided along with a transparent transfer policy.
- Awareness on Adolescents health and production of local context related IEC materials and creating avenues to address the issue with all stakeholders.
- Contain the outbreaks and health events in time, strengthened all district needs Public Health laboratory and trained manpower equipped with technology for direct reporting of in time.
- 20% of the health establishment have solar installation. Being an eco-friendly and non-conventional source of energy, all health establishment should have solar installation.
- To reduce the transmission of HIV/AIDS to general population and the highly risk group by 100%.
- To reduce the transmission of parents to child transmission of HIV/AIDS by 100%

PEACE & JUSTICE

- Zero Tolerance to Corruption,
- People-to-People Contact:
- Zero Political Exclusion.
- Social Auditing for transparency and accountability
- Police Reforms
- Strengthen Infrastructure of Judiciary sector including Court Building, Office of Prosecutors and Residential Quarter
- Improve the Justice sector along with capacity development etc.
- Active involvement of all sections of people including marginalised groups at the grass-root level and all stake-holders in policy making process and policy formulation.
- Strengthened local bodies.

NO POVERTY AND ECONOMIC GROWTH

- Improve Economic Growth rate at par with national rate.
- The first SDG is 'no poverty' or ending poverty in all its forms everywhere by 2030.
- Reduce proportion of persons living below the poverty line to half the level of its present ratio by 2030.i.e reduce the incidence of poverty from the present 36.9 %to about 18%.

GENDER EQUALITY

- Policies have to be formulated taking into account three roles of women perform in the Society; i) productive role (paid work), ii) reproductive role (household labour and care work for child and elders), and iii) community managing role (in Manipur's context it could be a role such as Meira Paibis).
- A policy package for fostering self-employment is required as a first step towards empowerment.
- Need for gender sensitive planning of civic amenities by providing crèche facilities, clean, well-maintained toilets, with provision of adequate supply of water, construction of storage facilities wherever feasible, and ensuring hygienic conditions and safety of working women.
- Public policy on education has to be restructured; vocational skills need to be developed. Steps should be taken to raise awareness about the importance of education. Adult education should be encouraged.
- Attempts should be made towards monetary valuation of unpaid household labour .
- Macro-economic policies should be streamlined taking into account women's reproductive and care-giving work which consumes a considerable proportion of their time and energy. There is need for designing more egalitarian and gender-sensitive macroeconomic policies.
- The statistical system of the State should be tuned to produce reliable and timely statistics on issues related to women. Better methods of collecting data on women in the unorganized sector should be evolved to improve the quantity and quality of information on women.
- Feminist development critiques insist that a gender perspective should be built into all development issues. Using a gender perspective, we should ask, what kind of development policies can best promote the interests of women.
- Women must be empowered to hold the authority accountable, answerable to their promises, and to call for corrective action when they fail to deliver. Empowerment is necessary for monitoring and advising.
- There is need for more efficient and equitable sharing of time, resources and family responsibilities among men and women, and flexible workplace innovations for them to ease the intense time pressures on working women.

- The effort to integrate unpaid work into the macro-economy must include not only time use surveys and valuation processes and satellite accounts, it must also include efforts to get the public interested in such things.
- The economic empowerment of women needs to go along with political empowerment which would improve their bargaining power both in the household, at work and in society as a whole.
- Filling gender gaps in the process of development should be worked out by specific attention to gender needs.
- Capacity building efforts should be taken up to increasing the productivity of women's labour by enabling their access to extension services, credit, assets, education, information and skill training; and on the other hand ensuring access to proper market outlets for their products; increase control over their own income, increase their ability to participate in the political processes, empower to take advantage of all opportunities in life.

INDUSTRY & INFRASTRUCTURE

- Infrastructure to be strengthened by providing better air, railway and digital connectivity.
- Infrastructure to be strengthened for social and economic sectors ; Health, Education, Industry, Tourism, Power and Water Supply.
- Infrastructure for access to bank services will be strengthened and coverage of each revenue blocks by at least one nationalised public sector banks.
- Transport system will be improved by providing affordable and reliable public transport and railways crisscrossing the state.
- Innovative practices need to be encouraged at every level to usher in inclusive and sustainable industrial development.
- Trading infrastructure of the State will be strengthened to enable trading activities to flourish tap the geographical advantage of location of the State to South East Asian Markets.
- Envisages establishing logistic hub to cater to the expected flow of trade and commerce in the region.

CLEAN WATER AND SANITATION

The prioritised areas include

- i. Enhancement of water resources, catchment and improvement of river/ streams basin health through catchment area treatment and conservation of water resources through river basin care and development;
- ii. Averting disasters due to heavy precipitation and increase in extreme events like flood, draught etc through enhancement/river front development at eroded/hazard zones;
- iii. Watershed management, water harvesting (including rainwater) through rain

water harvesting in community lands, roof top harvesting etc. for collection of water sources (integrate to building by laws), construction of small check dams;

- iv. Conservation of water resources [wetland, lakes, rivers, major water bodies] and encouragement of indigenous and community pond/lake through conservation of water bodies, wetlands(hill and valley), major urban water bodies, conservation and management of the Loktak and associated wetlands integrating Manipur river basin(short term action plan as well as long term action plan), comprehensive coverage of ecologically safe sanitation in villages adjoining Pumlun, Ikop, Khanung and Khoidum, development of community water harvesting as mini water reservoir at hill ridges, Minor/integrated irrigation tanks/community ponds, water harvesting in terms of digging/extension of ponds.
- v. The sewerage system both in urban and rural areas should be properly developed to get clean water. Leaking pipes are major source of water contamination.

CLIMATE CHANGE

There is a need to understand integration of climate change and development as the existing departments, schemes, policies pursue varied development objectives. Objectives of all state government departments should be integrated in the state action plans on climate change.

1. Greening and increase in forest cover will help decrease the adverse effects of climate change.
2. Every policy with climatic concerns should be subjected to Environmental Impact Assessment process.
3. Some of the gaps like Knowledge and institutional capacity need to be bridged.
4. State Action Plans should be routinely updated to incorporate new knowledge on climate change, vulnerability assessment and green house gas emissions to make them robust.
5. Educational curricula should include State Action Plans, SDGs and other interventions to deal with climate change.
6. Agro-forestry practices should be promoted.
7. Vulnerability assessment at State Level should be done with the help of experts and stakeholders in a transparent manner.
8. The solutions should be economical, technologically feasible and politically acceptable.
9. A dedicated department should be established to study in real time basis the causes and impacts of environmental degradation, the adaptation and mitigation plans. Research needs to be done on the state action plans on climate change (SAPCC).

10. Universities, research organizations etc doing research on climate change should come together on a platform. Scientific excellence can be achieved through collaborations with universities and research organizations.
11. Clear guidelines & processes for measuring ecological accounting & ecological footprint should be made available.

URBANISATION

The suggestions for sustainable urbanization are as follows

- i. Urban Population distribution should be guided towards the medium size city by strengthening their economic base, creating employment opportunity in secondary and tertiary sectors and also by investing in economic activities having potential for further development to strengthen the economic base of the medium size urban centres.
- ii. A clear cut housing policy has to be formulated by which all the citizens would have access to homestead land.
- iii. The drainage and sewerage system should be properly planned to avoid endemic flooding and water logging in the city and its environ.
- iv. Parking spaces including multi-storeyed parking stations should be developed in urban areas and use of private vehicles may be discouraged by charging higher parking fees.
- v. The urban dwellers should be provided adequate power and safe drinking water through the prepaid system.
- vi. All waterbodies including marshes in and around Imphal should be preserved. This should be supplemented by afforestation programmes on the slopes of hills around which urban centres are going to be developed.
- vii. Trams should be introduced along the foothills connecting Imphal with decentralized urban centres.
- viii. There should be investments to attract major manufacturing industries which may be located in the decentralized points along the foothills.
- ix. Imphal urban agglomeration must have well-developed inter-linkages among the decentralized urban centres.
- x. Urbanization should extend to the foothills without upsetting the ecological balance.
- xi. There should be urban Solid waste management policy including hospital waste management
- xii. Due important should be given to historic sites and precincts located in urban areas.
- xiii. While constructing Hospitals, Public Buildings, Malls, Institutions etc. fire safety and other possible natural and man-made calamities measures must be taken.

- xiv. Policy for Protection of embankments of Imphal, Iril and Nambol river, all flowing through Imphal valley, from the hazards of floods should be framed and implemented.
- xv. Use of plastics and non biodegradable materials should be banned in and around the urban settlements and there must be water cleaning plant for Nambul-Naga rivulet
- xvi. There must be concerted effort to make the people understand their role in sustainable urbanization using mass media and educational curricula. Nothing can be achieved without the support of the people.

POWER

- MSPCL, MSPDCL and MANIREDA need to be strengthened so that a clean and affordable 24x7 power be available to every household by 2030. The higher is the share of renewable energy, the better it is.
- Energy efficient lighting and household equipments should be made widely available both in rural and urban areas at subsidized prices.
- If we want to implement the 24X7 power supply scheme across the state successfully and in a sustained manner all stakeholders including the consumers have to collaborate. Poor communication and flow of information to all stakeholders can become potential roadblocks. For instance consumers should understand the contribution their proper use of power can make to the success or otherwise of the 24X 7 power supply scheme. Power saved can be used elsewhere.
- Capacity building of the employees to take advantage of IT applications in Transmission & Distribution system is also necessary. It may include consumer grievance system, awareness regarding importance of working with safety, outage management system, demand side management etc.
- Since most of the power is planned to be obtained through sources outside the state there should be strong focus on future system strengthening schemes. Large hydropower projects are no longer fashionable. Projects based on renewable resources and small scale projects are going to be more practical.

CONSUMPTION

- The households of the lowest level of MPCE must rise up to the consumption level of the higher level of MPCE.
- Material consumption must be judiciously chosen with the idea that the present consumption is not the last consumption of human kind.
- Manipur must try to reduce food wastage to almost zero level .
- The public distribution system must be efficient by 2030 so that all the inventory of food grains and other items must be kept at the lowest possible level.

- All the lighting system must be converted to the most efficient system of lighting using the LED based equipment. The present scheme of solar power grid must reach at least half of the housetops of the total housing units of the state by 2030.
- Improve the public transport system in the state and by 2030 at least three-fourth of the transportation conveyance must be made using the public transport system.
- Inefficient use of chemical fertilizer, pesticides and weedicides must totally be over by 2030 for which the extension service of the agriculture department must be made responsible. The organic movement should be roped in to minimise the use of various chemicals in agriculture.
- Water must be consumed judiciously. Most of the drinking water in Manipur comes from the untreated sources. This needs to be given proper attention so that every household has access to adequate potable water.
- Enforcing appropriate land laws, at least one-third of the hills of the state should be used for growing vegetables and extracting wood/timber.

TERRESTRIAL BIODIVERSITY AND CONSERVATION NEED

- Inventorization, documentation and qualitative and quantitative evaluation of Biodiversity should be taken up in right earnest.
- Generate appropriate manpower for handling these tasks.
- Seek international cooperation in monitoring and checking the spread of invasive alien species.
- Establish (where possible) biological corridors for inter linking the smaller hot spots .
- Monitor the populations of “vulnerable and rare species” and through biotechnological tools multiply and rehabilitate them in their original habitats.
- Workout strategies for ‘Bioprospection” and sustainable utilization of bio-resources.
- Supporting National Biodiversity Action Plan
- Accelerate effective actions at the central, state and local levels to implement provisions under the Biological Diversity Act 2002 and its Rules 2004.
- Review enabling policies to prevent the transfer of prime agricultural land to non-agricultural purposes, and promote sustainability of agricultural lands
- Develop consortium of lead institutions engaged in conservation providing linkage and networking across public and private sectors.
- Promote application of biotechnology tools for conserving endangered species.
- Encourage DNA profiling for assessment of genetic diversity in endangered species to assist conservation.

- Strengthen participatory appraisal techniques and encourage formation of local institutional structures for planning and management of natural resources, ensuring participation of women.
- Preserve and strengthen traditional, religious, ritualistic, ethical and cultural methods of conservation
- Strengthen manpower, infrastructure and other pertinent capacities including upgradation of skills to address new and emerging requirements in field of biodiversity conservation and management.
- Develop a system of natural resource accounting reflecting the ecological as well as economic values of biodiversity, with special attention to techniques of green accounting in National Accounts and estimation of positive and negative externalities for use of various types of natural resources in the production processes as well as in household and government consumption.
- Support projects and pilot studies aimed at validating methods of valuation of bio-resources.: development of tribal areas in the State.
- Development of hill tribal areas; economic, social and infrastructure development in par with rest of the state and country.

A. APPENDIX

A.1 TEAM MEMBERS OF PLANNING DEPARTMENT:

SL NO	NAME	DESIGNATION
Sl No	Name	Designation
1	Shri. Sumant Singh,IAS	Commissioner
2	Dr. Th. Munindro Singh	Director
3	Ms. N. Kulkarani Devi	Joint Director
4	Dr. R.K. Tombisana Singh	ARO
5	Shri. Y. Rajendra Singh	L.O
6	Dr. R.K Sunita Devi	Scientist/ GIS Expert (SLNA)
7	Shri. Vaskar Mutum	Administrative Officer (SLNA)
8	Shri. W. Premananda Singh	Programmer (SLNA)

A.2 LIST OF RESOURCE PERSONS

1. Prof. Sh.Gyaneswor Singh, Dept. of Teacher Education, Manipur University.
2. Prof. Ch. Priyoranjan Singh, Economics Department, Manipur University
3. Prof. Asha Gupta, Life sciences Department, Manipur University
4. Prof. N. Deva Singh, Geography Department, Manipur University
5. Prof. N. Rajmuhon Singh, Chemistry Department, Manipur University
6. Prof. Sh. Dorendrajit Singh, Physics Department, Manipur University
7. Prof. Ksh. Jhaljit Singh, Economics Department, Manipur University
8. Prof. N. Pramodini Devi, Linguistics Department, Manipur University
9. Prof. Ch. Ibohal Meitei, Manipur Institute of Management Studies, Manipur University
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