Executive Summary

(a) Introductory paragraph about the State

(b) The Importance of L1 and L2 landscape selected

(c) Scope of implementing GIM in L2 and L3 landscapes i.e. problems and analysis and drivers of degradation

(d) Various processes and outcomes of planning and stakeholders consultation in preparation of perspective plan

(e) Submissions and support activities proposed in the area

(f) Extent of convergence with other Line department and missions.

(g) Livelihood issues and activities proposed

(h) Details of cross-cutting interventions with special considerations for protection and improvement of catchments of hydrological importance

(i) Any typical and outstanding features

(j) Mission costs.

Chapter 1

Introduction, Scope and Objectives

1.1 About the State (Landscape - L1)

1.1.1 Introduction

Mizoram was earlier a part of the British India since 1895. In 1898, the district called "Lushai Hills" was created with Aizawl as its Headquarters. After independence in 1947, the District was renamed as "Mizo District" and also the autonomous Mizo District Council was established on 25th April, 1952. Subsequently, Mizoram was made a Union Territory in 1972 and finally, it became the 23rd State of India on 20th February, 1987.

(j)1..2 Location, Extent and Topography

Mizoram, which is one of the Seven Sister States in the North-Eastern India, is located between 21°56` and 24°35` N Latitude and 92°16` and 93°26`E Longitude. It shares the boundary with Assam and Manipur on the North, Myanmar on the East and the South, and Tripura and Bangladesh on the West. The long international boundary (about 630 miles) of Mizoram with Myanmar and Bangladesh makes it strategically located.

The geographical area of the State is 21,087 sq. km. with mostly hilly terrains. Most of the hills have moderate to steep slopes and are separated by rivers flowing either to the North or South direction. These Rivers have created deep gorges between several hill ranges. In fact, Mizoram is "a land of rolling hills, valleys, rivers, and lakes" (Environment & Forest Department, 2010, p.5). The plains occupy comparatively a very small portion of the total geographical area and are mostly located at places such as Champhai, North Vanlaiphai etc. on the eastern part of the State.

(j)1..3 Climate

The whole of Mizoram enjoys a pleasant climate with cool summer and moderate winter. The temperature varies from 11°C to 21°C during winter and 18°C to 29°C in summer. The State gets rainfall from both the North-East and the South-West Monsoon. It receives heavy rains from May to September. The average annual rainfall is about 254 cm. As such, the climate in Mizoram is conducive to conservation and sustainable development of forests.

(j)1..4 Soil

The soil in Mizoram, in general, is fertile and rich in organic contents. However, the soil depth is found less at few places, particularly at very steep slopes, due to the effect of heavy run-off in degraded forests. The contents of potash and phosphorus in the soil are low, whereas the content of nitrogen is normally high because of the accumulation of organic matters over the years. The fertile soil is generally found at low to moderate slopes, on river banks and in the valleys. The soil at such places is responsive to the vigorous and healthy growth of the forests and thus supports rich biodiversity.

1.1.5 Demography

The population of the State was 10,91,014 as per 2011 census, of which 5,52,339 (51 percent) are male and 5,38,765 (49 percent) are female. The population density has increased from 33 to 52 persons per sq. km. during the decade, 1999 - 2011. Most of the people in the State belong to several culturally-linked ethnic tribes which are collectively called "Mizos" (Mi: People, Zo: Hill). These people are highly educated. Mizoram has a literacy rate of 91.58 %, which ranks it second among States in India. "Mizo" and "English" are the main languages spoken by the majority of the people.

1.1.6 Socio-economic life of the people

Since signing the "Peace Accord" on 30th June 1986, the State has effectively implemented several developmental schemes. Peace and development have resulted into comparatively better Human Development Index (HDI). The HDI in Mizoram was found 0.67, the highest among the north-eastern States and more than the national average (Government of Tripura, 2007, p.28).

Agriculture is the dominant source of income and employment for the people in Mizoram. As per 2001 census, 61 percent of the working population in the State was dependent on agriculture. In rural areas, most of the people are engaged in "Jhumming" (shifting cultivation). 89,454 households, 57.85 percent of total 1,54,643 households, were cultivators and further, 78,195 households, 87 percent of all cultivator households, were practicing shifting cultivation (Government of Mizoram, 2004, p.17). The "Jhumming" practice has adversely affected the rich forest cover of the State. Planned efforts are now being made to control and transform the practice of shifting cultivation into settled agriculture. Technical and financial assistance is being given to the rural people enabling them to leave the practice of shifting cultivation and get engaged in other sustainable livelihood activities such as horticulture, piggery, settled cultivation etc.

1.2 The forests in Mizoram

1.2.1 Forest cover

A large area - 19,277 sq.kms. (91.44 percent of the State's total geographical area) - is covered under forests i.e. Forest and Tree cover (Forest Survey of India, 2013). However, the forests have suffered serious depletion and degradation due to the traditional practice of shifting cultivation, uncontrolled fire, unregulated felling etc. As per the "India State of Forest Report 2013" published by the Forest Survey of India, the State has 13,016 sq. kms. open forests which is 67.70 % of the total forest cover and 61.74 % of the total geographical area. The density-class of forests found in the State has been shown below graphically in Figure 1.

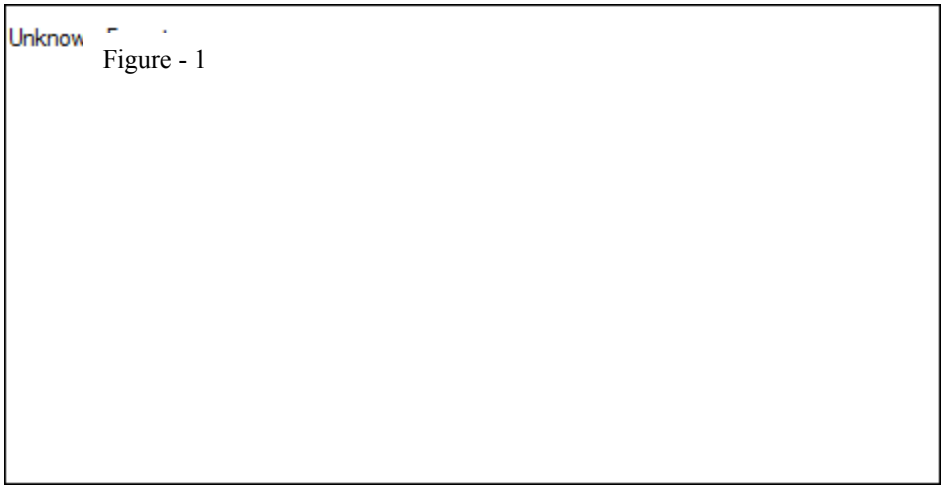


Figure - 1

Source: Forest Survey of India, 2013

(j)1..2 Forest types

The forests in Mizoram are very rich in biodiversity. As many as 6 important forest types have been reported to occur in the state (Forest Survey of India, 2011). These are:-

- **Cachar Tropical Semi-Evergreen Forest (2B/C2):** Mostly found in all districts of the State. The important species are *Dipterocarpus turbinatus, D. tuberculatus, Terminalia chebula, Emblic spp, Careya arborea etc.*

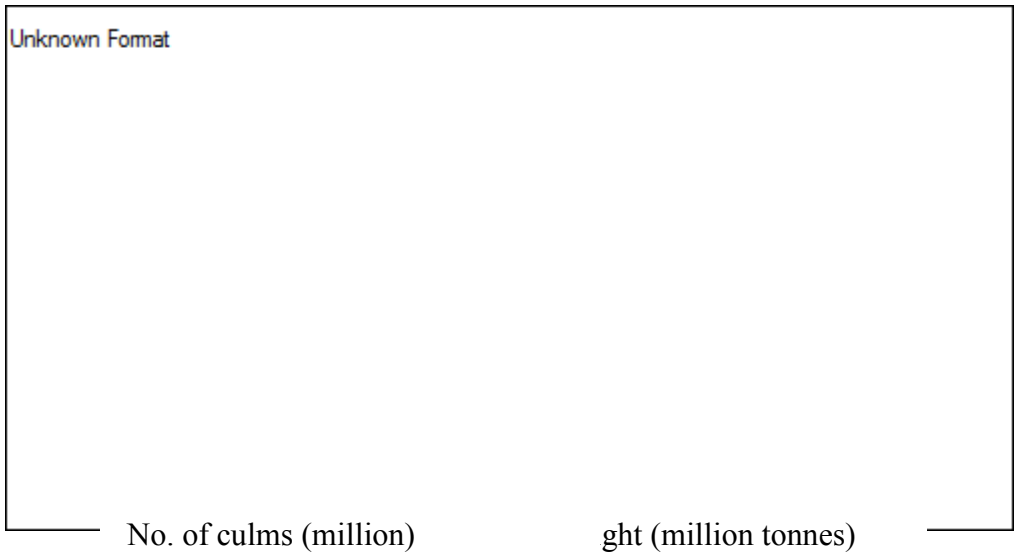
- **Secondary Moist Bamboo Brakes (2/2S1):** Dominant species of bamboo like *Melocanna bambusoides, Dendrocalamus hamiltonii etc.* are present.
- **Pioneer Euphorbiaceous Scrub (2B/2S1):** It is generally found in degraded forests and exposed lands present on higher slopes and on top of the hills. It has quick growing species like *Macaranga* spp., *Mallotus* spp. etc. This type is found in all Districts except Kolasib.
- **East Himalayan Moist Mixed Deciduous Forest (3C/C3b) :***Schimawallichii, Syzigiumcuminii, Albizziaprocera, Dilleniapentagyna, Artocarpuslakoocha, Terminaliaballerica, T. chebula, Lagerstroemia parviflora, Anthocephalouskadamba* etc. are the characteristic species of this type. It is found in all Districts of Mizoram.
- **East Himalayan Subtropical Wet Hill Forest (8B/C1):** Major characteristic species are *Quercusvercus, Q. serrata, Castanopsis spp, Litsea spp. Machilus spp* etc. This forest type is found in Kolasib District.
- **Assam Subtropical Pine Forest (9/C2):** It is mostly dominated by the species *Pinus kesiya* with other associates like *Quercus* spp, *Schima wallichii, Rhododendron* spp. etc. This forest type is found mainly in Champhai District of the State.

(j)1..3 Bamboo Resources

Nature has endowed Mizoram with valuable Bamboo Forests. Bamboos - Green Gold for the State - are one of the most important natural resources which provide immense economic and environmental benefits for the local people. Bamboos are used for multiple purposes as the culms are straight and strong but light. These are used extensively in house construction particularly in the rural areas, as food, and for making various household items such as stools, benches, kitchen utensils, agricultural implements, and fishing devices. Further, bamboo acts as an effective soil binder protecting the slopes from erosion through its deep and extensive root system.

Bamboos are found abundantly in the State mainly along river banks and on abandoned jhumland. Both the clump forming and the non-clump forming species occur naturally in most parts of the State except on the higher altitudes of its eastern region. A large area of about 9,245 sq. kms., which is 44 percent of the State's geographical area, is covered under "Bamboo Forests" (Forest Survey of India, 2011, p.61). In spite of being small in size, Mizoram contributes significantly to the country's growing stock of bamboos.

Bamboo resources of the country have been assessed by the Forest Survey of India (FSI), Dehradun. As per the India State of Forest Report 2011 (Chapter 6) published by the FSI, total number of culms in recorded forests of Mizoram has been estimated to be 2,205 million as against 23,297 million estimated at the national level. Similarly, the total estimated green weight of bamboo culms has been estimated to be 13,187,000 tonnes for the recorded forests of Mizoram as against 1,69,312,000 tonnes for the whole country. The growing stock of bamboos in recorded forests of Mizoram as against the same for the whole country has been shown below graphically.



Area under "pure bamboo brakes" in Mizoram was found the highest among all the States/Union Territories of the country (226 sq.kms.). The dense bamboo forests also cover a large area in the State of Mizoram. The dense bamboo across all the States was found maximum in Arunachal Pradesh (8,681 sq. kms.) followed by Mizoram (6,116 sq.kms.).

The bamboo forests in Mizoram are also rich in bio-diversity. 35 species of bamboos under 9 genera have been reported to grow in the State (E & F Department, 2010). *Melocanna baccifera* (locally called "Mautak"), a non-clump forming species, is the prominent species found in the State. Other dominant species are *Dendrocalamus hamiltonii* (Phulrua), *D. longispathus* (Rawnal), *Bambusa tulda* (Rawthing), *B. longispiculata* (Rawthing chi), and

Arundinaria callosa (Phar). These species do not occur in large proportions like Mautak but are commercially valuable.

(j)1..4 Areas under Notified Forests in the State

The notified forests include (1) Riverine Reserve Forests (1832.50 sq.kms), (2) Inner line Reserved Forests (570 sq.kms.), (3) Roadside Reserve Forests (97.20 sq.kms.), (4) Other Reserve Forests (1963.63 sq.kms.) and (5) Protected Areas (1240.75 sq.kms) under the ownership of the State Government as well as 2562 sq.kms. under the ownership of District Councils. Thus, about 39 percent of the total geographical area (8223.93 sq.kms.) is covered under "notified forests" in the State of Mizoram.

1.2.5 Protected Areas

The Environment and Forest Department, Govt. of Mizoram has taken praiseworthy initiatives for preservation of wildlife by constituting one Tiger Reserve, two National Parks and seven Wildlife Sanctuaries. These are (1) Dampa Tiger Reserve, (2) Murlen National Park, (3) Phawngpui National Park, (4) Ngengpui Wildlife Sanctuary, (5) Lengteng Wildlife Sanctuary, (6) Khawnglung Wildlife Sanctuary, (7) Tawi Wildlife Sanctuary, (8) Thorangtlang Wildlife Sanctuary, (9) Pualreng Wildlife Sanctuary, and (10) Tokalo Wildlife Sanctuary. The area set aside for long-term wildlife conservation is 1686.96 sq. km. which is more than 8 % of the State's geographical area.

The network of protected areas provides healthy habitats for many wild animals, birds, and reptiles. Some important species of mammals found in the State are Tiger, Elephant, Malayan Sun Bear, Wild dog, Brush Tailed Porcupine, Gour, Leopard Cat, Marbled Cat, Golden Cat, Clouded Leopard, Serow etc. The forests of Mizoram also provide habitats for primates such as Assamese Macague, phyare Leaf Monkey, Slow Loris, Pig Tailed Macaque, Stump Tailed Macaque, Rhasus Macaque, and Capped Langur and also for Hoolock Gibbon, the only ape found in India.

Important bird species found in the State are Black Stork, Oriental Darter, Serpent Eagle, Black Eagle, Humes Bartailed Pheasant, Blyth's Tragopan, Green Burmese Peafawl, Grey Peacock, Yellow-legged Button quill etc. The Hornbill species include Great Indian Hornbill, Wreathed Hornbill, Oriental Pied Hornbill, Brown Hornbill, and Rufous-necked Hornbill.

1.3 Bio-geographical importance

The forests in Mizoram are ecologically significant as the region represents an important part of the Indo Myanmar bio-diversity hotspot which is one of the 25 global biodiversity hotspots

recognized across the globe. Several hot-spots in the State carrying diverse flora and fauna have been identified for protection. Further, the region is part of biologically distinctive eco-system (Mizoram-Manipur-Kachin Rainforests Eco-region). As such, conservation of the forests in the State is a necessity for arresting the progress of climate change and mitigating the impact of changing climate on the people.

1.4 Expectations of people from the forests

1.4.1 People's Participation in Conservation of the Forests

The State of Mizoram moved from State regulation to people's participation for managing its rich forest wealth by adopting the "Joint Forest Management" (JFM) through a notification issued in 1998. The introduction of JFM established a new mutually-beneficial relationship between the forests, the people and the State. The basic objective for adopting the mechanism of JFM in the State was to encourage active involvement of the local people in enrichment, protection and sustainable management of the forests.

It was envisaged to impart sense of ownership over the forest areas covered under JFM to the villagers. Guidelines for managing the forests with people's participation were framed. As per these guidelines, the local people participating in managing the forests and the State would share the forest produce, which may be extracted from the areas covered under JFM by applying scientific principles of sustainable management.

The organizational structure for managing the forests with constructive participation of the local people, at present, consisted of three levels in the State i.e. (1) State Forest Development Agency (SFDA) at the State level, (2) Forest Development Agencies (FDAs) at the divisional level, and (3) Village Forest Development Committees (VFDCs) at the village level. Eco-Development Committees (EDCs) have been constituted for the villages located near the protected areas. The existing guidelines for JFM included (1) the procedures for constituting SFDA, FDAs and VFDCs/EDCs, (2) their duties and responsibilities, (3) methodology of preparing micro-plans, their effective implementation, and timely monitoring, (4) fund flow mechanism, and (5) disposal of forest produce and sharing of benefits.

For involving the local people in planning, implementation, and monitoring of schemes for forest management, one SFDA, 21 FDAs and 598 VFDCs/EDCs have been constituted in Mizoram. These committees i.e. VFDCs/EDCs have 2, 75,435 members belonging to 80,728 families. Memorandum of Understandings (MoUs) has been signed between SFDA and FDAs and also between various FDAs and VFDCs/EDCs.

Works under centrally sponsored scheme - "National Afforestation Programme" (NAP) - are mainly taken up by VFDCs/EDCs through FDAs. Revised operational guidelines for implementing NAP through JFM were issued in the year 2009 by the Ministry of Environment and Forests, Government of India. These guidelines were aimed at (1) strengthening institutional arrangements for project implementation (capacity building), (2) treatment of highly degraded lands (problem lands), (3) application of latest nursery and plantation techniques, (4) generation of additional sustainable income for members of VFDCs/EDCs through value addition to forest produce and linkage to better markets for forest-based products. The Government of Mizoram has adopted these revised guidelines by issuing notification in March, 2010. The scheme - NAP - is being implemented effectively in Mizoram through the mechanism of JFM. Suitable tree species have been planted over an area of 57540 ha. under NAP during the period 2003-04 to 2013-14. These plantations are being protected through joint efforts of the local people and the Government agencies. It is expected that enrichment, protection, and sustainable management of the forests through JFM will provide substantial benefits to the local people while contributing significantly to ecological equilibrium and environmental stability.

1.4.2 Stakeholder's expectations

The local people particularly those living nearby forest areas expect sustainable livelihood support from the forests through extraction of permissible yield, value addition to forest produce and marketing of value-added products. They also expect to meet their needs for constructional timber at economical cost from the forests. However, they are also concerned for ecological stability in the region. Expectations of various stakeholders from the Environment and Forests department are given as under:-

Table: 1

Slno.	Name of Stakeholder	Expectations from the Department
1	The Indian citizens living in Mizoram including the indigenous people.	a. Ecological balance and environmental stability. b. Bonafide forest-based needs - constructional timber, fuel wood, and fodder – as per the Mizoram Forest Act, 1955. c. Constructive participation in afforestation, enrichment, and protection of forests. d. Easy access to information on uses and economic benefits of

		the forest products including Non-Timber Forest Products (NTFPs) and Medicinal Plants. e. Availability of technical know-how as well as other facilities for raising private plantations.
2	The State Government	a. Effective implementation of the planned schemes achieving the desired outcomes. b. Satisfaction of the local people.
3	The Government of India	a. Conservation of environment and forestry resources as envisaged in the National Forest Policy, 1988. b. Balance between conservation and development by implementing the provisions of the Forest (conservation) Act, 1980 as well as other National and State acts and rules related to management of the forests and the wildlife.
4	The forest officials working in the State	a. Healthy working conditions. b. Adequate facilities at par with our counterparts in other departments/services. c. Awards and recognition for good works.
5	Non-Government Organizations (NGOs)	a. Increase in forest cover. b. Enrichment and protection of the existing forests. c. Preservation of wildlife by creating and maintaining healthy habitats for them. d. Generating awareness towards the importance of forests and wildlife. e. Eliciting active participation of public in conservation and protection efforts.
6.	Private tree/bamboo growers	a. Technical knowhow. b. Logistic and financial support for raising and managing the plantations. c. Mechanism to facilitate harvesting and transportation of timber and bamboos.

Accordingly, the Department of Environment & Forests, Government of Mizoram is committed to provide a variety of services, both tangible as well as intangible, to the citizens by scientifically managing the rich forest cover existing in the State. The tangible services include (1) arranging forest products of economic importance such as constructional timber, fodder, fuel-wood, sand, gravels etc. at reasonable costs, (2) offering gainful employment while implementing various schemes for enrichment and protection of the forests, (3) creating opportunities for additional income through the mechanism of "Joint Forest Management", (4) disseminating information on importance and economic benefits of the forests including Non-Timber Forest Products and medicinal plants, (5) building and maintaining eco-friendly recreation sites and trails, (6) making technical know-how available for raising and managing private forests/plantations, and (7) assisting private tree-growers in silvicultural harvesting and transporting of timber inside as well as outside the State. The intangible services include (1) stabilizing the climate, (2) enriching the soil fertility, (3) recharging ground water, (4) regulating the water flow, and (5) offsetting the air pollution.

1.5 Objectives for GIM implementation

Although the identified landscape (L-1) - the entire state of Mizoram - has a large area under forest cover, the forests are not rich in quality. About 67.70 % of the forest cover is open, having very less canopy density. A large extent of open forest, particularly in the hilly terrain, can have devastating impacts on the normal structure and the delicate interdependencies of diverse flora and fauna in the forest ecosystem. The situation is likely to be further aggravated in Mizoram by the prevalence of shifting cultivation and other biotic interferences.

Efforts to enrich and protect the forests are being taken up by effectively implementing various schemes such as National Afforestation Programme, Integrated Forest Management, Thirteen Finance Commission Grants-in-Aid, National Bamboo Mission, New Land Use Policy etc. The local people are being encouraged to shift from shifting cultivation to settled agriculture by providing them technical and financial assistance.

The treatments being done to the landscape coupled with the proposed interventions under Green India Mission (GIM) will save the valuable hilly ecosystem of the State from deterioration. It is expected that implementation of proposed strategies will enhance the quality of existing forests, ecologically re-stock wastelands, improve eco-system services, increase forest-based livelihood income and augment annual CO_2 Sequestration.

1.6 Scope of implementing planned interventions under GIM

The GIM, which aims at providing sustainable livelihood support to the people in a stable eco-system would be implemented initially in 51 villages of eight identified L2 landscapes. These villages form compact blocks for treatment in five Forest divisions/4 Districts of the State. It is further planned to extend the mission in other parts of the State. It is to mention here that, the entire State has been identified as vulnerable i.e. L1 landscape

Chapter 2

Details of Identified Landscapes

2.1 Criteria for selection of L1 Landscape

Criteria, which were adopted for identification of L1 landscape, are given below:-

Table: 2

Details of Criteria			
Item	Criteria	Details	Details of the source of data, maps etc. appended
1. Forest cover and degradation	1(a) Forest cover	19,277 sq. kms. (91.44% of the State's geographical area).	India State of Forest Report 2013, Forest Survey of India, Dehradun.
	1 (b) Bio-diversity	The State is rich in Bio-diversity, having six major forest types, namely i) Cachar Tropical Semi-Evergreen Forest, ii) Secondary Moist Bamboo Brakes, iii) Pioneer Euphorbiaceous Scrub, iv) East Himalayan Moist Mixed Deciduous Forest, v) East Himalayan Subtropical Wet Hill Forest, vi) Assam Subtropical Pine Forest.	India Forest Atlas prepared by Forest Survey of India, Dehradun
	1 (c) Wastelands	6021.14 sq km (28.56% of the State's total geographical area) is wasteland including jhumland.	Wastelands Atlas of India, 2010.
2. Projected Forest vulnerability to climat	2 (a) Vulnerability maps and attribute data	Although the State is having a large area under forest cover, the forests are not good in quality. The State has 13,016 sq km open forest which is 67.70% of the total forest cover and 61.74% of the total geographical area. It is expected that a large extent of open forests, particularly in the hilly terrain, may adversely affect not	As indicated above in column 1.

e change		only the forest eco-system but adjoining areas as well. The situation is likely to be further aggravated in Mizoram by the prevalence of shifting cultivation and other biotic interferences.	
		Effect of climate change in the State is (1) irregular behavior of rainfall, (2) rise in mean maximum and mean minimum temperatures, (3) gradual and progressive increase in humidity, and (4) increased frequency of extreme climate events (heavy rainfall, flash floods, etc.). Forests are highly vulnerable to these changes in climatic conditions. Impact of climate change on the forests coupled with biotic interferences is characterized by (1) degradation (a large extent of open forests), (2) loss of biodiversity, (3) increased incidence of invasive species, and (4) loss of forest environmental functions (water conservation, soil conservation, flood control etc.).	(1) Programme Design Document for North East Climate Change Adaptation Programme presented to KfW Germany, DoNER, and State Govts. (2) Field observations by Forest Officers.
3.Vuln-erable Popula-tion / Comm unities	3(a) ST/SC Total population, ratio 3 (b) Scheduled areas	The majority of the population in the State - over 95% - belongs to STs.	2011 Census data, Govt. of India.

2.2 Importance of L1 Landscape

Based upon the criteria given in para 2.2, the entire State of Mizoram (Area: 21,081 sq. km.) has been taken as L1 Landscape. Proper treatment of the landscape in the State would bring ecological security in the region and would also contribute significantly to stabilize the changing climate. The bio-geographical importance of the L1 landscape has been given in para 1.3.

2.3 Criteria for selecting L2 Landscape

Operational units (L2 level) have been identified based mainly on five indicators which are (1) extent of open forest, (2) dependency of the local population on the forests i.e. biotic pressure,

(3) drainage pattern, (4) prevalence of shifting cultivation and (5) compact block for treatment under GIM. The criteria for selection of L2 Landscapes are given below in detail:

Table: 3

Items	Criteria	Details	Details of the Source of data – Maps etc appended
Extent of open forests	Extent of degraded forests i.e. forests having very less canopy density	Aizawl, Champhai, Lawngtlai, Lunglei, and Mamit districts have larger area under open forests.	FSI, Dehradun
Forest Dependence	Forest areas (sq. kms.) per 1000 population	Aizawl, Champhai, Kolasib, and Serchhip Districts have less forest areas per 1000 population. Therefore, it is expected that these districts may witness more biotic pressure on the forests.	Data for forest areas: FSI data and for population: census data.
Drainage Pattern	Catchment areas of major and important rivers	After identifying the divisions on the basis of first two criteria, the operational units have been identified within these divisions on the basis of these two criteria.	Maps obtained from MIRSAC (Mizoram Remote Sensing Application Centre)
Prevalence of shifting cultivation	Areas including Abandoned Jhumland and Current Jhumland		Maps obtained from MIRSAC (Mizoram Remote Sensing Application Centre)
Formation of Compact Block	All identified L2 landscapes to form a compact block for better outcomes.	Aizawl, Champhai, Darlawn, Kolasib and Thenzawl divisions form a compact block in the State.	Map of the State.

2.4 Reasons for selecting this L2 landscape among other possible L2 landscapes within L1:

A meeting (brainstorming session) of senior forest officers was held in March, 2012 to discuss various issues and formulate suitable strategies for the preparation of Bridge Plan/Perspective Plan under GIM. The views presented by the senior officers in the meeting are summarized below:

- The operational units should be from the districts which satisfy either of the two criteria i.e. extent of open forests or biotic pressure on the forests. Further, this unit should be strategically important for i) treatment and management of catchment areas and ii) engagement of the local people in settled agriculture or other sustainable livelihood options i.e weaning them away from jhum cultivation.
- The operational units, so selected, should form a compact block.
- The forest divisions, where activities similar to those proposed under GIM (KfW sponsored North East Climate Change Adaptation Programme) are being carried out, may not be taken up as operational units.
- Aizawl city, which carries maximum concentration of population (26% of the State's population), has the significant impact on the climate and the eco-system in the State. Therefore, forest-based interventions inside and outside the city of Aizawl may be taken up under GIM.

Considering the above views, it was decided in the meeting that 8 nos. of operational units in 5 forest divisions namely Darlawn, Champhai, Thenzawl, Kolasib, and Aizawl (for Aizawl Division limited to inside and outside Aizawl city) may be taken in the initial five years of GIM. Other areas/divisions may be taken up subsequently under GIM.

The proposed landscape, Sechhip (Tuikum Zau) lies across the inter-range boundary of Chhingchhip and Serchhip Forest Ranges in Thenzawl forest Division. The landscape consists of open and degraded forests, both Government and privately owned. There are many current and abandoned jhumlands as well. Further, it forms the catchment area of Tuikum River which is the only source of water for Serchhip, one of the largest Towns in the State. The treatments under Green India Mission would ensure continuous and uninterrupted supply of water for Serchhip town. As such, Serchhip was selected as L2 landscape for treatment under GIM.

2.5 Importance of L2 Landscape (Serchhip)

The identified landscape lies in the catchment area of Tuikum River, the source of water supply to Serchhip Town. Treatment of this landscape under GIM would ensure regular water supply to 46,600 inhabitants (2011 census) living in Serchhip Town. Well-stocked good-quality forests in "Serchhip" landscape will also stabilize water flow in another major river of the region i.e. Zalreng river flowing in north-west direction.

2.6 Criteria for selection of L3 landscape

All villages namely New Serchhip, Thentlang, Vanchengte and Chhiahtlang having interests in "Serchhip (Tuikum Zau)" have been taken as "Working Units" i.e. L3 landscape.

2.7 Importance of L3 landscape (New Serchhip)

The area under Village Council of New Serchhip is one of the four L3 landscapes (working units) identified for coverage in L2 landscape Thenzawl-Serchhip. The New Serchhip village was established around the year 1974. It has the population of 3,997 with 841 households (187 households under BPL category). The villagers are quite educated, literacy rate being 99.92%.

The total geographical area of this L3 landscape is 7.44 sq. km. In the past, most of the land was covered with well-stocked good-quality forests. However, the forests have suffered serious depletion and degradation due to traditional practice of shifting cultivation and uncontrolled felling of tress. As a result, presently, most of the areas are either wastelands or forests having very less canopy density i.e. less than 10%. It is expected that execution of well-planned strategies under GIM may result into ecological stability in the region.

Further, this L3 landscape controls water flow in several streams/rivers such as Zalreng lui, Saibual lui and Zatlan lui. These water-bodies are natural sources of water for Serchhip and other nearby villages. The productivity of agricultural crops also depends upon water flow in these streams/rivers.

2.8 Extent of L1 landscape

Name of the L1 landscape: The entire State of Mizoram (map enclosed as annexure)

Location of the landscape:

State	: Mizoram
District	: All Districts
Forest Division	: All Forest Divisions

Extent (area, boundaries, geo-references):

- Geographical area of the State is 21,087 sq.kms.
- The State shares its boundary with Assam and Manipur on the North, Myanmar on the East and the South, Tripura and Bangladesh on the West.

- It is located between 21°56’ and 24°31’ N latitude and 92°16’ and 93°26’ E longitude.

2.9 Extent of L2 landscape

Name of L2 landscape : Thenzawl-Serchhip (map enclosed as annexure ‘B’

Location of the L2 Landscape : State: Mizoram, District: Serchhip,

Division : Thenzawl

Geo references of the L2 Landscape : 23°26’28” N & 92°51’40” E and 23°18’48” N and 92°54’46” E

Area of the landscape:

1.Total Working area : 80.78 sq.km.

2.Community forest : 42.63Sq km

3.Chunglurh tlang : 0.11 sq.km

4. Community land:

(i).Moderately dense forest : 4.32 Sq.km

(ii).Degraded open forest : 8.58 Sq.km

(iii).Current jhumland : 3.70 Sq.km

(iv).Community safety reserve : 0.93 Sq.km

(v).Abandon jhumland : 5.85 Sq.km

5. Private land moderately dense forest : 0.10 Sq.km

6. WRC : 0.79 Sq.km

7. Horticulture : 0.63 Sq.km

8. Farmer’s land : 8.40 Sq.km.

9. Department plantation : 3.11 Sq.km.

10. Plantation in urban and peri urban areas :

(i) Within working area : 0.54 Sq.km

(ii) Within L-3 Village : 0.46 Sq.km

11. Highways/Rural roads/ canals/tank bunds :

(i)Within working area : 0.93 Sq.km

(ii)Within L-3 village : 0.57 Sq.km

12. Human settlement : 0.14 Sq.km.

2.10 Extent and other features of L3 landscape (New Serchhip)

Table: 4

Location	The L3 Landscape (New Serchhip) is located along Aizawl-Lunglei highway (NH-54). It is about 5 kms. away from Serchhip town, District headquarter of Serchhip district, and about 105 kms. from Aizawl, the State capital.
GPS coordinates:	N $23^0$21'44'' & E$92^0$51'14'' , N $23^0$21'43'' & E $92^0$52'14'' N $23^0$19'20'' & E $92^0$51'45'', N $23^0$19'15'' & E $92^0$52'30''
Area	7.44 sq. kms.
Forest cover	Moderately dense forests – 1.16 sq.kms. Open forests – 5.23 sq.kms. Non-forests - 1.05 sq.kms.
Forest type	Cachar Tropical Semi Evergreen Forest (2B/C2) mixed with bamboo breaks. Important species found in the locality are *Dipterocarpus turbinatus, D tuberculatus, Terminalia chebula, Emblica spps,Careya arorea etc.* Dominant bamboo species are *Melocanna baccifera, Dendrocalamus hamiltonii, Bambusa tulda, D longispathus etc*
Soil quality	Three soil orders i.e. ultisols, inceptisols and entisols are found in the project area. The surface soil textures are loam to clay loam with clay content increasing with depth in the hills whereas in the valleys it is mostly sandy loam to sandy clay loams. The soils are acidic in nature with pH values ranging from 4.5 to 6.3. The soils in the hills are strongly acidic in reaction, whereas, the soils in alluvial deposits are less acidic in nature. The percentage of organic carbon content is medium (0.70 %).
Topography	Some portion of the land is undulating with moderate slope i.e. 15^o to 30 ^{o}, whereas most parts of the land are comparatively flat with an altitude of 800-900 mts. above MSL.

2.11 Profile of L3 Landscape (New Serchhip)

2.11.1 Population and Workers Population

The population data of New Serchhip village is given below in the following table:

Table: **5 A**

No of Households	Population		Children below 6yrs	Total
	Adult Male	Adult Female		

891	1769(44.13%)	1790(44.78%)	443(11.08%)	4002

The average family size is 4 to 5 persons per household. Workers Population is as under:-

Table: 5 B

Total Workers	Regular/Main Workers	Irregular/Marginal Workers	Non Workers
Workers: 1986 (49.62 %) Male: 1025 (51.61%) Female: 961 48.38%)	Regular Workers: 402(10%) Male : 312(7.8%) Female: 90(2.25%)	Irregular Workers: 1587(39.66%) Male: 713(44.92%) Female: 874 (55.07%)	NonWorkers:2013(25.3%) Male: 544(13.61%) Female: 1467(36.70%)

Source: Census data 2011

2.11.2 Social structure

The social structure of the population at New Serchhip village is as under:-

Table: 6

General	Scheduled Caste	Scheduled Tribe	OBC	Total
Nil	19(0.30%)	3978(99.70%)	Nil	3997

Source: Census data,2011

2.11.3 Wealth Ranking: Table: 7

Sl. No.	Classification	No of families
1	Rich (Families having RCC building or motor car whose annual income exceeds Rs 5,00,000.00	27(approx)
2	Middle class (Families whose annual income is less than Rs 5,00,000.00 but above BPL)	677(approx)
3	Poor (Families who are listed as BPL by the Govt.)	187 (approx)

Source : Actual field verification

2.11.4: No of Educational institutions:

Table: 8

Anganwadi	Primary school	Middle school	High school	HSS	Colleges	Others
7	4	3	2	1	Nil	Nil

Source: Field verification

2.11.5 Enrolment (as on 15th Aug 2014): Table: 9

Anganwadi	Primary school	Middle school	High school	Colleges	Others
440	275	340	185	42	NA

Source: Field verification

2.11.6 Literacy percentage

Male – 99.94%, Female – 99.88%, Overall – 99.92%

Source: Census data 2011

2.11.7 Occupation:

Table: 10

Sl. No.	Category of Occupation	No of families
1	Govt. service	229
2	Jhumming (Shifting cultivation)	15
3	Horticulture including WRC	223
4	Business/Petty trade	22
5	Daily labourers	311
6	Others	91

Source: Field verification

2.11.8 Livestock population:

Table: 11

Cattle	Goat	Sheep	Pig	Poultry	Other
21	22	Nil	940	1200	-

Source: Field verification.

2.11.10 Cropping pattern:

Table: 13

Sl No	Crop	Time of sowing	Time of harvest	% of agri. area covered
1	Rice	April-May	Sept- Nov	20
2	Orange	May-June	Oct-Dec	15
3	Banana	April-March	Jan-Dec	15

4	Rubber	May-June	March-April	2
5	Maize	March	July	4
6	Ginger	April- June	Oct-March	5
7	Pumpkin	March	June	1
8	Calocasia (Bal)	April	Nov-Dec	3
9	Local pea (Behlawi)	March	Sept-Nov	5
10	Soya bean	June-July	Nov-Dec	10
11	Oil Palm	April-June	Aug-Dec	20

2.11.11 Water Resource

There are three main sources of water for the people living in New Serchhip village i.e. water connection from Public Health Engineering (PHE) Department, water collection points connected to perennial fountains and rain water harvesting. Water connection from PHE department has many outlets for all villagers and house-to- house connection has been provided. Rain water harvesting is being done by limited well-to-do families only.

2.11.12 Energy Consumption Pattern

The village has already been electrified by Power & Electricity department of the State. In addition, energy requirement is met from LPG connections, kerosene oil and fuel-wood collected from the Village Supply Reserves, the Jhumlands and the surrounding forests.

2.11.13 Demand for fuel-wood:

The demand for fuel-wood has been worked out based upon inputs received from NGOs, VC members and other villagers. The annual demand is as under:-

Table: 14

Average annual demand/household	No of households	Total annual demand of the village
1.8 cum	891	1603.8 cum

2.11.14 Existing infrastructure

Anganwadi Centre (7 nos.), Primary School (4 nos.), Middle School (3 nos.), High School (2 no.), Community Hall (1 no.), Mini-Market (1 nos.), Mini-Playground (1 nos.), Medical (1 Health Sub-Centre) and Govt. offices - 16 nos. (EE PWD, EE PHE, R.O Forest, Agriculture,

Minor Irrigation, Sericulture, DTO, Deputy Commisioner, Land Revenue & Settlement, DLAO, SP, Telecom, SE (Highway), Law & Judicial, SDE Building (PHE)).

Local Institutions / Organizations: - Village Council, YMA (4 Branches), MUP (2 units), MHIP (4 Branches) and Games & Sports Association

S2.11.15 Problems and Priority

Through PRA exercise, problems being faced by the villagers could be ascertained. These are lack of proper medical facility, absence of link road to agricultural fields, incomplete net-work of approach roads within the village, in-sufficient supply of LPG cylinders and scarcity of water-supply.

2.12 Demographic statistics of L2 Landscape:

Table: 15

Sl. No.	Village	Population			Poverty (BPL families)	Forest dependency	Drivers of degradation	JFMCs/ other institutions of Gram Sabha
		Total	SC	ST				
1	New Serchhip	3997	19	3978	187	Shifting cultivation, fuel-wood, timber for construction of houses, furniture etc.	Dealt in para 2.17	Village Forest Development Committee (VFDC) is active in all these villages.

Source: Census data 2011

2.13 Present interventions for addressing livelihood needs (forestry as well as non-forestry sector) and promoting sustainable forest development:

Table: 16

Sr. No	Name of	Implementing	Forestry and Wildlife	Other components	Details of livelihood	Villages

.	Scheme	Agency	activities	like SMC	component	covered
1	NLUP (New Land Use Policy)	Different line departments such as-Soil Conservation, Horticulture, Agriculture, Forest, Sericulture, Fisheries Industries, AH & Vety etc	Plantation of bamboos and other indigenous species	Construction of terracing, trenching, Rain water harvesting structures	Provision of technical and sustainable livelihood support so as to wean them away from the traditional practice of jhumming	New Serchhip
2	NAP (National Afforesta-tion Programme)	FDA Thenzawl / concerned VFDC	Sustainable management of forests with people's participation. Plantation is carried out on degraded lands	Construction of contour trenching, Check dams, inspection path etc	Livelihood generation through direct employment, sustainable extraction of forest produce, value addition and marketing	
3	NBM (National Bamboo Mission)	FDA Thenzawl / concerned VFDC	Plantation of bamboo species, Training to farmers to increase crop productivity		Livelihood support is expected from extraction of bamboo &marketing of value added products	New Serchhip
4	MIDH (Mission for Integrated Development of Horti.	DHO Serchhip	Rubber plantation	Terracing, Rain water harvesting structures	Technical &Financial support to promising farmers only.	New Serchhip
5	MGNREGS	DRDA, Serchh-ip Dist	Roadside plantation	Terracing Check dam, Retaining wall, contour trenching,	Provision of 100 days employment for every willing	New Serchhip

				Public water point, Rain water harvesting structures	household	
6	IWMP(Integrated Watershed Management Programme)	DRDA Serchhip,	Rubber plantation	Terracing Check dam, contour & staggered trenching, Public water point, Rain water harvesting structures Farm ponds, Fish ponds	Support to SHGs	New Serchhip
7	RKVY(Ras-tria Krishi Vikaas Yojona)	DHO(Horti), DAO(Agri), DFDO (Fishery), DO (Sericulture) Serchhip district	Planting of Mulberry cuttings under sericulture, Oil palm plantation under Agriculture (OPAE)	Terracing(WRC-II),Rain water harvesting unit, Fish/Farm ponds	Provision of financial and material support to selected promising farmers.	Individuals/cluster selected from village
8	RADP (Rain fed Area Development Programme)	DAO Serchhip	Shift from shifting cultivation to settled cultivation(WRC-II)	Terracing, water harvesting structure	Technical and financial support to vulnerable families	Selected cluster &Individuals
9	IAY (Indira Gandhi Awaas Yojona)	DRDA, Serchhip	Nil	Nil	Construction of houses for the poor	New Serchhip

2.14 Gaps/Strategies identified under GIM:

Table: 17

Sl. No	Village	Forestry activities proposed	Other activities like SMC	Livelihood activities proposed	Any others
1	New Serchhip	1)Enhancement of quality in existing forests(with limited root stock and open blanks) 2) E c o s y s t e m restoration(Rehabilitation of Shifting cultivation) 3)Agro forestry 4)Social forestry 5)Support to community conserved areas	Interventions in catchment areas of h y d r o l o g i c a l importance	C o m m u n i t y l i v e l i h o o d enhancement.	Promotin g alternate e n e r g y sources

2.15 Drivers of degradation and deterioration in the forest eco-system:

Table: 18

Sl. No.	Village	Drivers of degradation
1	New Serchhip	Traditional practice of shifting cultivation, Lack of strategic and participatory land-use planning, excessive population pressure on the forests for fuel-wood, fodder, timber etc., inadequate scientific management of watersheds including rainwater harvesting.

Chapter 3

Process undertaken for preparation of Micro-Plan/Sub-Landscape Plan:

3.1 Constitution of Micro-Plan Working Group.

A meeting was held with members/representatives of Village Council for New Serchhip village, conservation-oriented NGOs (YMA, MHIP and MUP), forest officers and other prominent citizens of the village on Dt 5.9.2014. As per recommendations made in the meeting, a Micro-Plan Working Group was constituted for facilitating preparation of micro-plan for New Serchhip Landscape (L3). The constitution of the group is as under:-

Chairman	:	PC Dengthuama	
Members	:	1) Lalrinthanga Sailo	VC representative
		2) K.Rodinga	YMA representative
		3) Laihmingthanga	YMA representative
		4) Zohmingthangi	MHIP representative
		5) Sanghmingliani	MHIP representative
		6) R.Awiliana	MUP representative
		7) Rengliana	VFDC representative

A questionnaire was designed by the committee for collection of data on (1) demographic status, (2) socio-economic conditions of the villagers, (3) resources available in the village etc. The questionnaire was designed to facilitate (1) assessment of current land use pattern and formulation of proposed land use pattern, (2) participatory resource-based land-use planning, (3) identification of livelihood needs, (4) planning of activities for sustainable livelihood support to the people and ecological stability in the region. The members of the Working Group also visited the area covered under L3 landscape.

3.2 Participatory Rural Appraisal (PRA)

PRA exercise including group discussion, experience sharing, one to one discussion with the villagers etc. was conducted to promote people's participation in project planning, implementation and monitoring. Information on various issues concerning GIM implementation was explained to the villagers through interpretation of maps and other documents. Resource mapping, Preparation of existing land use map, seasonal Calendar (Cropping season) and wealth ranking exercise were completed during PRA activities. The principle of participatory land use planning was adopted with available technical inputs and in consultation with all the stakeholders including the local public, proposed land used map was prepared. The proposed land used map reflects the area where interventions are to be planned and implemented.

3.3 Households survey

House-hold survey was carried out in the village covering almost all the families. A structured questionnaire was prepared for collecting information on dependency of every family on the forests as well as other required data.

3.4 Transect Walk

Transect walk was done by the Micro-plan Working Group along-with some local people and VFDC members. During transect walk, inputs were obtained from the field for deciding upon the suitability of the proposed land-use. GPS reading of the prominent sites/spots visited by the Working group were also recorded.

3.5 Details of awareness programmes, meetings and work-shops along-with the resolutions and other outcomes:

Table: 19

Sl. No.	Work-shop / meetings State Level / Landscape / Villages covered	Category (stakeholders and no. of participants)	Major outcomes	Details of facilitators engaged	Whether resolutions / photographs enclosed
1	State/L1 level(State Mission Directorate)	Representative of all line departments ,reputed academic and technical institutions	Suggestions were mainly given for strengthening institutions responsible for GIM implementation in the State		Minutes of the meeting enclosed at Annexure
2	Village/L3 level at New Serchhip	Representatives of VFDCs, VCs, and NGOs such as YMAs, MHIPs & MUP attended.	GIM guidelines in local dialect be distributed. Rural outreach activity for data collection be done at the earliest		Minutes of the meeting enclosed at annexture -

3.6 Details of facilitators engaged in the process, institutions who prepared the micro-plans and approval of the Gram-Sabha:Table: 20

Sl. No	Village	Institution who prepared Micro-Plan JFMC/Others	Details of participation of all stakeholders/ Deptt.	Approval of Gram Sabha	Details of facilitator engaged
1	New Serchhip	Thenzawl FDA & Micro-plan Working Group as mentioned in para	Representatives of Govt. departments, Conservation oriented NGOs, VFDCs, VCs,	Approved by Village Council, New Serchhip. Approval letter	NA

		3.1	and local public.	enclosed at annexture	

3.7 Details of involvement of district level committee in preparation of perspective plan especially of convergence mechanism

- NA

3.8 Details of the meetings/consultations with other departments in finalizing the convergence issues and perspective plan

Chapter: 4

Activities proposed to be undertaken in the Sub-landscape (L2)

4.1 Current Land Use pattern

Current land use pattern has been mapped with interpretation of satellite imageries and field verification of interpreted data. The details are as under:-

New Serchhip village: **Table: 21**

Sl. No.	Land Use category	Area (Sq. kms.)	% of total area	Remarks
1	Working Area	7.44		
2	Horticulture land	0.45	6.04	
3	WRC	0.16	2.15	
4	Private land	6.66	89.52	
	i) Open forest	4.67	62.77	
	ii) Moderately dense forest	1.10	14.79	
	iii) Non Forest	0.89	11.96	
5	Community land	0.07	0.94	
	i) Open forest	0.04	0.54	
	iii) Non Forest	0.03	0.41	

Source:GIS cell,E&F dept,Mizoram

4.2 Proposed Land Use Pattern:

After careful scrutiny of current land use pattern, needs assessment and consultation with stakeholders, the following land use model is designed/proposed:

New Serchhip village: **Table: 21B**

Sl. No.	Proposed land-use	Area (sq. km.)	% of total area	Remarks
1	Working Area	7.44		
2	Community land	1.82	24.46	
	(i) Moderately dense forest	0.50	6.72	
	(ii) Urban and peri urban (within working area)	0.15	2.02	
3	Private Land	6.52		
	(i) Degraded open forest	1.00	13.44	
	(ii) Moderately dense forest	1.00	13.44	
	(iii) Abandoned jhumland	0.50	6.72	
	(iv) Agro-forestry: Farmer's land	1.35	18.15	
4	WRC	0.16	2.15	
5	Highways /Rural Roads/ Canals/Tank Bunds	0.80		This category of plantation is also propose to carry out at the peripheral areas of New Serchhip Town
6	Department plantation	0.10	1.34	
7	Urban and peri-urban (within L-3 village)	0.45		

4.3 Treatments proposed

The following prescriptions (sub-missions/categories) are proposed to achieve the objectives under GIM through sustainable use of available natural resources:-

Submissions:

Table: 21C

Sl. No.	Village	Submission/category				
		Enhance quality of forest cover	Ecosystem restoration & increase in forest cover	Agro forestry	Social forestry	Support to Community Reserves
1	New Serchhip	Stock enrichment planting to increase the quality of existing forests (ANR)	Plantation of indigenous species to improve ecosystem and provisional services (AR)	Raising of plantation along with agri-crops for generating additional income sources	Afforestation activities with active people's participation of locals along the roads, in school premises etc	Support to community for conservation/improvement of their forests

Cross-cutting interventions:

Table: 21D

Sl. No.	Village	Cross-cutting interventions			
		Alternate energy sources	livelihood enhancement Community	Community conserved areas and sacred groves	Watershed management

4.4 Objectives

Short term objectives

- Identification and arrest of drivers responsible for eco-system degradation
- Water-shed management - ridge to valley approach
- Increase in fuel-wood and fodder availability
- Employment generation

- Awareness for sustainable management of natural resources

Long term objectives

- Sustainable livelihood support to the people
- Ecological stability in the region
- **4.5 Details of submissions proposed for treatment (Action plan)**

Table: 22

Sl. No.	Village	Sub-mission	Categories	Proposed area	Proposed cost (In lakh of rupees)	Livelihood activities proposed based on Micro-Plan
1	New Serchhip	**Submission-1** Enhancing quality of forest cover and improving eco-system services	a)Moderately dense Forest cover showing degradation b)Eco restoration degraded open Forests type-A(200 plants/Ha) c)Type-C (2500 plants/Ha)	50 Ha (ANR Without plantation) 100 Ha 100 Ha	20.25 43.20 135.00	For support of livelihood activities such as Two-three wheeler workshop, Carpentry, Steel and aluminum fabrication, Petty trade, Restaurant & Tea stall, Weaving Tailoring, Computer Desktop publishing Etc.
		Submission-2 Eco-system restoration and increase in forest cover	Rehabilitation of shifting cultivation areas. (1100 plants/Ha)	50Ha	40.50	
		Submission-3 Enhancing tree cover in urban and peri urban areas including institutional lands	Plantation in urban and peri urban (2500 plants/Ha)	60 Ha	162.00	
		Submission-4 Agro forestry &Social Forestry (increasing Biomass and creating carbon sink)	a)Farmer's land including current fallows b)Highways/ rural roads/canals/tank bunks	135 Ha 80 Ha	72.90 151.20	

		Submission-5 Promoting alternative fuels	Biogas, Solar device, LPG etc.	317 families	10.461	

4.6 Treatment area under the landscape unit :

Table: 22A

Sl. No.	Sub-mission	Category	Proposed area	Proposed cost(Rs in lakhs)	Livelihood activities	Proposed cost(Rs in lakhs
1	2	3	4	5	6	7
1	Enhancing quality of forest cover and improving eco-system services	(a). Moderately dense forest cover, but showing degradation (ANR) (b)Eco-restoration of degraded open forest Type A, (c) type C	250Ha	198.45	17 % of submission cost	106.2585
Sub Total			**250 Ha**	**198.45**		
2	Eco-system restoration and increase in forest cover	Rehabilitation of shifting cultivation	50Ha	40.50		
Sub total			**50Ha**	**40.50**		
3	Enhancing tree cover in urban and peri urban areas including institutional lands	Plantation on urban and peri urban areas (2500 plants/ Ha)	60 Ha	162.00		
Sub total			**60 Ha**	**162.00**		
4	Agro forestry & Social Forestry (increasing	a)Farmer's land including current fallows	135 Ha	72.90		

	Biomass and creating carbon sink)	b)Highways/rural roads/canals/tank bunks	80 Ha	151.20		
Sub total			**180 Ha**	**224.10**		
5	Promoting alternate energy sources	Biogas, Solar device, LPG etc	317families	10.461		
Sub total			**317families**	**10.461**		
TOTAL				**635.511**		

4.7 Whether Map showing details of the area proposed village-wise and submission-wise enclosed

-Attached at Annexure-

4.8 Whether the geo-references of the treatment locations enclosed in the prescribed format

4.9 Details of support activities proposed in the landscape including proposed cost and village-wise details wherever applicable

Under GIM,the livelihood support given to locals will be Technical and financial support to 2 units of forest based cottage industries. The proposed cost for this activity will be Rs 20.00lakhs.

Chapter 5

Activities proposed under convergence

5.1 Activities proposed under convergence:

Table: 23

Sl. No	Village	Scheme	Implem-enting Agency	Area (Natural Resource Development Activities)/ other activities	
				Works	Proposed funding

					(in lakhs)
1	New Serchhip	MGNREGS	1) VEC 2)PD, 3)BDO, Serchhip	Providing 100 days employment to every willing household	1124.1
		AEF Serchhip	Horti Deptt. Serchhip	Cultivation of Dragon Fruits	3.36
		RKVY	Agri Deptt. Serchhip	1.Distribution of Tractor to Farming society 2. Constn. Of water harvesting Structures 3.Land development WRC	10.00 2.70 8.00
		ISDP	DSO Serchhip	1) Construction of rearing house 2)Construction of mounting hall 3) Water conservation for rain water harvesting	11.85 3.60 1.20

5.2Activities proposed for overall improvement of the landscape to be taken up through convergence;

(details regarding each scheme of the forest/non-forest departments proposed and the village-wise activities along-with expected outcomes and funding during the project to be given)

Chapter 6

Institutional Set-up for implementation in the landscape

6.1 GIM Committee:

Various committees have been constituted by the State government vide Notification dated 11th Nov 2014 for effective implementation of GIM in the State of Mizoram. A copy of notification is attached at Annexure------

The names of these committees are as under:-

1) State Forest Development Agency for "Green India Mission"/State Mission Directorate
2) State Level Steering Committee for Green India Mission
3) GIM Cell under Environment & Forest Department/Nodal Agency
4) Revamped FDA for Green India Mission
5) District Level Steering Committee
6) Village Level GIM Committee
7) Revamped VFDC for Green India Mission.

6.2 Activities proposed for overall improvement of the landscape to be taken up through convergence (details regarding each scheme of the forest/non-forest departments proposed and the village-wise activities along-with expected outcomes and funding during the project to be given)

Chapter: 7

Livelihood Issues

7.1 Brief note on the forest dependency and livelihood issues village-wise

7.1.1 Availability and Requirement of Fuel wood.

Most of the households use fuel-wood as supply of LPG cylinders is much limited in the rural areas. The requirement and availability of fuel-wood is indicated below:-

Table: 23

Sl . No.	Village	No. of households	Average fuel wood requirement per household (cum.)	Annual Fuel wood requirement (cum.)	Fuel wood availability (Annual Yield) (cum.)	Remarks
1	New Serchhip	822	2.7	2219.4	1631.8	

7.1.2 Availability and Requirement of Fodder

Very few households practice cattle rearing for livelihood support. Therefore, demand for fodder is comparatively low.

7.1.3 Availability and requirement of Timber

Demand for timber used in house construction and furniture has been worked out and is indicated below:-

Table: 24

Sl . No .	Village	No. of house-holds	Average timber requirement per household (cum.)	Annual timber requirement (cum.)	Timber availability (cum.)	Remarks
1	New Serchhip	822	1.5	1233	800	

7.1.4 Availability and Requirement of NTFP(s).

Bamboo, cane, thatch, honey etc. are some of the important NTFP (s) which are extracted by the villagers from the forests. The demand as well as the availability for various NTFPS has been indicated below:-

New Serchhip Village:

Table: 25

Bamboo (nos.)		Fuel wood (cum)		Broom (Qtls.)		Thatching grass (Bundles)	
Demand	Supply availability	Demand	Supply Availability	Demand	Supply availability	Demand	Supply Availability

50,000	10,00,000	2219.40	1600	258.57	1346	4621	34326

Chapter 8

Baseline Survey

8.1 Baseline survey

The baseline data for various parameters required for maintaining the outcomes of activities undertaken under GIM are given below:-

New Serchhip village:

Table: 26

Parameters	Indicator	Baseline Status (As on 15.6.2014)
1. Forest/tree cover on forest / non-forest lands in the Mission Target Area (MTA)	a) % of area with forest cover	62.90% (Total forest cover 4.68 sq. km. out of 7.44 sq. km.)
	b) % area in various forest density classes	1) Very Dense = 0.0% 2) Moderately Dense= 15.59% (1.16 sq. kms.) 3) Open Forest = 70.29 % (5.23 sq. km.) 4) Non Forest = 14.11 % (1.05 sq. km) Source: GIS cell E&F Deptt.Govt of Mizoram
3. Ecosystem services from targeted areas / landscapes	a) Shannon-Weiner Diversity Index	**2.603**
	b) Biomass	Above Ground Biomass = **37274.787 Tonnes** Source: Field Survey data
Soil	a) Depth of top soil	The depth of top soil is very deep in valley flatlands whereas in the hills it is deep to very deep.

	b) Soil quality	Three soil orders such as ultisols, inceptisols and entisols are found in the project area. The surface soil textures are loam to clay loam with clay content increasing with depth in the hills whereas in the valleys it is mostly sandy loam to sandy clay loams. The soils are acidic in nature with pH values ranging from 4.5 to 6.3. The soils in the hills are strongly acidic in reaction, whereas, the soils in alluvial deposits are less acidic in nature. The percentage of organic carbon content is medium (0.70%). The available nitrogen is medium (0.6 kg/ha) while available phosphorus is found low (12 kg/ha). The available potash is found to be high (285 kg/ha).	
4. Hydrology	a) Wetland area b) Stream beds/water discharge c) Ground water, Table- water level in wells/ springs	a) No wetlands in the Area b) No data on stream water discharge c) The area is hilly with variable elevation. Therefore, the ground water level varies. In the village settlement area, the depth of water in well is about 40 ft.	
5. Annual sequestration of Co_2	Carbon sequestered in the target area.	Baseline Carbon Stock = **78,564.411 Tones**	
6. Forest / non-forest based livelihoods income	No. of targeted households (HH) reporting at least 25% increase in real income	Income(Rs. Annual)	No of Households
		More than 5Lakh	40
		5 lakh> -- <50,000	462
		Less than 50,000	320
7. Quality of forest cover & ecosystem services of forest /	a) % of forest area naturally regenerating.	55% Source: GIS Cell, E&F Dept, Mozoram	

non-forests		
a) Moderately dense forests	b) Biomass	**37274.787 Tones** (AGB)
b) Open forests		
c) Degraded grasslands		No Degraded Grasslands
d) Wetlands		No wetland area
2. Ecosystems are restored and forest cover is increased in Scrub, shifting cultivation areas etc.	a) % of area that is adequately stocked /productivity	
3. Forest and Tree cover in urban/ peri-urban land	a) % of forest and tree cover in the targeted urban/peri-urban areas	There is about 8.065 % of urban and peri-urban areas in the mission target areas.
4. Forest and tree cover on marginal agricultural lands / fallows and other non- forest land under agro forestry/ social forestry	a) % of tree cover on non-forest land.	18.6 % (1.26 sq. kms. out of 7.44 sq. kms.) Source: GIS Cell, E&F Dept Mizoram
5. Public forest/ non-forests areas (taken up under the Mission) are managed by the community institutions.	a) % of area under management of community institutions	0.94 % (0.07 Sq Km out of 7.44 Sq Km) Legally under the Village Council Source: GIS Cell E&F Dept, Mizoram
6. Improved fuel wood-use efficiency and alternative energy devices adopted by households in the MTA.	a) % of HH reporting use of alternative energy devices.	Total Households = 891 LPG users = 779 Fuel-wood users = 700 Fuel-wood only users =112 Solar Devices users = 0
7. Forest/non forest based livelihoods of the people living in and around the	a) % of HH reporting diversification of income sources.	Source of income: Govt Service — No of Households: 229

forests are diversified.		Jhumming	15
		Horticulture including WRC	223
		Business/Petty Trade	22
		Daily Labourers	311
		Others	91

Chapter 9

Status of reforms proposed

9.1 Role of Gram Sabha (Village Council) in project planning, implementation and monitoring.

Village level GIM committee has been constituted by the State Government vide notification No. B.11016/16/2011-FST dated 11th Nov, 2014 for the following activities:-

1. To render support in the preparation of Perspective Plan.
2. To ensure implementation of planned and approved schemes (approved by the State Level Steering Committee and MoEF & CC) with expected level of quality.
3. To promote active people's participation in the implementation of "Green India Mission' and
4. To provide feedbacks timely to concerned authorities for further improvement in programme implementation.

Further, VFDC would play key role in project planning, monitoring and implementation under GIM. Both the VFDC and the village level GIM Committee would work closely in co-ordination with Gram Sabha (Village Council).

9.2 Revamping of FDAs and SFDAs

SFDAs and FDA's (General Body as well as Executive Committee have been revamped for formulating suitable plans and executing well-planned projects with people's participation under GIM in Mizoram. The SFDA (General body) will provide overall guidance for effective implementation of 'Green India Mission' in the State. It will also oversee implementation of the broad policy framework in achieving Mission goals and objectives. The Executive Committee of revamped SFDA has been entrusted with the following functions:-

1. Approval of Perspective Plan as well as Annual Plan of Operations;
2. Preparation of annual reports on GIM implementation in the State;
3. Programmatic convergence at the landscape level.

The revamped FDA (General body) will deal with policy issues pertaining to cohesion and convergence of different programmes at the Panchayat/Village Council level for better outcomes from the mission. The Executive Committee of revamped FDA will arrange for preparation of perspective plan/annual plan and convergence of various programmes.

9.3 FRAs compliance in areas covered under L2 and L3s.

Claims for rights in the forests would be settled strictly as per the relevant acts applicable in the State of Mizoram.

9.4 Easing out regulatory framework in felling and transportation of forest produce.

There is a need to simplify the procedure for issuing documents enabling felling and transportation of forest produce. The MoEF & CC has recently taken initiative for simplifying rules and procedures for issue of permits and transit passes in respect of trees grown on non-forest private lands. The State of Mizoram would work in this direction in a proper way to motivate tree planters on non-forest private lands and also to protect the valuable forest wealth existing in the State.

9.5 Strengthening frontline formation of E&F department.

Necessary actions would be taken for 'Capacity Building' of frontline forest staff engaged in implementation of GIM in the State. Suitable training as well as required facilities would be provided to them for executing the planned works efficiently. It is expected that well-trained forest staff with people's participation would be able to deliver the desired outputs/outcomes under GIM.

Chapter – 10

Mission Cost

10.1 Cost of the Mission

Year-wise cost of the mission for various work items has been given in the table place din Annexure

10.2 Mission sustainability

The mission will be executed with active participation of the local people. On completion of the project, crop productivity of the existing forest will increase substantially. Sustainable extraction of forest produce, value addition to forest produce as well as marketing of value added products will provide livelihood support to the people while maintaining ecological stability in the region. Thus the mission is economically viable and socially adoptable**.**

Abstract

Table : 27

1. Name of L1 landscape	The State of Mizoram	
2. Name of L2 landscape	Thenzawl-Serchhip	
3. Forest and non-forest area in L2	Forest area 7.44sq km. Non-forest area – 1.05 sq km	
4. Drivers of degradation in the landscape	*Traditional practice of shifting cultivation, Lack of strategic and participatory land-use planning, excessive population pressure on the forests for fuel-wood, fodder, timber etc., inadequate scientific management of watersheds including rainwater harvesting.*	
5. Results of problem analysis		
6. Existing scheme implemented in the landscape	*NAP,NBM,MGREGS,RKVY,IAY etc.*	
7. Implementing agencies under GIM	*Revamped FDA, Thenzawl*	
8. GIM activities	Proposed funding (Rs in lakhs)	First installment of CSS and SMS
(a) Submission/Category		
A. Submission/Category *1. Enhancing quality of forest cover and improving ecosystem services (a)Moderately dense Forest cover but showing degradation b)Eco-restoration of degraded open forest type A c) Type C*	*198.45*	*11.34 CSS +0.54 SMS*
2. Agro forestry and social-forestry increasing biomass and creating carbon sink. *(a)Famers lands including current fallows.*	*72.90*	*5.103CSS+0.57375SMS*

(b)highway/rural road/canal/tank bunds	*151.20*	*9.936 CSS+0.2336SMS*
***3.** Enhancing tree cover in urban & peri- urban areas (including institutional lands)Plantation in Govt. offices/residential complex* *4.Eco-system restoration and increase in forest cover* *(a) Rehabilitation of shifting cultivation.*	*162.00* *40.50*	*6.966CSS+2.025SMS* *2.295CSS+0.27MS*
Sub total of A	***625.05***	***35.64+3.6952***
B. Other support activities: *1. Research and Development 2 % of A*	*12.501*	
2. Publicity /media outreach activities 1% of A	*6.2505*	
3. Monitoring and Evaluation 1 % of A	*6.2505*	
4. Strengthening local level institutions 5% of A	*31.2525*	*0 .05285*
5. Strengthening FDs'5 % of A	*31.2525*	
6. Mission organization, operational & maintenance organization 4 % of A	*25.002*	
Sub total of B	***112.509***	***0.05285***
C. Livelihood activities: *Support to cottage Industries*	*106.2585*	
Sub-total C	***106.2585***	***Nil***
D. Promoting altenative Fuels: *Boigas, Solar device, LPG etc.*	*10.461*	
Sub-total D	***10.461***	
Total of (A+B+C+D)	**854.28**	**39.388**

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Annexture

Shanon weiner's Variable Diversity Index Calculation for L- 3 New Serchhip.

Sl No	Name of Species	Ni	Pi	Lnpi	-(Pi x LnPi)
1	**2**	**3**	**4**	**5**	**6**
1	Bischofia javonica	2	0.071	-4.075	0.289
2	Artocarpas locucha	1	0.036	-3.324	0.120
3	Gmelina arborea	1	0.036	-3.324	0.120
4	Cordia fragrantissima	2	0.071	-4.075	0.289
5	Erythrina sticta	1	0.036	-3.324	0.120
6	Artocarpas chama	1	0.036	-3.324	0.120
7	Figus religiosa	1	0.036	-3.324	0.120
8	Engelhartdia spicata	2	0.071	-4.075	0.289
9	Vitex [peduncularis	1	0.036	-3.324	0.120
10	Albizzia chinensis	2	0.071	-4.075	0.289
11	Lithocarpa dealbata	3	0.107	-2.235	0.239
12	Schima wallichii	10	0.357	-1.03	0.369
13	Bianghrei (Mizo Name)	1	0.017	-3.324	0.120
	Total	**28**			**H=2.603**

Shanon Weiner's Variable Diversity Index for L-3 New Serchhip = 2.603.

Calculation for Carbon stock in L- New Serchhip.

Sl No	Plot No	Name of Species	No of trees	Volume	Remarks
1	2	3	4	5	6
1	12	Nil	Nil	Nil	Bamboo forest
2	6	Cordiafragrantissima	2	0.782	Private land
		Bischofiajavonica	2	0.978	
		Artocarpas chama	1	0.423	
		Gmelina arborea	1	0.554	
		Erythrina sticta	1	0.285	
		Artocarpas locha	1	0.478	
3	51	Figus religiosa	1	1.038	Abandon jhumland
		Engelhartdia spicata	2	0.305	
		Vitex peduncularias	1	1.235	
		Albizzia chinensis	2	0.635	
		Lithocarpa delbata	3	0.294	
		schimawalliachii	10	1.99	
		Bianghrei(Mizo name)	1	0.091	
		TOTAL	**28**	**9.088**	

GS = 9.088 x 2.41 m3 = **21.902 m^3**. GS / Ha = 21.902 x 10 /3 = **73.007 T / Ha**

C_{AGB} = (GS_{AGB} x BCEF x CF) T / Ha (IPCC 2006)

= (73.007 x 1.7 x 0.47) T / Ha, **= 58.333 T / Ha.**

GS_{BGB} = (0.24 x GS_{AGB}) = (0.24 x 73.007) m^3 = **17.522 m^3/Ha**

C_{BGB} = (GS_{BGB} x CF) T / Ha, = (17.522 x 0.24) T/Ha = **4.205 T/Ha**

C_{DWB} = (C_{AGB} + C_{BGB}) 0.11 T /Ha, = (58.333 +4.205) 0.11T/Ha = **6.879 T /Ha**

C_L = **3.271 T/ Ha**

C_S = **57.14 T / Ha**

CT = (CAGB + CBGB + C_{DWB} + C_L + C_S) T / Ha

= (58.333+4.205+ 3.271 + 57.14) T / Ha = 122.949 T / Ha

Total carbon stock for L-3 New Serchhip 122.949 x 639 = 78,564.411 Tonnes

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