GREEN INDIA MISSION (GIM), CHAMPHAI FOREST DIVISION

MICRO PLAN

For

KHAWZAWL FOREST RANGE

{L2 Landscape}

For implementation of

GREEN INDIA MISSION

For the period

2016 – 2017 to 2022 – 2023

LANDSCAPE (L1)	-	MIZORAM.
SUB-LANDSCAPE (L2)	-	Khawzawl Range
WORKING UNITS (L3)	-	(1) Arro Ram
		(2) Hermon Ram
		(3) Hmuncheng Ram
		(4) Vankal Ram

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Hermon : Khawzawl Range
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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 headquarter. 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.

1.1.2 Location, Extent and Topography

Mizoram, which is one of the Seven Sister States in the North-Eastern India, is located between 21^{o}56` and 24$^{o}$35` N Latitude and 92^{o}16` and 93$^{o}$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.

1.1.3 Climate

The whole of Mizoram enjoys a pleasant climate with cool summer and moderate winter. The temperature varies from 11^{o}C to 21^{o}C during winter and 18^{o}C to 29^{o}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.

1.1.4 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).

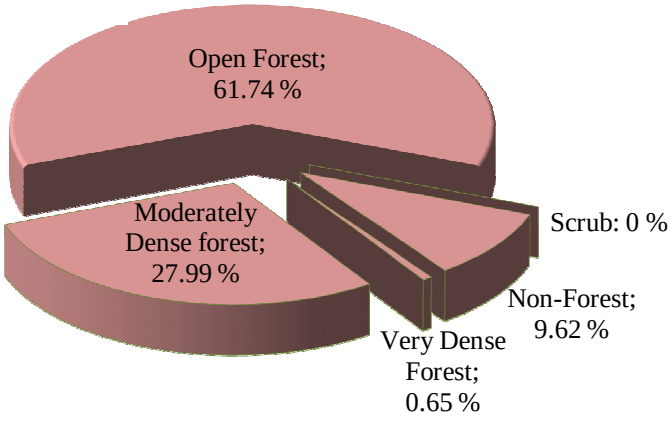
Agriculture is the dominant source of income and employment for the people in Mizoram. As per 2001 census, 61 percent of the working population in the State was dependent on agriculture. In rural areas, most of the people are engaged in "Jhumming" (shifting cultivation). 89,454 households, 57.85 percent 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

1.2.2 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 *Dipterocarpusturbinatus, D. tuberculatus, Terminaliachebula, Emblicaspp, Careyaarborea etc.*
- **Secondary Moist Bamboo Brakes (2/2S1):** Dominant species of bamboo like *Melocannabambusoides, Dendrocalamushamiltonii etc.* are present.

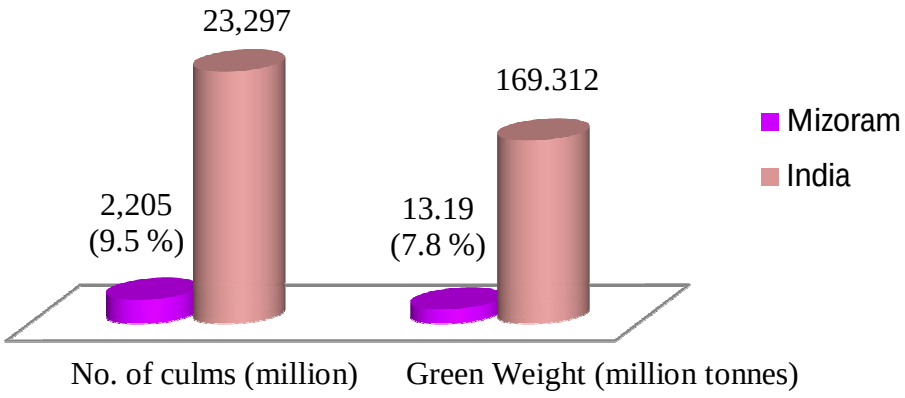
- **Pioneer Euphorbiaceous Scrub (2B/2S1):** It is generally found in degraded forests and exposed lands present on higher slopes and on top of the hills. It has quick growing species like *Macaranga* spp., *Mallotus* spp. etc. This type is found in all districts except Champhai.
- **East Himalayan Moist 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, Castanopsisspp, Litsea spp. Machilusspp* etc. This forest type is found in Champhai District.
- **Assam Subtropical Pine Forest (9/C2):** It is mostly dominated by the species *Pinus kesiya* with other associates like *Quercus*spp, *Schimawallichii, Rhododendron*spp etc. This forest type is found mainly in Champhai district of the State.

1.2.3 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.

1.2.4 Areas under Notified Forests in the State

The notified forests include (1) Riverine Reserve Forests (1832.50 sq.kms), (2) Innerline 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 (8266.08 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 1728.75 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, Fufous Patridge, Brushed Patridge, 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

Sl. No.	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 ecosystem 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	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.
	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
	c) Waste-lands	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 vulnerabi-lity to climate change	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 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.	As indicated above in column 1.
		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.Vulnerable Population/ Communities	a) ST/SC Total population, ratio	The majority of the population in the State - over 95% - belongs to STs.	2011 Census data, Govt. of India.
	b) Scheduled areas		

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

	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, Champhai, 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, Champhai 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, Champhai, 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, Khawzawl Range is one of the two operational units of selected L2 under Champhai Division. The Landscape consist of open and degraded forests, both Government & privately owned. There are many current and abandoned jhumlands. There are 4 villages having separate Village Council as well as separate jurisdiction within this landscape. Further, it formed the catchment area of Tuichang and Tuipui rivers, these two major rivers have many tributaries which are the major source of water for drinking as well as for irrigation to Agriculture/Horticulture field of the people living inside and outside of this landscape Khawzawl Range. Treatment under Green India Mission would ensure continuous and interrupted supply of water for the villagers not only living in the 4 villages within the landscape but also some villages nearby the Landscape Khawzawl Range. As such, Khawzawl Range was selected as L2 Landscape for treatment under GIM.

2.5 Importance of L2 Landscape (Khawzawl Range)

The identified landscape lies in the catchment area of Tuichang and Tuipui river which have many tributaries, the source of water for the villages including Khawzawl Town. Treatment of this landscape under GIM would ensure regular water supply to inhabitants of four villages and Khawzawl Town. Hence, treatment under Green India Mission is the key to keep the regular water supply to the people and to check degradation of the forest within this landscape.

2.6 Criteria for selection of L3 landscape

All villages under this Landscape namely Vankal, Arro, Hmuncheng and Hermon having interests in GIM L2 have been taken as working unit i.e. L3.

2.7 Importance of L3 landscape (Hermon Ram)

The area under Village Council of Hermon is one of the four L3 landscapes (working units) identified for coverage in L2 landscape 'Hermon Ram'. The Hermon village was established around the year 1982. It has the population of 1638 with 325 households (120 households under BPL category). The villagers are well educated, literacy rate being 93.44%.

The total geographical area of this L3 landscape is 16.63 Sq. Km. Several rivers/streams flowing through this L3 such as Khuai lui, Phaisen, Tuimuk lui, Haidai lui, Sakei kaw lui, Changel lui, Damdiai lui, Hmawng mual lui.etc. These are the natural sources of water for Hermon and nearby villages. 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 and prodigal used of forest resources due to inadequate knowledge of the importance of forests. As a result, presently, most of the areas are either deforested or forests having less/moderate canopy density i.e. approximately 13.97 %. It is expected that execution of well-planned strategies under GIM may result into ecological stability in the region.

2.8 Extent of L1 landscape

Name of the L1 landscape : The entire State of Mizoram (map enclosed as annexure 'E')
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 : Khawzawl Range
Location of the L2 Landscape : State : Mizoram
District : Champhai
Division : Champhai

Geo references of the L2 Landscape:

23°38'46.07"N & 93°08'01.58"E (Vankal ram)
23°25'33.68"N&93°05'07.72" E (Hmuncheng ram)
23°28'31.79"N & 93°13'7.94"E (Hermon ram)
23°31'29.22"N & 93°09'43.89" E(Arro ram

Area of the landscape:

Open forests	:	60.82 sq. km.
Moderately dense	:	47.34 sq. km.
Very Dense forests	:	11.06 sq. km.
Scrub lands	:	-
WRC	:	8.78 sq. km
Horticulture	:	9.50 sq. km
Other areas	:	42.2 sq. km.
Total area	**:**	**221.68 sq. km.**

2.10 Extent and other features of L3 landscape (Hermon ram)

Table 4

Location	The L3 Landscape (Hermon) is a Village in Khawzawl Block in Champhai District of Mizoram State, India. It is located 45 Km. towards west from District headquarters Champhai. 166 Km. from State capital Aizawl. Hermon is surrounded by Champhai Block towards East , East Lungdar Block towards South , Khawbung Block towards South , Serchhip Block towards west
GPS coordinates:	N $23^0$29'41.23'' & E$93^0$11'04.62'' , N $23^0$29'15.21'' & E $93^0$13'19.25'' N $23^0$27'50.23'' & E $93^0$10'26.29'', N $23^0$28'08.23'' & E $93^0$12'55.31''
Area	16.63 sq. kms.
Forest cover	Moderately dense forests - 5.37 sq. kms. Open forests – 8.17 sq. kms. Non-forests - 3.09 sq. kms.
Forest type	Eastern submontane semi-evergreen (2B/C_{1b}) mixed with bamboo breaks. Important species found in the locality are - *Lithocarpus* spp., *Castanopsis* spp., *Schima wallichii, Toona ciliata, Duabanga grandiflora, Phoebe* spp., *Michelia, Tetrameles nudiflora, Gmelia, etc.* Dominant bamboo species are - *Dendrocalamus hamiltonii, Bambusa tulda, 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 4.3 to 6.1. 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 (0.71 %).
Topography	Most of the land is undulating with moderate slope i.e. 20^{o} to 40^{o}, whereas some parts of the land are comparatively flat with an altitude of 500-1200 mts. above MSL.

2.11 Profile of L3 Landscape (Hermon)

2.11.1 Population and Workers Population

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

Table 5A

No. of Households	Population		Children below 6yrs	Total
	Adult Male	Adult Female		
325	722	666	250	1638

The average family size is 5 to 6 persons per household.

Workers Population is as under:-

Table 5B

Total Workers	Regular/Main Workers	Irregular/Marginal Workers	Non Workers
Workers: 1039 Male: 685 Female: 354	Regular Workers: 380 Male : 219 Female: 161	Irregular Workers: 659 Male: 466 Female: 193	NonWorkers: 599 Male: 231 Female: 368

Source: Census data, 2011

2.11.2 Social structure

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

Table 6

General	Scheduled Caste	Scheduled Tribe	OBC	Total
-	7	1631	-	1638

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	16(approx)
2	Middle class (Families whose annual income is less than Rs 5,00,000.00 but above BPL)	189 (approx)
3	Poor (Families who are listed as BPL by the Govt.)	120 (approx)

Source : Actual field verification

2.11.4 Energy Consumption

Table 8

1	No. of Household	325
2	LPG users	35
3	LPG & Fuel wood users	170
4	Fuel wood only user	120
5	Solar devices user	-

Source : Actual field verification

2.11.5 No. of Educational institutions

Table 9

Anganwadi	Primary school	Middle school	High school	HSS	Colleges	Others
3	1	1	1	-	-	-

Source : Actual Field verification

2.11.6 Enrolment (as on 15th Aug 2014)

Table 10

Anganwadi	Primary school	Middle school	High school	HSS	Colleges	Others
84	103	134	74	29	16	-

Source : Actual Field verification

2.11.7 Literacy percentage

Male – 93.65%, Female – 93.22 %, Overall – 93.44 %
Soure: Census data, 2011

2.11.8 Occupation

Table 11

Sl. No.	Category of Occupation	No. of families
1	Govt. service	35
2	Jhumming (Shifting cultivation)	138
3	Horticulture including WRC	21
4	Business/Petty trade	13
5	Daily labourers	118
6	Others	-

Source : Actual Field verification

2.11.9 Livestock population

Table 12

Cattle	Goat	Sheep	Pig	Poultry	Other(buffalo)
17	2	-	178	286	-

Source: Actual Field verification

2.11.10 Agriculture practices

Table 13

Category	Current Jhumming	Abandoned Jhumming	WRC
Area (ha.)	338Ha.	166 Ha.	-

Source: Existing Land Use Map

2.11.11 Cropping Pattern

Table 14

Sl. No.	Crop	Time of sowing	Time of harvest	% of agri. area covered
1	Rice	April-May	Sept- Nov	120 (7.22%)
2	Orange	May-June	Oct-Dec	12 (0.72%)
3	Banana	April-March	Jan-Dec	15 (0.9%)
4	Arecanut	May-June	March-April	
5	Maize	March	July	2 (0.12%)
6	Ginger	April- June	Oct-March	170 (10.22%)
7	Pumpkin	March	June	3 (0.18%)
8	Calocasia (Bal)	April	Nov-Dec	5 (0.30%)
9	Local pea (Behlawi)	March	Sept-Nov	3 (0.18%)
10	Soya bean	June-July	Nov-Dec	2 (0.12%)
11	Oil Palm	April-June	Aug-Dec	6 (0.36%)

2.11.12 Water Resource

There are three main sources of water for the people living in Hermon 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, while house-to- house connection has been provided for some families. Rain water harvesting is being done by limited well-to-do families only.

2.11.13 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.

2.11.14 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 15

Average annual demand/household	No. of households	Total annual demand of the village
1.5 cum	325	487.5 cum

The supply as per the carrying capacity of existing forest in L3(Hermon) is expected as under:-

A - Total forest area : 1663 Ha.
B - GS/Ha : 87.80629 cum
C - Total GS : 146021.86027 cum
D - Annual Yield : 2727.32 cum
E - Fuelwood availability assuming 30% of Annual Yield as fuel wood: 818.19 cum

2.11.15 Existing infrastructure

Anganwadi Centre (3 nos.), Primary School (2 nos.), Middle School (1 no.), High School (1 no.), Community Hall (1 nos.), Mini-Market (1 nos.), Playground (1 nos.)

Local Institutions/Organizations: - Village Council, YMA (1 branch), MUP (1 unit), MHIP (2 branch) and Games & Sports Association

2.11.16 Problems and Priority

Through PRA exercise, problems being faced by the villagers could be ascertained. These are inadequate supply of water, in-sufficient supply of LPG cylinders and lack of proper medical facility, abnormal construction of link road to agricultural fields, incomplete network of internal roads within the village.

2.12 Demographic statistics of L2 Landscape:

Table 16

Sl. No.	Village	Population			Poverty (BPL families)	Forest dependency	Drivers of degradation	JFMCs/other institutions of Gram Sabha
		Total	SC	ST				
1	Hermon	1638	7	1631	120	Shifting cultivation, fuel-wood, timber for construction of houses, furniture etc.	Dealt in para. 2.15	Village Forest Development Committee (VFDC) is active in the village.

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 17

Sl. No.	Name of Scheme	Implementing Agency	Forestry and Wildlife activities	Other components like SMC	Details of livelihood component	Villages 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	Hermon

2	NAP (National Afforestation Programme)	FDA Champhai/ 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 Champhai/ concerned VFDC	Plantation of bamboo spp., Training to farmers to increase crop productivity		Livelihood support is expected from extraction of bamboo &marketing of value added products	
4	MGNREGS	DRDA, Champhai District	Roadside plantation	Terracing Check dam, Retaining wall, contour trenching, Public water point, Rain water harvesting structures	Provision of 100 days employment for every willing household	
5	IWMP (Integrated Watershed Manage-ment Pr0gram-me)	D.O,S & WC Khawzawl	Afforestation including plantation, reservation of community forest area, and prevention of fire etc.	Terracing, contour trenches, Farm ponds, water harvesting structures, Check Dam and Horticulture Development etc.	Provision of Financial and Material Support to selected beneficiaries and Self Help Groups of activities like Piggery, Goat Rearing, Poultry, Farming, Handloom, Tailoring, Hair Cutting, Petty Trade etc.	
6	IAY (Indira Gandhi Awaas Yojona)	DRDA, Champhai District	Nil	Nil	Construction of houses for the poor	

2.14 Gaps/Strategies identified under GIM:

Table 18

Sl. No.	Village	Forestry activities proposed	Other activities like SMC	Livelihood activities proposed	Any others
1	Hermon	1) Moderately dense forest cover, but showing degradation 2) Eco-restoration of degraded open forest (Type A) 3) Eco-restoration of degraded open forest (Type B) 4) Eco-restoration of degraded open forest (Type C) 5) Rehabilitation of shifting cultivation areas 6) Farmer's land including current fallows 7) Highways/Rural Roads/Canal/Tank bunds	Interventions in catchment areas of hydrological importance	(1) Community livelihood enhancement by Financial support to forest based cottage Industries and Handloom & Handicraft industries. (2) Support to SGHs (3) Construction of modern toilet (septic tank) (4) Provision of Household water storage tank	Promoting alternate energy sources

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

Table 19

Sl. No.	Village	Drivers of degradation
1	Hermon	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. Prodigal used of Forest resource due to inadequate knowledge of the importance of forest not only for themselves but also for future generation.

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 Hermon 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 Hermon Landscape (L3). The constitution of the group is as under:-

Chairman : K. Lalrema, Range Forest Officer, Khawzawl Range

Secretary : K. Lalrema,

Members : 1) Dengthanga (President, Village Council)
2) Laldikzuala (Vice President, Village Council)
3) Zoramthanga (Young Mizo Association)
4) Malsawmtluanga (VFDC)
5) Lalremruata (VFDC)
6) Lalramngaii (MHIP)
7) K. Laltanpuia (AEO, Agriculture Department)
8) Lalchhanhima (HD, Horticulture Department)
9) Kawlthuama (SCO, Soil Department)
10) HD Thandanga (SEO, Sericulture Department)
11) Dr. Thanseia (AH, Vety Department)
12) TBC Lalthangzuala (VLAA, RD Department)

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 20

Sl. No	Workshop/ meetings State Level/ Landscape / Villages covered	Category (stakeholders and no. of participants)	Major outcomes	Details of facilitators engaged	Whether resolu-tions/ photogra phs enclosed
1	State/L1 level(State Mission Directorate)	Representative of all line departments, reputed academic and technical institutions No. of attendants - 33	Suggestions were mainly given for strengthening institutions responsible for GIM implementation in the State	Principal Secretary, Environment and Forest Dept. Govt. of Mizoram	
2	District/L2 level	Representatives of VFDCs, VCs, and NGOs such as YMAs, MHIPs & MUP. Total No. of participants:-65	More trainings are to be given at all levels.GIM guidelines in local dialect be distributed to locals/trainees.	1) Pu CC Lalchuangkima, Project Director, District Rural Development Agency, Champhai District Phone/Fax:03831-234940/03831-234104 E-mail: chhuangkima@yahoo.co.in 2)Pu Lalthanzuala, District Agriculture Officer, Champhai District	
3	Village/L3 level at Hermon	Representatives of VFDCs, VCs, and NGOs such as YMAs, MHIPs & MUP attended. Total no. of participants -32.	GIM guidelines in local dialect are distributed. Rural outreach activity for data collection be done at the earliest	1) Pu CC Lalchuangkima, Project Director, District Rural Development Agency, Champhai District Phone/Fax:03831-234940/03831-234104 E-mail: chhuangkima@yahoo.co.in 2)Pu Lalthanzuala, District Agriculture Officer, Champhai District	

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

Table 21

Sl. No	Village	Institution who prepared Micro-Plan JFMC/Others	Details of participation of all stakeholders/departments	Approval of Gram Sabha	Details of facilitators engaged
1	Hermon	Champhai FDA & Micro-plan Working Group as in para. 3.1	Representatives of Govt. departments, Conservation oriented NGOs, VFDCs, VCs, and local public.	Approved by Village Council, Hermon. Approval letter enclosed at Annexure- C.	1) Pu CC Lalchuangkima, Project Director, District Rural Development Agency, Champhai District Phone/Fax:03831-234940/03831-234104 E-mail: chuangkima@yahoo.co.in 2)Pu Lalthanzuala, District Agriculture Officer, Champhai District

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

-

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 (L3)

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:-

Hermon village:

Table 22 A

Sl. No	Land Use category	Area (Sq. kms.)	% of total area	Remarks
1	Abandoned Jhum Area	1.66	9.98 %	
2	Current Jhum Land	3.38	20.32 %	
3	Private land	4.57	27.48 %	
4	a) Private land(Open forest)	1.65	9.92 %	
	b) Private land(Moderately Dense forest)	2.06	12.38 %	
5	VC Land	5.07	30.48 %	
	a) VC Land (Open Forest)	2.85	17.14 %	
	b) VC Land (Moderately Dense Forest)	1.43	8.59 %	
6	Non-Forest	3.09	18.58 %	
	TOTAL	**16.63**		

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:

Hermon village:

Table 22 B

Sl. No.	Proposed land-use	Area (sq. km.)	% of total area	Remarks
1	Agriculture Land	3.38	20.32 %	
2	WRC	1.92	11.55 %	
3	Shifting Cultivation Rehabilitation	1.66	9.98 %	
4	Agro Forestry	4.57	27.48 %	
5	Social Forestry	2.25	13.53 %	
6	Community Reserved	1.44	8.66 %	
7	VC Area (Dense Forest)	1.41	8.47 %	
	TOTAL	**16.63**		

4.3 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

4.4 Details of submissions proposed for treatment (Action plan):

Table 23

Sl. No.	Village	Sub-mission	Categories	Proposed area	Proposed cost (Rs. in lakh)	Livelihood activities proposed based on Micro-Plan
1	Hermon	**Sub-Mission 1:** Enhancing quality of forest cover and improving ecosystem services (4.9 m ha.)	a) Moderately dense forest but showing degradation	100 Ha.	40.50	(1) Support to Cottage industries @Rs. 10 lakh/unit (2 units) (2) Support to SGHs @Rs. 6 lakh/unit (4 SGHs) (3) Construction of Modern Toilet @ Rs. 40,000/unit to BPL families (100 families) (4) Provision of HH water storage tank @ Rs. 27391.90/HH (95 HH)
			b) Eco-restoration of degraded open forest (Type A)	120 Ha.	51.84	
			b) Eco-restoration of degraded open forest (Type B)	50 Ha.	40.50	
			b) Eco-restoration of degraded open forest (Type C)	155 Ha.	209.25	
		Sub-Mission 2: Ecosystem restoration and increase in forest cover (1.8 mha)	a) Rehabilitation of shifting cultivation areas	210 Ha.	170.10	
		Sub-Mission 4: Agro-Forestry and social forestry (increasing biomass & carbon sink) : 3 mha	a) Farmer's land including current fallows	145 Ha.	78.30	
			c) Highways/ Rural Roads/ Canal/ Tank Bunds	30 Ha.	56.70	
TOTAL				**810 Ha.**	**647.19**	

4.5 Treatment area under the landscape unit:

Table 24

Sl. No.	Sub-mission	Category	Proposed area	Proposed cost (Rs. in lakh)	Livelihood activities	Proposed cost (Rs. in lakh)
1	**Sub-Mission 1:** Enhancing quality of forest cover and improving ecosystem services (4.9 m ha.)	a)Moderately dense forest but showing degradation	100 Ha.	40.50 @Rs. 40,500/Ha.	Financial support to forest based cottage Industries and Hand-loom & Handicraft industries	2 nos. @Rs. 10.00 lakh /unit
		b) Eco-restoration of degraded open forest (Type A)	120 Ha.	51.84 @Rs. 43,200/Ha.		
		b) Eco-restoration of degraded open forest (Type B)	50 Ha.	40.50 @Rs. 81,000/Ha.		
		b) Eco-restoration of degraded open forest (Type C)	155 Ha.	209.25 @Rs. 1,35,000/Ha.		
Sub Total			**425 Ha.**	**342.09**	**2 units**	**20.00**
2	**Sub-Mission 2:** Ecosystem restoration and increase in forest cover (1.8 mha)	a)Rehabilita-tion of shifting cultivation areas	210 Ha.	170.10 @Rs. 81,000/Ha.	Support to SGH	4 nos. @ Rs. 6 lakh/ SGH
Sub Total			**210 Ha.**	**170.10**	**24 HH**	**24.00**
3	**Sub-Mission 4:**Agro-Forestry and social forestry (increasing biomass & carbon sink) : 3 mha	a) Farmer's land including current fallows	145 Ha.	78.30 @Rs. 54,000/Ha.	Constructio n of modern toilet to BPL families	100 families @Rs. 40,000 per family
		b) Highways/ Rural Roads/ Canal/ Tank Bunds	30 Ha.	56.70 @Rs. 1,89,000/Ha.	Provision of Household (HH) water storage tank	95 HH @Rs. 27391.90 /HH
Sub Total			**175 Ha.**	**135**	**195 HH**	**66.0223**
4	Promoting alternative fuel energy	Biogas, solar devices, LPG, Biomass-based systems, improved stoves	312 families	10.296 @Rs. 3,300/unit		
Sub Total			**312 families**	**10.296**		
TOTAL				**657.486**	**221 HH**	**110.0223**

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

- Attached at Annexure-

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

- N/A

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

(1) Technical and financial support to 2 units of forest based cottage industries. The proposed cost for this activity will be Rs. 20.00 lakh.

(2) Financial support to 4 units of SHGs for revolving fund which may be utilized as a loan by the members and the interest may be distributed in equal amount among the members from time to time. The proposed cost for this activity will be Rs. 24.00 lakh.

(3) Construction of modern toilet (septic tank) to 100 BPL families to improve their livelihood by having a hygienic toilet. The proposed cost for this activity will be Rs. 40.00 lakh.

(4) Construction of household water storage tank for 100 families @ Rs. 27391.90/HH to solve scarcity of water and time consume to carry water from far distance so that working periods will increase. The proposed cost for this activity will be Rs. 26.0223 lakh.

4.9 Details of each cross-cutting intervention proposed under the mission with area details, geo-references, activities etc.

Table 25

Sl. No.	Cross cutting interventions proposed	Activities	Unit	Total Cost (in lakh)	Geo-references
1	Promoting alternative fuel energy	Biogas, solar devices, LPG, Biomass-based systems, improved stoves	312 families	10.296	
Sub-Total			**312 fam.**	**10.296**	
2	Community livelihood enhancement	1) Financial support to micro cottage industries	2 units	20.00	
		2) Support to SHGs	4 units	24.00	
		3) Construction of Modern Toilet to BPL families	100 families	40.00	
		4) Provision of household water tank	95 families	26.0223	
Sub-Total				**110.0223**	
TOTAL				**120.3183**	

4.10 Promotion of alternative fuel energy:

Table 26

Sl. No.	Village	Schemes proposed (Biogas, Solar devices, LPG, improved stores, biomass based systems etc.	No. of beneficiaries in each scheme proposed		Total cost under each scheme (Rs. in lakh)
			No. of family	No. of beneficiary	
1	Hermon	Promoting alternative fuel energy	312 families	312 HH	10.296 @ Rs. 3,300/unit
		Total	312 **fam.**	312 **HH**	**10.296**

Chapter - 5
Activities Proposed Under Convergence

5.1 Activities Proposed Under Convergence:

Table 27

Village/L3 Landscape	Scheme	Implementing Agencies	Area (NRD Activities)		Other Activities	
			Works	Proposed Funding	Activity proposed	Propose funding
Hermon	IWMP	Ministry of Rural Development	-	-	Terracing	GIM and MoA
	IWMP	Ministry of Rural Development	Grape Plantation	GIM and MoA	-	-
	IWMP	Ministry of Rural Development	Jackfruit Plantation	GIM and MoA	-	-
	IWMP	Ministry of Rural Development	WRC	GIM and MoA	-	-
	IWMP	Ministry of Rural Development	-	-	Fish Pond	GIM and MoA

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 No. B. 11016/16/2011-FST dated 11th November, 2014 for effective implementation of GIM in the State of Mizoram. A copy of notification is attached at Annexure – D.

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

6.2 Institutional Set-up for implementation in the landscape:

Table 28

Village	Institutions proposed for implementation	Submission of area			Details of other activities
		Submission	**Category**	**Area**	
Hermon	Revamped VFDC	**Sub-Mission 1:** Enhancing quality of forest cover and improving ecosystem services	a)Moderately dense forest but showing degradation	100 Ha.	Provision of support to small scale cottage industries
			b) Eco-restoration of degraded open forest (Type A)	120 Ha.	
			b) Eco-restoration of degraded open forest (Type B)	50 Ha.	
			b) Eco-restoration of degraded open forest (Type C)	155 Ha.	
		Sub-Mission 2: Ecosystem restoration and increase in forest cover (1.8 mha)	a)Rehabilitation of shifting cultivation areas	210 Ha.	
		Sub-Mission 4: Agro-Forestry and social forestry (increasing biomass & carbon sink) : 3 mha	a) Farmer's land including current fallows	145 Ha.	
			c) Highways/ Rural Roads/ Canal/ Tank Bunds	30 Ha.	
		Total		**810 Ha.**	

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 29

Sl. No.	Village	No. of households	Average fuel wood requirement per household (cum.)	Annual Fuel wood requirement (cum.)	Fuel wood availability (Annual Yield) (cum.)	Remark
1	Hermon	325	1.5	487.5	1504.21	

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 30

Sl . No.	Village	No. of house-holds	Average timber requirement per household (cum.)	Annual timber requirement (cum.)	Timber availability (cum.)	Remarks
1	Hermon	325	0.23	74.75	1011.55	Source: PRA Exercise

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:-

Hermon Village:

Table 31

Bamboo (nos.)		Fuel wood(cum)		Broom(Qtls)		Thatching grass (Bundles)	
Demand	Supply availability	Demand	Supply Availability	Demand	Supply availability	Demand	Supply Availability
12911	460000	487.5	1504.21	1.14	77.90	710	3635

7.2 Details of activities to be carried out to address livelihood issues through Green India Mission including details of activities, beneficiaries, cost, village-wise plan etc. :

Table 32

Village	Proposed livelihood activities	Role of facilitators, if any engaged	Beneficiaries		Proposed cost (Rs. in lakh)	Remarks
			Family	No.		
Hermon	(1) Technical & Financial support to cottage industries	Provision of technical knowledge to improve quality and quantity of production as well as assistance in marketing	2	2	20.00 @10 lakh per unit	Producing different handicraft-items like basket, pot, traditional local carriers, Flower vase, Mat, etc. made from bamboo & cane
	(2) Support to SGHs	Provision of knowledge to form a healthy SHGs for livelihood improvement activities	24	4	24.00 @6 lakh per SHGs	The revolving fund may be utilized as a loan by the members and the interest may be distributed in equal amount among the members from time to time
	(3)Construction of Modern toilet (septic tank) to BPL families	Provision of technical knowledge for construction of septic tank	100	100	40.00 @Rs.40,000 per HH	BPL families may improve their livelihood by having a hygienic toilet
	(4) Provision of Household water storage tank		95	95	26.0223 @Rs. 27391.90/ HH	Scarcity of water and time consume to carry out water from far distance will be solved, and working period will increase.
TOTAL			221	201	**110.0223**	

7.3 Convergence of schemes of other departments/missions viz. NRLM to enhance the livelihood especially with the aim of addressing the drivers of degradation and the activities proposed along-with the beneficiaries, cost, and village-wise plan.

Table 33

Sl. No.	Village	Scheme	Implementing Agency/ department	Proposed livelihood activities	Beneficiaries		Proposed cost (Rs. In lakh	Remarks
					Fam.	No.		
1	Hermon	IWMP	DRDA, Champhai District	Poultry/ Muga Silkworm /Piggery	24	4	24.00	SHG shall be formed and financial support to be given in the form of revolving fund @Rs. 6 lakh/SHG. The cost shall be borne from livelihood improvement activities as in Table 22

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:-

Hermon village:

Table 34

Parameters	Indicator	Baseline Status
1. Forest/tree cover on forest/ non-forest lands in the Mission Target Area (MTA)	a) % of area with forest cover	81.42% (Total forest cover 13.54 sq. km. out of 16.63 sq. km.)
	b) % area in various forest density classes	1) Very Dense = 0.0% 2) Moderately Dense = 32.39% (5.37 Sq. Km.) 3) Open Forest = 49.12% (8.17 Sq. Km) *Source: GIS cell E&F Dept. Govt of Mizoram*
2. Ecosystem services from targeted areas /landscapes	a) Shannon-Weiner Index	2.888677879
	b) Biomass	Above Ground Biomass = 65119.57388 tonnes *Source: Field Survey data*
3. 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 = 118889.71666 tonnes

<table>
<tr><td rowspan="5">6. Forest/ non-forest based livelihoods income</td><td rowspan="5">No. of targeted households (HH) reporting at least 25% increase in real income</td><td colspan="2">Annual Income (Rs.)</td><td>No. of Households</td></tr>
<tr><td colspan="2">More than 5 lakh</td><td>16</td></tr>
<tr><td colspan="2">5 lakh> – <50,000</td><td>189</td></tr>
<tr><td colspan="2">Less than 50,000</td><td>120</td></tr>
<tr><td colspan="2">TOTAL</td><td>325</td></tr>
<tr><td>7. Quality of forest cover & ecosystem services of forest / non-forests</td><td>a) % of forest area naturally regenerating.</td><td colspan="3">71%
Source: GIS Cell, E&F Dept,Mozoram</td></tr>
<tr><td>a) Moderately dense forests</td><td>b) Biomass</td><td colspan="3">25826.59614 tonnes (AGB)</td></tr>
<tr><td>b) Open forests</td><td></td><td colspan="3">39292.97774 tonnes (AGB)</td></tr>
<tr><td>c)Degraded grasslands</td><td></td><td colspan="3">No Degraded Grasslands</td></tr>
<tr><td>d) Wetlands</td><td></td><td colspan="3">No wetland area</td></tr>
<tr><td>8. Ecosystems are restored and forest cover is increased in scrub, shifting cultivation areas etc.</td><td>a) % of area that is adequately stocked /productivity</td><td colspan="3"></td></tr>
<tr><td>9. Forest and Tree cover in urban/ peri-urban land</td><td>a) % of forest and tree cover in the targeted urban/peri-urban areas</td><td colspan="3">No urban area is there in the Mission Target Area</td></tr>
<tr><td>10. Forest and tree cover on marginal agricultural lands / fallows and other non- forest land under agro forestry/ social forestry</td><td>a) % of tree cover on non-forest land.</td><td colspan="3">57.09 % (1.65 sq. kms. out of 2.89 sq. kms.)
Source: GIS Cell ,E&F Dept Mizoram</td></tr>
<tr><td>11. Public forest/ non-forests areas (taken up under the Mission) are managed by the community institutions.</td><td>a) % of area under management of community institutions</td><td colspan="3">17.14 % (2.85 Sq Km out of 16.63 Sq Km)
Legally under the Village Council
Source: GIS Cell E&F Dept, Mizoram</td></tr>
<tr><td>12. Improved fuel wood-use efficiency and alternative energy devices adopted by households in the MTA.</td><td>a) % of HH reporting use of alternative energy devices.</td><td colspan="3">Total Households = 325
LPG users = 35
LPG & Fuel-wood users = 170
Fuel-wood only users = 120
Solar Devices users = Nil</td></tr>
<tr><td rowspan="7">13. Forest/non forest based livelihoods of the people living in and around the forests are diversified.</td><td rowspan="7">a) % of HH reporting diversification of income sources.</td><td>Source of income</td><td>No. of Household</td></tr>
<tr><td>Govt. Service</td><td>35</td></tr>
<tr><td>Jhumming</td><td>138</td></tr>
<tr><td>Horticulture including WRC</td><td>21</td></tr>
<tr><td>Business/Petty Trade</td><td>13</td></tr>
<tr><td>Daily Labourers</td><td>118</td></tr>
<tr><td>Others</td><td>-</td></tr>
<tr><td>TOTAL</td><td>325</td></tr>
</table>

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 MoEFCC) 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 MoEFCC 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 in Annexure – A.

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 35	
1. Name of L1 landscape	The State of Mizoram
2. Name of L2 landscape	Khawzawl Range
3. Forest and non-forest area in L2	203.84 Sq. Km. & 17.82 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,CAMPA, MNREGS, IWMP, IAY
7. Implementing agencies under GIM	Revamped FDA, Champhai
8. GIM activities	**Proposed funding (Rs. in lakhs)**
(a) *Submission/Category*	
Sub-Mission 1:	
a) Moderately dense forest but showing degradation	40.50
b) Eco-restoration of degraded open forest (Type A)	51.84
b) Eco-restoration of degraded open forest (Type B)	40.50
b) Eco-restoration of degraded open forest (Type C)	209.25
Sub-Mission 2:	
a) Rehabilitation of shifting cultivation areas	170.10
Sub-Mission 4*:*	
a) Farmer's land including current fallows	78.30
c) Highways/Rural Roads/Canal/Tank bunds	56.70
SUB-TOTAL	**647.19**

Promoting alternative fuel energy	10.296
SUB-TOTAL	**10.296**
(b) Livelihood improvement activities	
1. Support to cottage industries	20.00
2. Support to Self Help Groups (SHGs)	24.00
3. Construction of modern toilet(septic tank) to BPL	40.00
4. Provision of Household water storage tank	26.0223
Sub-Total	**110.0223**
(c) Other support activities	
1. Research	12.9438
2. Publicity/Media/Outreach activities	6.4719
3. Monitoring and Evaluation	6.4719
4. Strengthening local-level institutions	32.3595
5. Strengthen FDs	32.3595
6. Mission Organisation, operation and maintenance, contingencies and overheads	25.8876
Sub-Total	**116.4942**
TOTAL	**884.0025**

- **Details of Work Proposal given in Annexure – A**

GREEN INDIA MISSION, CHAMPHAI FOREST DIVISION
WORK PROGRAMME FROM 2017-2018 TO 2022-2023
HERMON (L3) LANDSCAPE : KHAWZAWL RANGE

ANNEXURE - A

A. WORK DETAILS

Sub-Mission/ Intervention	Category	Type	Rate per Ha. (in Rs.)	2016-2017		2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		2022-2023		Total Financial Outlay (in lakh rupees)
				Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*
Sub-Mission - 1: Enhancing quality of forest cover and improving ecosystem services (4.9 m ha)	a) Moderately dense forest but showing degradation	***ANR (without Plantation)***																
		1) Advance Work	9450			56.25	5.315625											**5.315625**
		2) Creation	15660			43.75	6.85125	56.25	8.80875									**15.66**
		3) Maintenance (1st year)	9720					43.75	4.2525	56.25	5.4675							**9.72**
		4) Maintenance (2nd year)	3510							43.75	1.535625	56.25	1.974375					**3.51**
		5) Maintenance (3rd year)	2160									43.75	0.945	56.25	1.215			**2.16**
		6) Advance Work (Fund Received)	5400	43.75	2.3625													**2.3625**
		7) Advance Work (Bal. of 2016-2017)	4050			43.75	1.771875											**1.771875**
		Sub-Total	**49950**		**2.3625**		**13.93875**		**13.06125**		**7.003125**		**2.919375**		**1.215**			**40.5**
	b) Eco-restoration of degraded open forests	***200 plants/Ha. (Type A)***																
		1) Advance Work	8100			69.6	5.6376											**5.6376**
		2) Creation	15390			50.4	7.75656	69.6	10.71144									**18.468**
		3) Maintenance (1st year)	8100					50.4	4.0824	69.6	5.6376							**9.72**
		4) Maintenance (2nd year)	6480							50.4	3.26592	69.6	4.51008					**7.776**
		5) Maintenance (3rd year)	5130									50.4	2.58552	69.6	3.57048			**6.156**
		6) Advance Work (Fund Received)	6750	50.4	3.402													**3.402**
		7) Advance Work (Bal. of 2016-2017)	1350			50.4	0.6804											**0.6804**
		Sub-Total	**51300**		**3.402**		**14.07456**		**14.79384**		**8.90352**		**7.0956**		**3.57048**			**51.84**
		1100 plants/Ha. (Type B)																
		1) Advance Work	18360			25	4.59											**4.59**
		2) Creation	36450			25	9.1125	25	9.1125									**18.225**
		3) Maintenance (1st year)	11340					25	2.835	25	2.835							**5.67**
		4) Maintenance (2nd year)	8100							25	2.025	25	2.025					**4.05**
		5) Maintenance (3rd year)	6750									25	1.6875	25	1.6875			**3.375**
		6) Advance Work (Fund Received)	11070	25	2.7675													**2.7675**
		7) Advance Work (Bal. of 2016-2017)	7290			25	1.8225											**1.8225**
		Sub-Total	**99360**		**2.7675**		**15.525**		**11.9475**		**4.86**		**3.7125**		**1.6875**			**40.5**

ANNEXURE - A

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Sub-Mission - 1: Enhancing quality of forest cover and improving ecosystem services (4.9 m ha)	b) Eco-restoration of degraded open forests	***2500 plants/Ha. (Type C)***																
		1) Advance Work	25650			52	13.338	75	19.2375									**32.5755**
		2) Creation	53460			28	14.9688	52	27.7992	75	40.095							**82.863**
		3) Maintenance (1st year)	20250					28	5.67	52	10.53	75	15.1875					**31.3875**
		4) Maintenance (2nd year)	18090							28	5.0652	52	9.4068	75	13.5675			**28.0395**
		5) Maintenance (3rd year)	17550									28	4.914	52	9.126	75	13.1625	**27.2025**
		6) Advance Work (Fund Received)	17010	28	4.7628													**4.7628**
		7) Advance Work (Bal. of 2016-2017)	8640			28	2.4192											**2.4192**
		Sub-Total	**160650**		**4.7628**		**30.726**		**52.7067**		**55.6902**		**29.5083**		**22.6935**		**13.1625**	**209.25**
Sub-Mission - 2: Ecosystem restoration and increase in forest cover (1.8 mha)	a) Rehabilitation of Shifting Cultivation Areas	***1100 plants/Ha.***																
		1) Advance Work	18360			56.67	10.404612	110	20.196									**30.600612**
		2) Creation	36450			43.33	15.793785	56.67	20.656215	110	40.095							**76.545**
		3) Maintenance (1st year)	11340					43.33	4.913622	56.67	6.426378	110	12.474					**23.814**
		4) Maintenance (2nd year)	8100							43.33	3.50973	56.67	4.59027	110	8.91			**17.01**
		5) Maintenance (3rd year)	6750									43.33	2.924775	56.67	3.825225	110	7.425	**14.175**
		6) Advance Work (Fund Received)	11070	43.33	4.796631													**4.796631**
		7) Advance Work (Bal. of 2016-2017)	7290			43.33	3.158757											**3.158757**
		Sub-Total	**99360**		**4.796631**		**29.357154**		**45.765837**		**50.031108**		**19.989045**		**12.735225**		**7.425**	**170.1**
Sub-Mission - 4: Agro-Forestry and Social Forestry (increasing biomass & creating carbon sink) : 3 mha	a) Farmer's land including current fallows																	
		1) Advance Work	13500			39.67	5.35545	75	10.125									**15.48045**
		2) Creation	20250			30.33	6.141825	39.67	8.033175	75	15.1875							**29.3625**
		3) Maintenance (1st year)	7020					30.33	2.129166	39.67	2.784834	75	5.265					**10.179**
		4) Maintenance (2nd year)	6750							30.33	2.047275	39.67	2.677725	75	5.0625			**9.7875**
		5) Maintenance (3rd year)	6480									30.33	1.965384	39.67	2.570616	75	4.86	**9.396**
		6) Advance Work (Fund Received)	8370	30.33	2.538621													**2.538621**
		7) Advance Work (Bal. of 2016-2017)	5130			30.33	1.555929											**1.555929**
		Sub-Total	**67500**		**2.538621**		**13.053204**		**20.287341**		**20.019609**		**9.908109**		**7.633116**		**4.86**	**78.3**
	c) Highways/ Rural Roads/ Canals/ Tank Bunds	***Roads/Canals/Tank Bunds***																
		1) Advance Work	29700			18.75	5.56875											**5.56875**
		2) Creation	83700			11.25	9.41625	18.75	15.69375									**25.11**
		3) Maintenance (1st year)	32400					11.25	3.645	18.75	6.075							**9.72**
		4) Maintenance (2nd year)	21600							11.25	2.43	18.75	4.05					**6.48**
		5) Maintenance (3rd year)	21600									11.25	2.43	18.75	4.05			**6.48**
		6) Advance Work (Fund Received)	25110	11.25	2.824875													**2.824875**
		7) Advance Work (Bal. of 2016-2017)	4590			11.25	0.516375											**0.516375**
		Sub-Total	**218700**		**2.824875**		**15.501375**		**19.33875**		**8.505**		**6.48**		**4.05**			**56.7**
TOTAL					**23.45493**		**132.17604**		**177.90122**		**155.01256**		**79.612929**		**53.584821**		**25.4475**	**647.19**

B.

Sub-Mission/ Intervention	Category	Type	Rate per Ha. (in Rs.)	2016-2017		2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		2022-2023		Total Physical Target	Total Financial Outlay (in lakh rupees)
				Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)	Physical Target (in Ha.)	Financial Outlay (in lakh)		
Sub-Mission 5: Promoting alternative fuel energy	Biogas, solar devices, LPG, Biomass-based systems, improved stoves	Per House Hold	3300			250	8.25	62	2.046									312	10.296
		TOTAL	**3300**				**8.25**		**2.046**									**312**	**10.296**

C. SUPPORT ACTIVITIES			
Sl. No.	**Support Activities**	**Cost**	**Amount (in lakh)**
1	Research	2 % of A	12.9438
2	Publicity / Media / Outreach activities	1 % of A	6.4719
3	Monitoring & Evaluation	1 % of A	6.4719
4	Livelihood improvement activities	17 % of A	110.0223
5	Strengthening local – level institutions	5 % of A	32.3595
6	Strengthening FDs	5 % of A	32.3595
7	Mission Organization, operation and maintenance, contingencies & overhead	4 % of A	25.8876
TOTAL		**35 % of A**	231.903

D. G. TOTAL (A+B+C) = 884.0025 lakh. *Rupess (Eight hundred and eighty four lakh, two hundred fifty) only.*

GREEN INDIA MISSION - CHAMPHAI FOREST DIVISION, MIZORAM
ANNUAL PLAN OF OPERATION (APO)
HERMON/CHAWNGTLAI (L3) LANDSCAPE (2017-18)

A.						
Sl. No.	Sub-Mission/ Interventions	Category	Items of work	Target (in Ha.)	2017-2018	
					Rate per unit (in Rs.)	Total cost per unit (in lakh)
1	*2*	*3*	*4*	*5*	*6*	*7*
1	Sub-Mission- 1: Enhancing quality of forest cover and improving ecosystem services (4.9 mha)	a) Moderately dense forest but showing degradation	Advance Work	56.25	9450	5.315625
			Creation	43.75	15660	6.85125
			Advance Work (Balance of 2016-2017)	43.75	4050	1.771875
			Sub-Total	100		13.93875
		b) Eco-restoration of degraded open forests – 200 plants/Ha. (Type A)	Advance Work	69.6	8100	5.6376
			Creation	50.4	15390	7.75656
			Advance Work (Balance of 2016-2017)	50.4	1350	0.6804
			Sub-Total	120		14.07456
		b) Eco-restoration of degraded open forests – 1100 plants/Ha. (Type B)	Advance Work	25	18360	4.59
			Creation	25	36450	9.1125
			Advance Work (Balance of 2016-2017)	25	7290	1.8225
			Sub-Total	50		15.525
		b) Eco-restoration of degraded open forests – 1100 plants/Ha. (Type C)	Advance Work	52	25650	13.338
			Creation	28	53460	14.9688
			Advance Work (Balance of 2016-2017)	28	8640	2.4192
			Sub-Total	80		30.726
2	Sub-Mission 2: Ecosystem restoration and increase in forest cover (1.8 mha)	a) Rehabilitation of shifting cultivation areas	Advance Work	56.67	18360	10.404612
			Creation	43.33	36450	15.793785
			Advance Work (Balance of 2016-2017)	43.33	7290	3.158757
			Sub-Total	100		29.357154
3	Sub-Mission 4: Agro-Forestry and social forestry (increasing biomass & creating carbon sink) : 3 mha	a) Farmer's Land including current fallows	Advance Work	39.67	13500	5.35545
			Creation	30.33	20250	6.141825
			Advance Work (Balance of 2016-2017)	30.33	5130	1.555929
			Sub-Total	70		13.053204
		c) Highways/Rural Roads/Canals/Tank Bunds	Advance Work	18.75	29700	5.56875
			Creation	11.25	83700	9.41625
			Advance Work (Balance of 2016-2017)	11.25	4590	0.516375
			Sub-Total	30		15.501375
TOTAL (A1)				550		132.176043
Advance Work Funding already received						28.4921
TOTAL of A (A2)						160.668143

B.						
Sl. No.	Sub-Mission/ Interventions	Category	Items of Work	Target (in Nos.)	Rate per unit (in Rs.)	Total cost per unit (in lakh)
1	2	3	4	5	6	7
1	Promoting alternative fuel energy	Biogas, Solar device, LPG, Biomass based systems, improved stoves	Per Household	250	3300	8.25
TOTAL of B				250		8.25

C.			
Sl. No.	Support Activities	Cost	Amount (in lakh)
1	Research	2 % of A2	3.213362
2	Publicity / Media / Outreach activities	1 % of A2	1.606681
3	Monitoring & Evaluation	1 % of A2	1.606681
4	Livelihood improvement activities	17 % of A2	27.313584
5	Strengthening local – level institutions	5 % of A2	8.033407
6	Strengthening FDs	5 % of A2	8.033407
7	Mission Organization, operation and maintenance, contingencies & overhead	4 % of A2	6.426725
TOTAL of C		35 % of A2	56.233850

D. G. TOTAL (A1+B+C) = 198.65989

Rupees (One hundred and ninety eight lakh, sixty five thousand, nine hundred and eighty nine) only.

ANNEXURE - 10

APPROVAL LETTER

Green India Mission (GIM) awmzia. Kalphung leh thil tumte (Mission, aims and objectives), mipui chanvo leh mawhphurna (stake holder's expectation) te, Forest Department Official ten chiang taka min hrilhfiah hnuah, Keini _____ : Khawngtlai khaw mipuite chuan he mission hna hi tha kan tiin kan pawm a. GIM hnuaia kan khaw ramchhunga hna thawh tur ruahman (plan) te hi pawmpuiin kan remti tlang a, concern Department hrang hrang pawh he Mission hna a hlawhtlin ngei theih nan kan thawhpui ang.

Khawtlang aiawhin,

Name : B. ZAITHANGA

Signature : B. Zaia

Designation : V.C.P

With Seal : President
Village Council/Court
Khawngtlai

Annexure - D

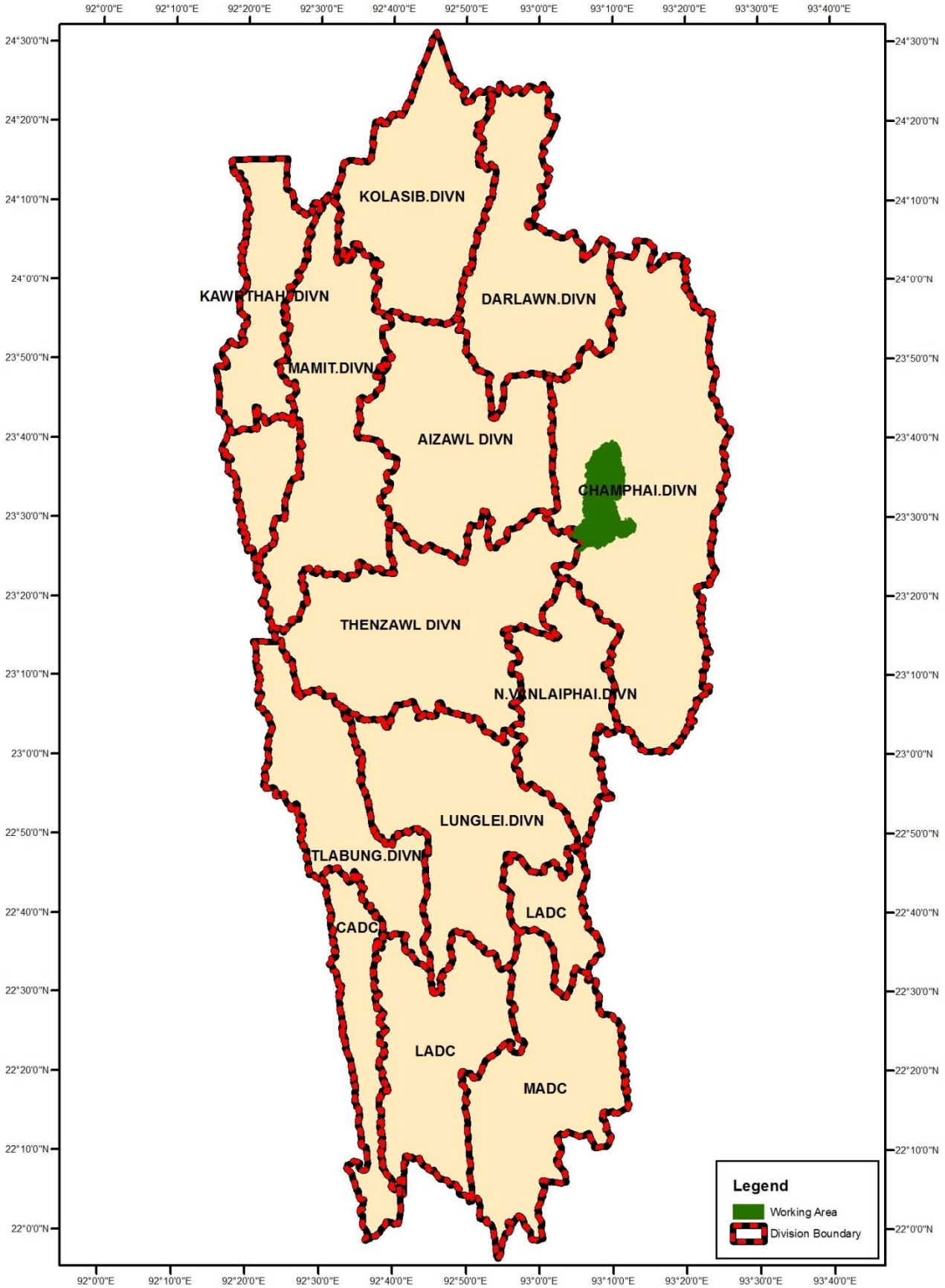
Constitution of Village Level GIM Committee

As per Govt. Notification No. B. 11016/16/2011-FST, Dated 11th November, 2014 a Village Level GIM Committee was set up with the following composition:

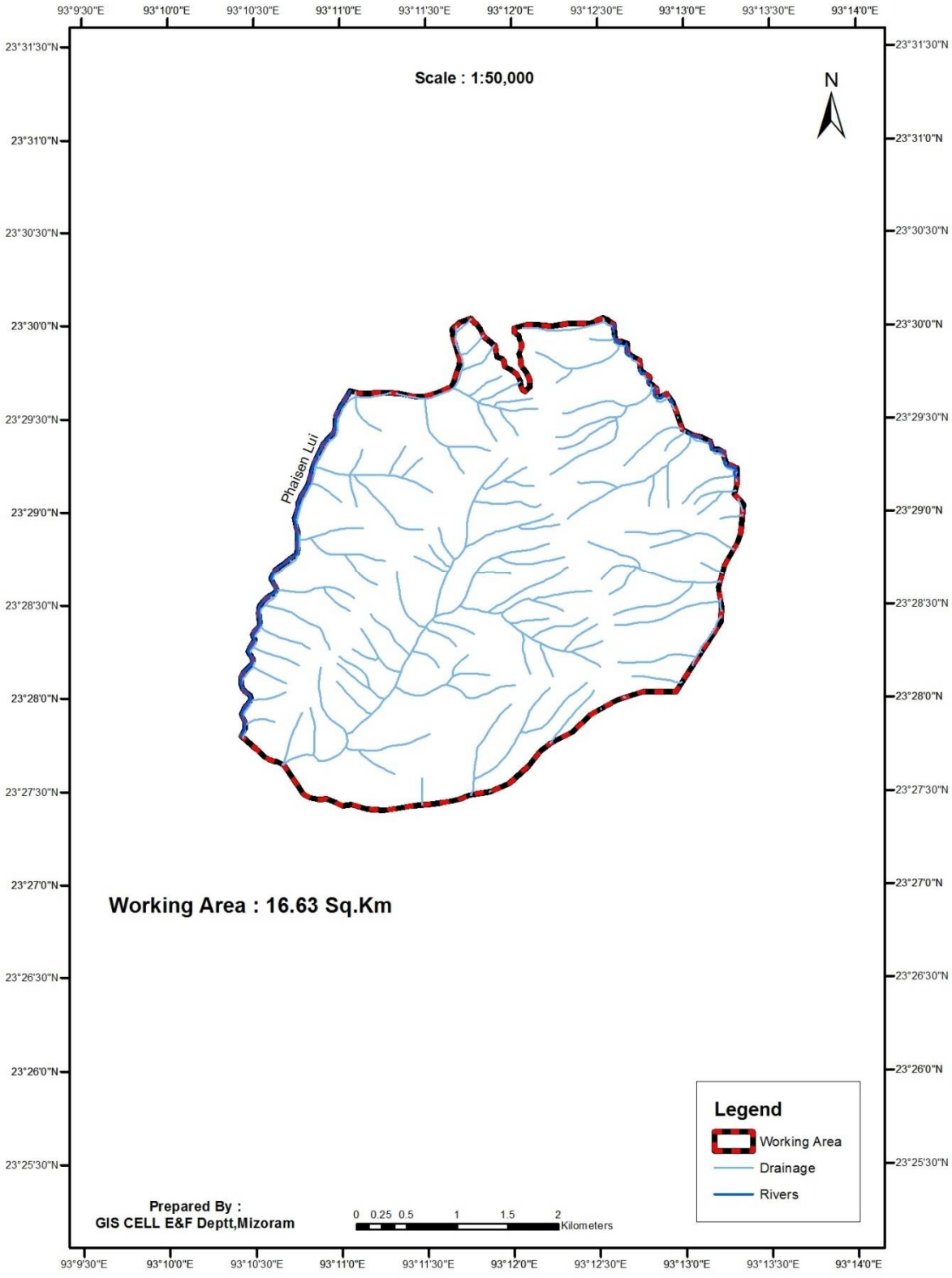
Hermon/Chawngtlai Village:-

Chairman : K. Zairema, Range Forest Officer, Khawzawl Range
Secretary : K. Zairema
Members : 1) Dengthanga (President, Village Council)
2) Laldikzuala (Vice President, Village Council)
3) Zoramthanga (Young Mizo Association)
4) Malsawmtluanga (VFDC)
5) Lalremruata (VFDC)
6) Lalramngaii (MHIP)
7) K. Laltanpuia (AEO, Agriculture Department)
8) Lalchhanhima (HD, Horticulture Department)
9) Kawlthuama (SCO, Soil Department)
10) HD Thandanga (SEO, Sericulture Department)
11) Dr. Thanseia (AH, Vety Department)
12) TBC Lalthangzuala (VLAA, RD Department)

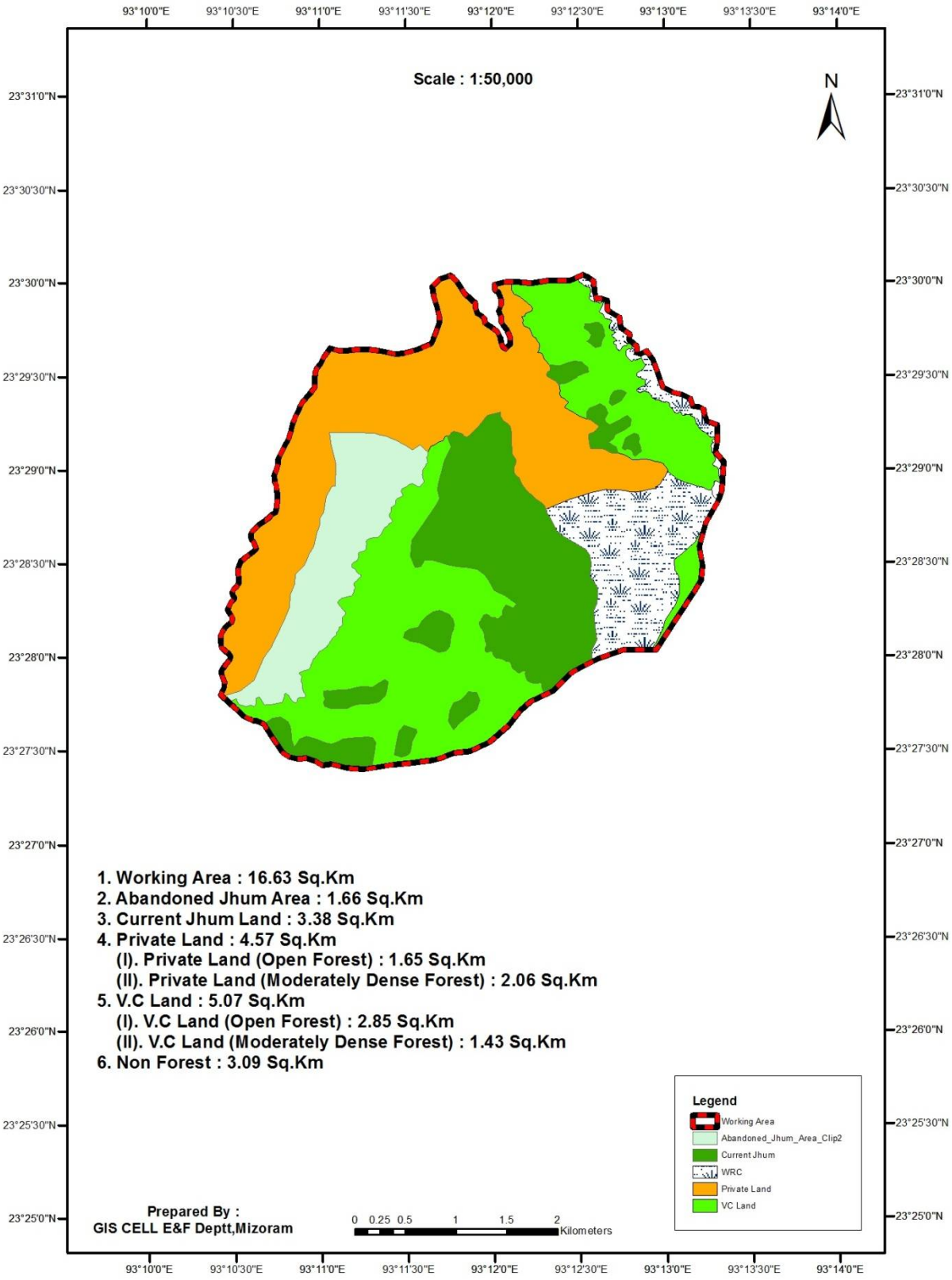
MAP OF L1 LANDSCAPE MIZORAM



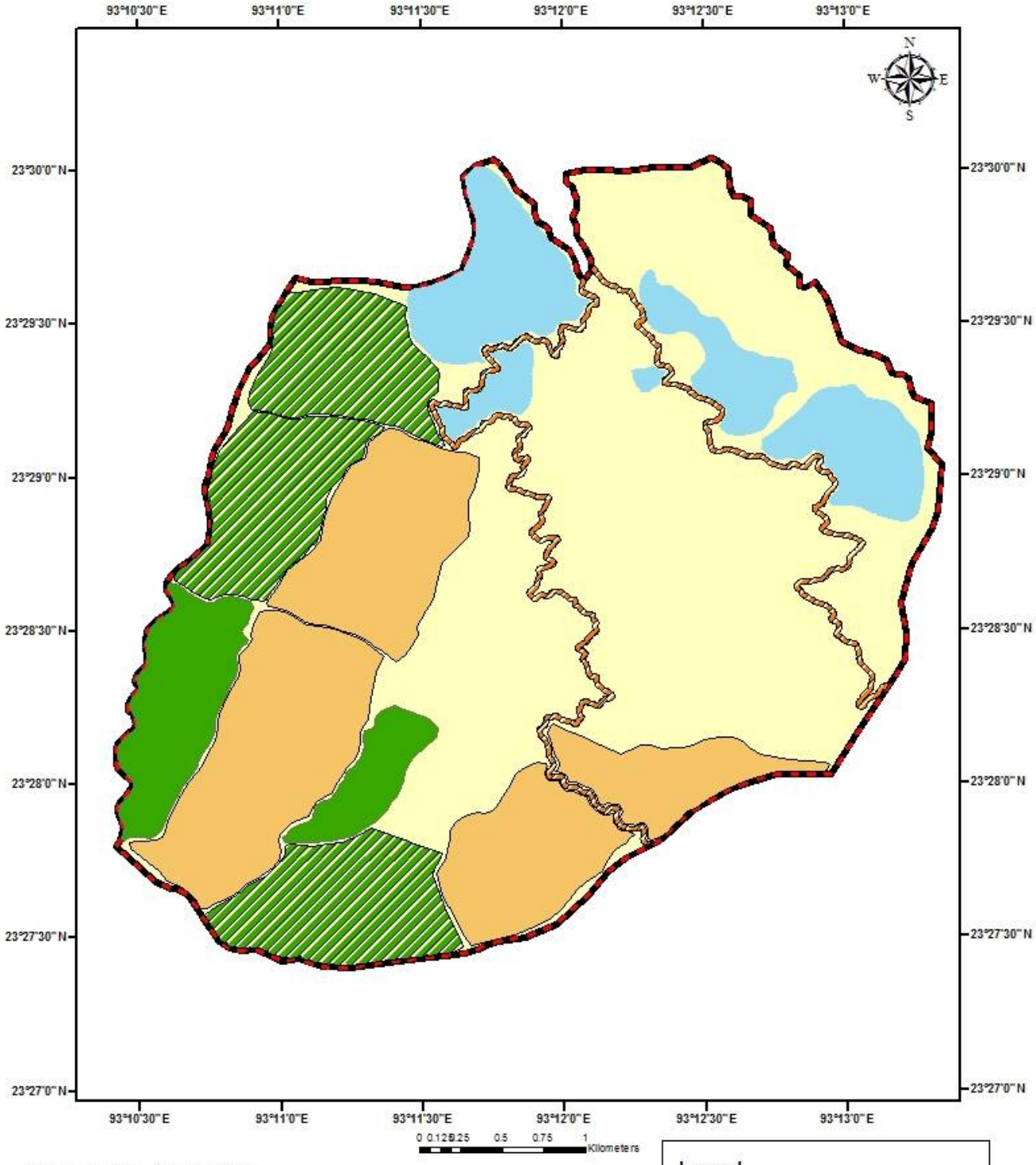
DRAINAGE MAP OF L3 HERMON VC AREA



LANDUSE MAP OF L3 HERMON VC AREA



PROPOSED LANDUSE MAP OF L3 HERMON

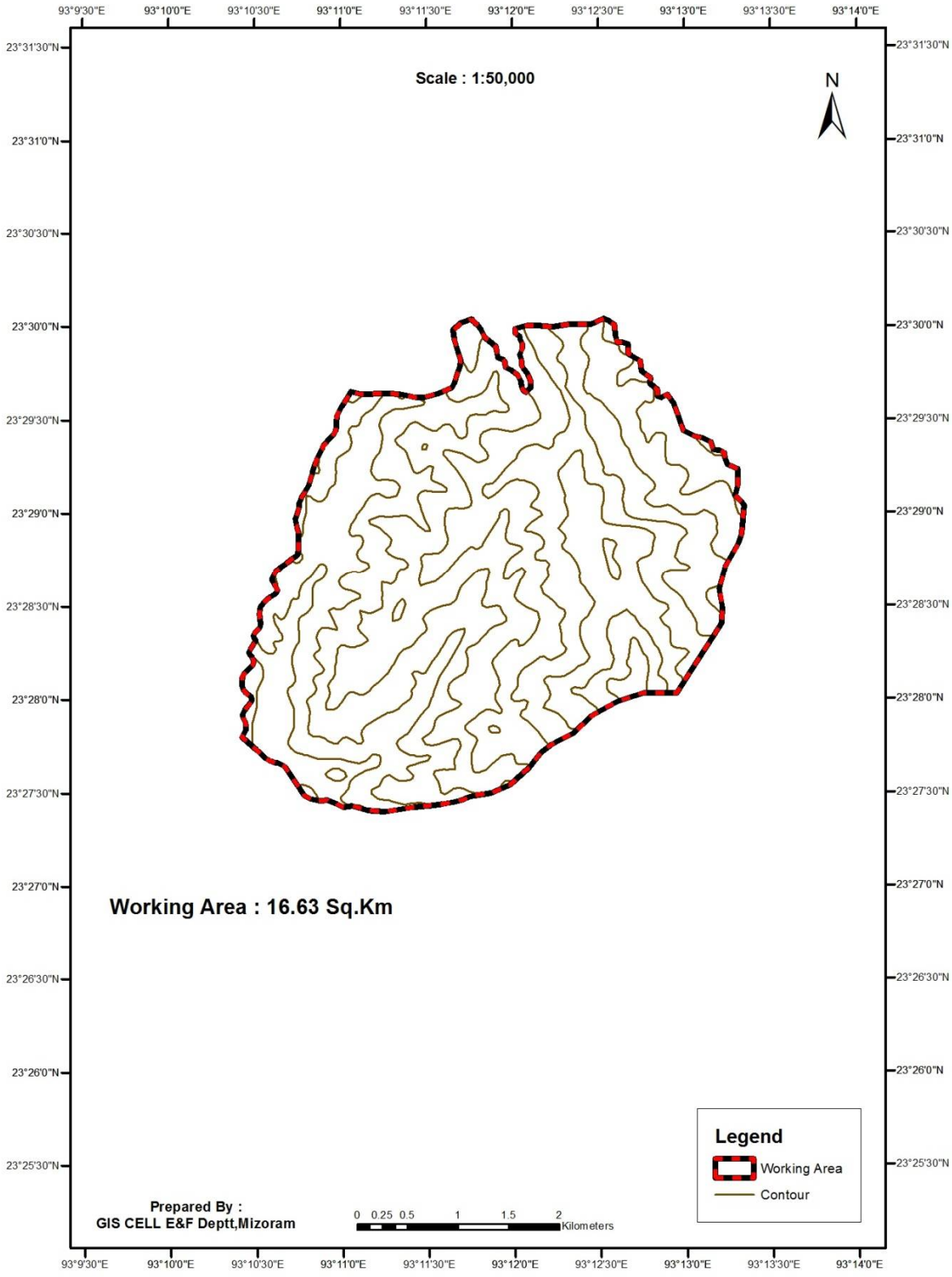


Working Area - 16.63 Sq.km
Rehabilitation of Shifting Cultivation - 2.36 Sq.km
Agro Forestry & Social Forestry:
1. Farmers Land - 1.65 Sq.km
2. Highway / Roadside Plantation - 0.38 Sq.km
Community Land :
1. Moderately Dense Forest cover showing degredation - 0.97 Sq.km
2. Eco-restoration of degraded open forest - 7.78 Sq.km
Community Land - 52.98 Sq.km

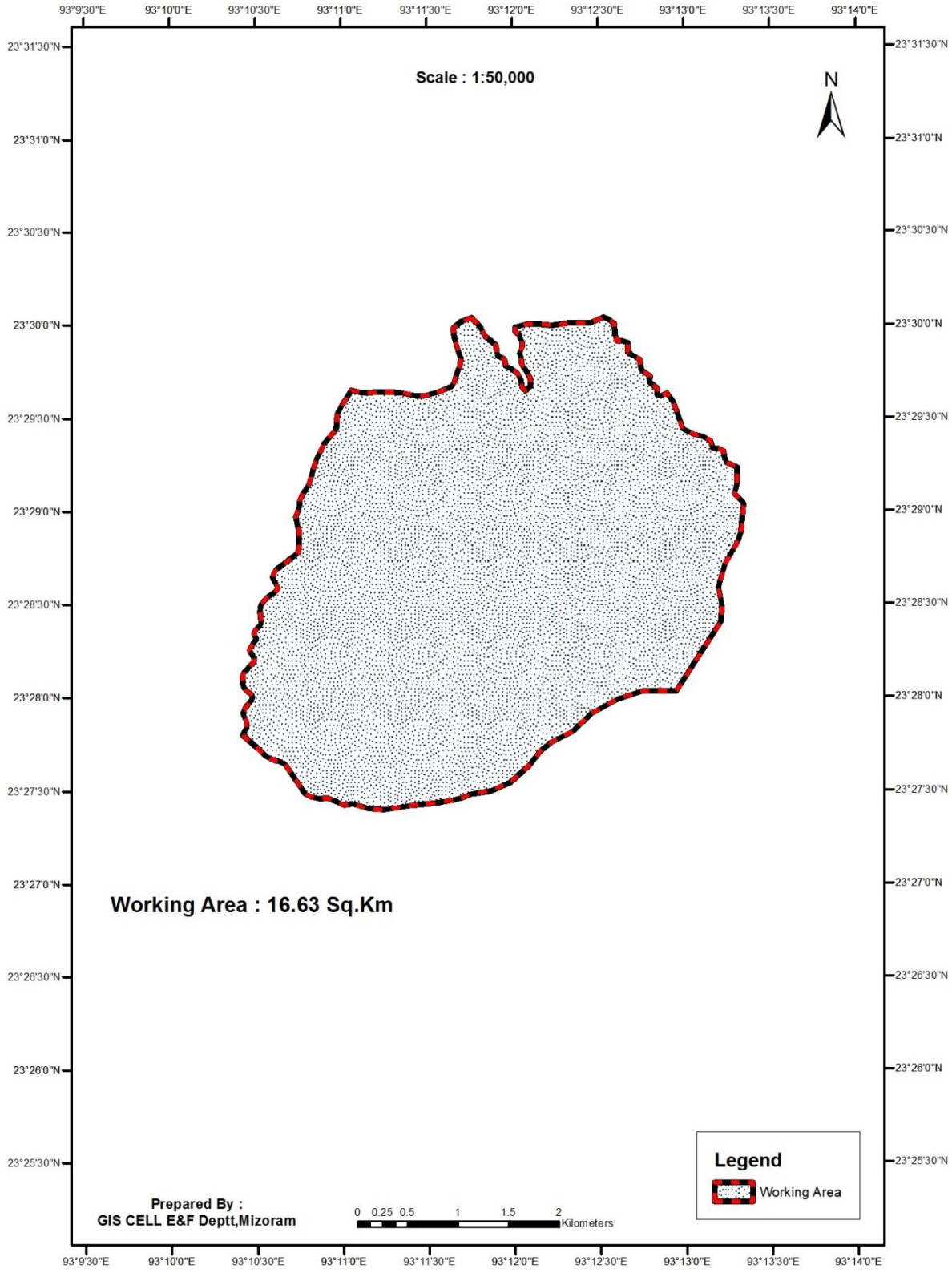
Legend

- Farmers Land
- Rehabilitation of Shifting Cultivation
- Community Land Degraded Open Forest
- Community Land Moderately Dense Forest
- Highway Roadside Plantation
- Working Area
- Community Land

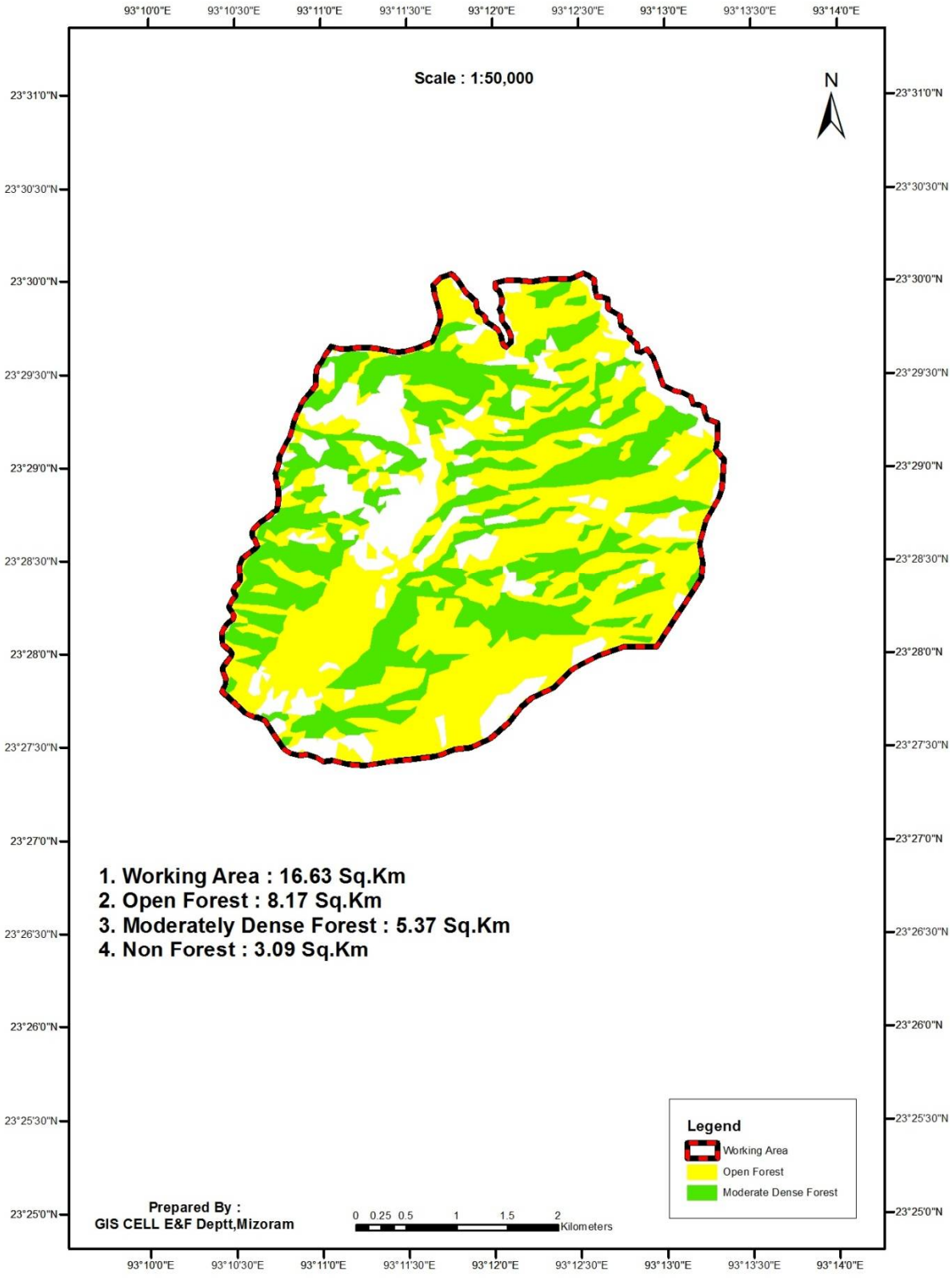
CONTOUR MAP OF L3 HERMON VC AREA



GEOGRAPHICAL MAP OF L3 HERMON VC AREA



VEGETATION MAP OF L3 HERMON VC AREA



ESTIMATION OF TOTAL CARBON STOCK
HERMON L3 LANDSCAPE

ANNEXURE - L

Sl. No.	Plot No.	Total Volume	Vol./t/.1Ha.	Vol./t/Ha.	AGB	AGC	BGB	BGC	DWB	CLB	SOC	Total
1	32	0.66729	1.608169	16.08169	22.51436	10.58175	2.11635	0.994685	1.273408	3.217	57.14	73.20684
2	61	0.871702	2.100802	21.00802	29.41123	13.82328	2.764655	1.299388	1.663493	3.217	57.14	77.14316
3	71	1.3135	3.165535	31.65535	44.31749	20.82922	4.165844	1.957947	2.506588	3.217	57.14	85.65076
4	77	2.07621	5.003666	50.03666	70.05133	32.92412	6.584825	3.094868	3.962089	3.217	57.14	100.3381
5	84	2.19848	5.298337	52.98337	74.17672	34.86306	6.972611	3.277127	4.19542	3.217	57.14	102.6926
TOTAL AGB					**240.4711**	**TOTAL**						**439.0314**
AGB/Ha.					**48.09422**	**Carbon Stock per 1 Ha.**						**87.80629**

SHANNON DIVERSITY INDEX (H)
HERMON/CHAWNGTLAI (L3) LANDSCAPE

Sl. No.	Tree Species	Local Name	Ni (No. of trees)	Pi	ln(Pi)	- (Pi * lnPi)
1	*Schima wallichii*	Khiang	4	0.083333333	-2.48490665	0.207075554
2	*Ficus prostrata*	Theitit	2	0.041666667	-3.17805383	0.13241891
3	*Macaranga indica*	Hnahkhar	9	0.1875	-1.673976434	0.313870581
4	*Lithocarpus pachyphylla*	Then	4	0.083333333	-2.48490665	0.207075554
5	*Trema orientalis*	Belphuar	1	0.020833333	-3.871201011	0.080650021
6	*Collicarpa orborea*	Hnahkiah	3	0.0625	-2.772588722	0.173286795
7	*Quercus dealbata*	Fah	4	0.083333333	-2.48490665	0.207075554
8	*Pinus kesiya*	Far	1	0.020833333	-3.871201011	0.080650021
9	*Colona floribunda*	Hnahthap	1	0.020833333	-3.871201011	0.080650021
10	*Duabanga grandiflora*	Zuang	3	0.0625	-2.772588722	0.173286795
11	*Haldina cordifolia*	Lungkhup	1	0.020833333	-3.871201011	0.080650021
12	*Castanopsis lanceacfolia*	Thingsia	2	0.041666667	-3.17805383	0.13241891
13	*Aporusa octandra*	Chhawntual	1	0.020833333	-3.871201011	0.080650021
14	*Toona cilia*	Tei	2	0.041666667	-3.17805383	0.13241891
15	*Anogeissus acuminate*	Zairum	1	0.020833333	-3.871201011	0.080650021
16	*Derris robusta*	Thingkha	1	0.020833333	-3.871201011	0.080650021
17	*Bauhinia varaegata*	Vaube	1	0.020833333	-3.871201011	0.080650021
18	*Glochindion khasicum*	Thingpawnchhia	1	0.020833333	-3.871201011	0.080650021
19	*Gmelina orborea*	Thlanvawng	1	0.020833333	-3.871201011	0.080650021
20	*Acer laevigalum*	Thingkhim	1	0.020833333	-3.871201011	0.080650021
21	*Wendlandia grandis*	Batling	1	0.020833333	-3.871201011	0.080650021
22	*Alreodaphne petiolaris*	Bul	1	0.020833333	-3.871201011	0.080650021
23	*Litsea monopetala*	Nauthak	1	0.020833333	-3.871201011	0.080650021
24	*Vitese peduncularis*	Thingkhawilu	1	0.020833333	-3.871201011	0.080650021
TOTAL			**48**			**2.888677879**