

**COMMUNITY PARTICIPATION IN ENVIRONMENTAL PROTECTION  
IN MIZORAM: A CASE STUDY OF AIZAWL DISTRICT**

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## **PREFACE**

Environmental protection has become a pressing issue all over the world. So much so that the state of Mizoram has also felt the need of improving and protecting its environment. The various causes of environmental problems and its implications require thorough study in establishing a clean and healthy environment. Moreover, sensitising the stakeholders, the community in particular, of its role in protecting the environment is crucial in mobilizing them towards the realization of the governmental programmes for environmental protection.

The thesis entitled ‘Community Participation in Environmental Protection in Mizoram: A Case Study of Aizawl District’ is divided into seven chapters. The first chapter is the ‘Introduction’. The second chapter is titled ‘Nature of Environmental Problems in Aizawl District’; the third chapter is ‘Need and Importance of Community Involvement in Aizawl District’ and the fourth chapter is ‘Environmental Education, Awareness and Information’. The fifth chapter of the thesis is titled ‘Implementing Agencies for the Protection of Environment in Aizawl District’; the sixth chapter is ‘Problems of Implementation of Environmental Protection in the Community in Aizawl District’; and the last chapter is the ‘Conclusion: Findings and Suggestions’.

The first chapter introduces the research work undertaken for study. It discusses the review of literature, the objectives for the proposed study, the scope of study, the hypotheses made with regard to the study, the methodology that will be carried out in the findings of the study and the sequence of chapters of the study.

The second chapter studies the environmental issues confronted at the global level. It deals with the environmental problems faced in India, in the state of Mizoram and particularly those encountered in the Aizawl District of Mizoram.

The third chapter stresses on the imperative role of the community in protecting the environment in Aizawl District and highlights the importance of their participation in solving environmental problems.

The fourth chapter traces the efforts undertaken for Environmental Education in India and Mizoram. It emphasizes the need for awareness of the implications of environmental hazards and dissemination of information concerning environmental protection.

The fifth chapter discusses the agencies, i.e. governmental and non-governmental agencies, involved in the protection of the environment in Mizoram. The various activities carried out by these agencies are also highlighted in this chapter.

The sixth chapter cites the various problems faced in the implementation of environmental protection by the governmental agencies and non-governmental agencies.

The final chapter is the concluding chapter which consists of the findings of the research and offers suggestions for solving the prevailing problems faced in the protection of the environment.

## ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my Supervisor, Prof. Lalneihzovi, Head, Department of Public Administration for her continuous patience, guidance and encouragement during the research. Her support and suggestions have been exceptionally valuable in the completion of the study.

I would like to thank the Officers of the Department of Environment, Forests & Climate Change, Junior Scientist, Mizoram Pollution Control Board, Presidents of the Environment NGOs and the Young Mizo Association, the respondents in the urban and rural areas of Aizawl District, for providing information necessary for the study.

I would like to extend my gratitude to the Faculty of the Department of Public Administration for offering suggestions relevant for the research. I also express my heartfelt thanks to thank the staff of the Department of Public Administration for their kind co-operation and help.

I would like to express my deepest gratitude to my father, Lalzarliana Renthlei for his unfailing support and profound knowledge.

I acknowledge, with a deep sense of reverence, my gratitude to my husband, LalrempuiaVaiphei, my parents and family members for their unconditional support throughout the study.

Above all, I would like to thank the Almighty God for his blessings and guidance.

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## **ABBREVIATIONS**

AIR	-	All India Radio
AMC	-	Aizawl Municipal Council
AMCO	-	Aviation Maintenance Company
AOFFPS	-	Area Oriented Fuel wood and Fodder Project Scheme
ASEP	-	Association for Environmental Preservation
ASTRPS	-	Association of ST and Rural Poor in Regeneration of Degraded Forests
BIOCONE	-	Biodiversity and Nature Conservation Network
BMW	-	Bio Medical waste
CAMPA	-	Compensatory Afforestation Fund Management and Planning Authority
CEE	-	Centre for Environment Education
CEP	-	Centre for Environment Protection
CFCs	-	Chloroflourocarbons
CPCB	-	Central Pollution Control Board
CPREEC	-	C.P.RamaswamyAyar Environmental Educational Centre
CO <sub>2</sub>	-	Carbon dioxide
DDT	-	Dichlorodiphenyltrichloroethane
DPR	-	Detailed Project Report
EE	-	Environmental Education
EEAT	-	Environmental Education, Awareness and Training
EDUSAT	-	Educational Satellite
EDB	-	Environmental Data Bank
ENVIS	-	Environmental Information System



EOSE	-	Environmental Orientation to School Education
ESD	-	Education and Sustainable Development
FDA	-	Forest Development Agency
GHGs	-	Greenhouse gases
GMN	-	Green Mizoram Network
IAEPS	-	Integrated Afforestation and Eco-development Project Scheme
IOC	-	Indian Oil Corporation
JFMC	-	Joint Forest Management Committee
LAD	-	Local Administration Department
MCPB	-	Mizoram Pollution Control Board
MHIP	-	Mizo Hmeichhe Insui khawm Pawl
MIPOGRASS-	-	Mizo Post-Graduate Science Society
MIS	-	Management Information System
MIZENVIS	-	Mizoram Environmental Information System
MoEF	-	Ministry of Environment and Forests
MOEFCC	-	Ministry of Environment, Forests & Climate Change
MSW	-	Municipal Solid Waste
MUP	-	Mizoram Upa Pawl
N.A.M.P	-	National Ambient Air Monitoring Programme
NAP	-	National Afforestation Programme
NCERT	-	National Council of Education Research and Training
NEAC	-	National Environment Awareness Campaign
NEEPCO	-	North Eastern Electric Power Corporation Limited

NGC	-	National Green Corps
NGC	-	National Green Corps' Programme
NGO	-	Non Governmental Organisation
NIB	-	NLUP Implementing Board
NLUP	-	New Land Use Policy
NNE-SSW	-	North North East – South South West
NNW-SSE	-	North North West – South South East
NO <sub>x</sub>	-	Mono-nitrogen oxides NO and NO <sub>2</sub> (nitric oxide and nitrogen dioxide)
NPE	-	National Policy on Education
NTFPS	-	Conservation of Non-Timber Forest Produce including Medicinal Plants
N.W.M.P	-	National Water Monitoring Programme
ODS	-	Ozone-depleting substances
OSD	-	Officer-on-Special Duty
PAHs	-	Polycyclic aromatic hydrocarbons
P&E	-	Power & Electricity
PFCs	-	Perfluorocarbons
RRA	-	Regional Resource Agencies
SCERT	-	State Council of Educational Research and Training
SEVA	-	Save Environment Association
SGVSY	-	Samnavit Gram VanikaranSamridhiYojana
SIPMIU	-	State Investment Programme Management and Implementation Unit
Sox	-	Sulphur Oxide

UN	-	United Nations
UNEP	-	United Nations Environmental Programme
UNESCO	-	United Nations Educational, Scientific and Cultural Organisation
UV-B	-	Ultraviolet B
VLNC	-	Village Level NLUP Committee
VO	-	Voluntary Organisation
YLA	-	Young Lushai Association
YMA	-	Young Mizo Association

## **GLOSSARY**

Anganwadi	A courtyard shelter, a government sponsored child-care and mother-care center in India
Balwadi	An Indian pre-school run for economically weaker sections of the society; either by government or NGOs
ChapcharKut	A festival of spring, celebrated after the ‘Jhums’ are cut in Mizoram
Chheihhla	Mizo songs and lyrics in praise of men, war and nature, some of which trace the origin of the Lushai, their descent and route of migration
Chheihlam	A Mizo dance of recent origin meaning a ‘dance of joy’
Chhinlung	A legendary cave or hole under a rock from which the originators of the Lushai had come out into this world
Darbu	Brass gong
Hmeichhe	Women
Hnatlang	Community Work
Insuihkhawm	Joining together/Joining forces
Jhum and Jhuming	Primitive system of rice cultivation known as ‘Slash and Burn cultivation or ‘shifting cultivation’

Khual	A guest
Khuangchawi	A public feast earlier given by the Lushai chiefs and well-to-do Lushais
Lengkhawm	A singing tradition of Mizo Christianity
MimKut	A harvest ceremony or dance when the first crop in the Jhums is harvested and offered to the spirit of the dead
Pawl	Association
Puandum	Traditional Mizo cloth with red, black and green stripes
Puma Zai	The name of an anti-Christian song, the avowed purpose of which was to oust the Christian hymns
SapelHrat	Hunter
Tlanglam	A dance performed when Puma Zai is sung or played
Tlawmngaihna	A moral code of conduct of the Mizos encouraging them to be courteous, unselfish, courageous, industrious and always ready to help others
Upa	Elder
Zirlai Pawl	Students' Association
Zawlbuk	Bachelor's Den/Dormitory
Zoram	The state of Mizoram

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**CERTIFICATE**

This is to certify that Miss Lalropari Renthlei, Doctor of Philosophy Scholar under Registration no. MZU/ Ph.D/316 of 20.10.2009, Extn. Vide- No. 16-2/Adm-1 (Acad) 14/8 dt. 16.02.2015 in the Department of Public Administration, Mizoram University worked under my supervision on the topic 'Community Participation in Environmental Protection in Mizoram: A Case Study of Aizawl District' for the award of the Degree of Doctor of Philosophy in Public Administration (School of Social Sciences) Mizoram University. The thesis is the product of her own original research work and it does not form a part of any other thesis. She is permitted to submit the thesis for examination.

(LALNEIHZOVI)  
Supervisor

## **DECLARATION**

I, LalropariRenthlei hereby declare that the dissertation/thesis entitled **‘Community Participation in Environmental Protection in Mizoram: A Case Study of Aizawl District’** is a research done by me during 2009-2016 under the supervision and guidance of Prof. Lalneihzovi, Department of Public Administration, Mizoram University. This dissertation/thesis did not form the basis of any award or any previous degree to me or to the best of my knowledge to anybody else and it has not been submitted by me or anybody else for my research degree in any other University/Institute.

This is being submitted to the Mizoram University for the degree of Doctorate of Philosophy in Public Administration.

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# CHAPTER - I

## INTRODUCTION

Environment is an all-embracing concept meaning different things to different people ranging from one's immediate physical surroundings to political set-up or socio-economic conditions.<sup>1</sup> Environment has been defined as “the aggregate of all the external conditions and influences affecting the life and development of an organism”.<sup>2</sup> While there has always been man's concern for natural environment, his serious concern about issues of resource depletion and degrading environment/ecosystem began after World War II when industrialization started vigorously.<sup>3</sup> Even such a geographically remote state as Mizoram has not been spared from the prevailing environmental degradation. Hence, there is an urgent need for protection of environment in Mizoram, especially in Aizawl District. Such protection can be effected through community participation. The term “Participation” has its origin from Latin word ‘participare’, which means ‘taking part’. Encyclopedia of psychology describes participation as: i) “taking part or involvement in an activity”, and ii) “greater involvement of persons in policy decision which affects them directly. In its simplest term it connotes self-activity and is a product of collective action in relation to social and economic situation.

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<sup>1</sup> Jain, R. B. & Sharma Kanchan, *Implementation Machinery for Environmental Protection in India*, The Indian Journal of Public Administration, July-September, 1989, p.53.

<sup>2</sup> [www.merriam-webster.com/dictionary/environment](http://www.merriam-webster.com/dictionary/environment), Accessed 11 April, 2009.

<sup>3</sup> Uberoi. N. K. *Environmental Management*, Excel Books, 2003, p.36.

Community Participation is a process which involves promoting full public understanding of processes and mechanisms through which environmental problems are investigated and solved. The community being an essential stakeholder of environmental protection, its involvement would greatly enhance the implementation of environmental programmes. Hence, one cannot overlook the imperative role of the community in combating environmental hazards and creating a better posterity to live in.

### **Aizawl District**

Aizawl is the capital of the state of Mizoram in India.<sup>4</sup> The district is named after the Headquarter of the district, Aizawl city. In Mizo language, *ai* also known as *aidu* refers to a herb (one of the turmeric specie) and *zawl* means *plain* or *field*. The name of the city was probably derived from the abundance of the *aidu* in the area during the previous years.

The district has five R.D. Blocks, Aibawk, Darlawn, Phullen, Thingsulthliah and Tlangnuam. The district has 14 Assembly Constituencies. These are Aizawl North I, Aizawl North II, Aizawl North III, Aizawl South I, Aizawl South II, Aizawl South III, Aizawl West I, Aizawl West II, Aizawl West III, Aizawl East I, Aizawl East II, Tuivawl, Chalfilh and Tawi.<sup>5</sup>

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<sup>4</sup> <https://en.wikipedia.org/wiki/Aizawl>, Accessed 20<sup>th</sup> March, 2014.

<sup>5</sup> [https://en.wikipedia.org/wiki/Aizawl\\_district](https://en.wikipedia.org/wiki/Aizawl_district), Accessed 20<sup>th</sup> March, 2014.

The Aizawl Municipal Council is the authority of civic administration of Aizawl city. It was formed in 2010 with 19 Members when the Congress-ZNP party coalition was voted to power in the state legislative assembly. The AMC office is being administered by one council Chairman, Vice Chairman and three executive members. It consists of 19 elected members representing 19 wards of the city and others appointed by the Governor of Mizoram. One-third of the total membership is reserved for women and these six seats shall be rotated after every five years. The tenure of the council is five years. There is a Ward Committee in every ward that consists of a Chairman, who is an elected councilor from that ward, and two members each from all the local council within the ward. There are 78 local councils having a term of 5 years.<sup>6</sup>

### **Statement of the Problem**

In Mizoram, the practice of Jhuming has turned virgin forests into vast areas of barren land. So much so, the erstwhile idyllic ambience of nature has been severely disturbed by none other than human beings. Besides the traditional practice of Jhuming, the tremendous increase in the number of motor vehicles in Aizawl has not only caused congestion of traffic but has also resulted in air pollution and inconveniences to pedestrians. Moreover, the demographic change of urbanisation i.e. the unprecedented influx of migration of the rural population to Aizawl city has resulted in burgeoning over-population and hardship to the residents.

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<sup>6</sup> <https://en.wikipedia.org/wiki/Aizawl>, Accessed 20<sup>th</sup> March, 2014.

In spite of the efforts made by the State Government and the community, the problem of environmental degradation and pollution has not been controlled to its optimum level. The fault must lie with the people or the institutional set-up or with both. In order to understand the causes of our failure to tackle environmental problems, one must have some idea of the kind of perceptions that different sections of our society, including our planners and decision-makers, have of such problems. Even the most educated classes in our society consider all references to the environment in Mizoram to be merely fashionable-conservation subjects at best, borrowed from among the issues considered important by the developed world. Though the academics and professionals are fully aware of environmental hazards, they are concerned in narrow sectoral contexts such as public health, forestry etc. What is not perceived is the totality of the linkages between these problems. This is partly due to the usual bureaucratic perversity and inertia towards any innovative thinking.

Thus, a thorough and extensive study ought to be carried out to ascertain the impact of environmental problems on the people of Aizawl and sensitise the community towards the protection of the environment. Based on the findings of this study, strategies may be planned out to counter further degradation of the environment and effective measures may be taken to improve the living condition of the people of Aizawl District.

### **Efforts for environmental protection in Mizoram**

Environmental protection is a major concern of the present society. Of late, there has been a growing concern for environmental protection in the Mizo community,

especially in Aizawl District. In Mizoram, the Young Mizo Association (YMA) plays a very important role in mobilizing the community. Since 1983, this organisation has initiated Annual Themes focusing on the prevailing need of the society; however, such themes are not mandatory. Themes such as ‘Preservation of Wildlife’ (1992), ‘Cleanliness’ (1983&1991), ‘Safeguarding Nation and Land’ (1998-2001) have been launched by the YMA for the protection of the environment. These themes have been successfully implemented through community participation.

The Environment and Forests Department, Government of Mizoram has launched a number of programmes for the protection of the environment. These programmes involve tree plantation beyond Forest Conservation and their effective implementation largely depends on community participation.

On its assumption of office in December 2008, the present Congress Ministry of Mizoram has launched an ambitious programme called the “New Land Use Policy” (NLUP) to wean away Jhumia families from their destructive Jhum practices and open opportunities for more productive and sustainable livelihood options. The overall objectives of the NLUP will be to improve the livelihood of vulnerable groups mainly Jhumia families in a sustainable manner through improved management of their resource base in such a way that contributes in protecting and restoring environment. Moreover, the Young Mizo Association (YMA) has been assisting the State Government’s ‘Green Mizoram’ project in which tree plantation programmes are held every year by involving the community at large.

## **Review of Literature**

Environmental issues are much in vogue these days. The literature based on environment is vast and numerous. A number of articles, journals, books and published works are available for studies and reference. In the case of Mizoram, few articles and publications on environment and their impact are available, most of them concerning the effects of Jhuming cultivation.

In his book, '*Environment Protection and Sustainable Development*' (2004) S. Bhatt relates to an important and emerging field of research in sustainable development for humankind and protection of the environment. The subjects of ecology and international law are being combined along with federalism for management of global resources. It describes the global environment movement, the environment movement in India, the Centre-State relations on environment management, the administrative working of the Ministry of Environment and Forests, the working of Environment Protection Act 1986 in India, combining law and science in environment management, the World Charter for Nature 1982, the present state of environment in India, and recent works for sustainable development in India.

C.S. Rao's '*Environmental Pollution Control Engineering*' (2006), deals with air, water and land pollution and their origin, effects on man and on the environment and awareness of the magnitude of their effects. The book clearly deals with all aspects of environmental pollution and the various methods of controlling it. It stresses the

fundamental aspects of these topics and their application with illustrative examples. Information pertaining to Indian conditions is given wherever possible to help the reader gain an insight into pollution problems in India. Although it does not mention the environmental conditions of Mizoram in particular, certain methods of controlling major pollutants mentioned in the book would be applicable for protecting the environment of Mizoram.

In his book, '*Environmental Protection in India- Socio-economic Aspects*' (2005) Abhay Kumar investigates as to how the development process affects not only our environment but also the lives of millions of people whose survival is based on environment. It also explores the alternate theories of development vis-à-vis environmental protection and their relationship with society. This book gives us an insight on how rapid economic development has created enormous pressure on India's natural resources. It deals with the concepts of environment and development and their relationship and the resultant social movements.

Lalneihzovi's book, '*District Administration in Mizoram*' (2006), contains eight chapters on District Administration in Mizoram. In order to have a clear perspective, it traces the evolution of District Administration in India and provides detailed account of the District Administration in Mizoram and Aizawl. It provides insightful information which is useful for understanding the administrative practices, plans and programmes of the Government of Mizoram.

M. Soundarapandian's '*Environment Degradation and Rural Poverty*' (2005) lays emphasis on the fact that the revolution in science and technology, growth of population and intensive industrial development have brought about the environmental crisis in India. He also mentions the relation between the environment degradation and income of the people. To him, the environment protection will lead to the economic development by way of income and employment generation in the agricultural sector.

In his book, '*Environment Problems in India*' (2005), S.K. Ahluwalia makes a thorough investigation into various concepts, approaches, methods, techniques, rules regulations and laws dealing with environmental problems. Delving deep into social dimensions of these problems and relationships between society and nature, he arrives at certain conclusions for alleviation and for mitigation of these problems.

R.R. Barthwal, in his book, '*Environmental Impact Assessment*' (2002) relates the exercise of the environmental impact assessment to major human actions, programmes, and policies in order to protect human health and well-being from the adverse impacts of projects and actions. He also discusses diverse issues relating to environmental and human health problems. Although this book is written for the reference of practicing engineers and students of environmental engineering, the methodology highlighted in this book can also be applied to various environmental issues.



M.K. Satapathy, in his book, '*Education Environment and Sustainable Development*' (2007), describes various issues and concerns of environment and sustainable development, starting with human dimension of environmental conservation and sustainable development to perspectives of environmental education at school and college level with emphasis on structural and philosophy of environmental education, models and principles of sustainable development, teacher education, value education, women education and gender issues in environmental sustainability.

Somesh Kumar's '*Methods for Community Participation*' (2003), provides a practical and comprehensive study of the concepts, practice and methodology of participatory development, focusing primarily on how to achieve participation. It adopts a simple step approach to suit different development activities. The book provides examples from experiences, material with directions for use, as well as possibilities for innovation. It contains useful information on the best practices which will be valuable for achieving participation of the people in general and the Mizo community in particular.

Ravindra Pratap Singh's '*Environment and Change*' (2002), contains the studies of various scholars and experts analysing environmental problems, ecosystem management, global temperature, deforestation, shifting cultivation, environmental education and impact of population growth on environment pertaining to Manipur in particular and the North-East region in general. It emphasises on the need to place

development and environmental issues in proper perspective and assimilate the environmental ethics of development in the socio-economic transformation of our habitat.

R.N. Trivedi's '*A textbook of Environmental Science*' (2002), emphasises on the problems of the third world in matters relating to socio-economic change, political development and problems of environment. He also refers to the effects of the problems leading to the cumulative effect of innovating concepts and methodological experiments. These innovative concepts would also be beneficial for mitigating the environmental problems faced by the people of Mizoram.

In his book, '*Environmental Challenges and Ecological Disaster*' (1992) Gopal Bhargava presents the interaction of environmental influences and the issues of development and environmental influences. He explores the population explosion in a global perspective as a challenging threat towards the deterioration of quality of life. He also emphasises on the imperative need to create environmental protection awareness through education in a global dimension. It also stresses the significant role of media like press and television in educating the masses concerning the environmental protection and ecological conservation.

Bala Krishnamoorthy's '*Environmental Management*' (2013) consists of ten chapters. It explains the environmental concepts and sustainable development, discusses the various environmental issues faced in India and the regulations for environmental

protection. The book provides insightful information on the environment focusing on the multidimensional aspects of environmental problems and highlighting the need for effective environmental management.

In his book, '*Environmental Law*' (2014), Dharmendra S. Sengar discusses the growing concern of the degradation of the environment due to environmental pollution. It deals with in detail the legal provisions for environmental protection and stresses on the need for its effective implementation by the government and the importance of the role of the people in complying with the environmental laws. This book is beneficial not only for academic appreciation but also for recognizing and realizing the importance of environmental laws in the protection of the environment.

In his book, '*Mizoram: A Study in Comprehensive Geography*' (2009), Rintluanga Pachuau presents a detailed information of the state of Mizoram perceiving it from the different branches of Geography. The historical, cultural, political, economic, social and demographical account of Mizoram is thoroughly dealt with in this book. It is exceedingly valuable for research scholars, academicians and students as it provides extensive information and data on Mizoram.

B.B. Dutta's '*Land Use Pattern in North-East India*' (1986) contains 17 articles concerning the various aspects of land-use in the north-eastern region of India. The book provides an insight on the utilization of land, different systems of cultivation, crop

production and human resources required in the economic development of North-Eastern India. Focus is laid on the ill-effects of jhuming on the environment and suggestions have been offered for alternative land use pattern.

V. S. Sharma's book entitled '*Environmental Education*' (2005) deals with the various aspects of Environmental Education. The book focuses on the causes and effects of environmental hazards, environmental awareness, and programmes of environmental education. Emphasis is also laid on the responsibilities of the educationists and educators in improving the environment. In his book, V. S. Sharma stresses that the training of teachers' is imperative for better learning and development in the protection of the environment.

In his book, '*Environmental Administration*' (2004), Raja Mohan Satt(h)u deals with environmental pollution, the administrative set up for environmental protection and examines the responses of different actors towards environmental administration. Furthermore, he stresses on the need of awareness, commitment and participation of the community in the improvement and protection of the environment. The book mainly focuses on the environmental issues confronted in Warangal District. However, the suggestions for mitigating such problems faced in the district are also useful and applicable for other districts and states as well.

Rajesh Tandon and Mohini Kak's, '*Citizen Participation and Democratic Governance: In Our Hands*' (2007) contains eleven articles with a special focus on citizens' participation. The issues dealt with are varied ranging from waste management to empowerment of women. It highlights the importance of people's participation at the local, national and global levels and discovers that there is universal application of the parameters of democratic governance be it at the local, national or global level. The collection of essays in this book is helpful for understanding the need of community participation in the administrative functioning of a country.

C. G. Verghese and R. L. Thanzawna's book, '*A History of the Mizos Volume I*', (1997) gives detailed account of the history, origin, traditions and customs of the Mizo community. It provides information regarding the profile of Mizoram, the influence of the Christian missionaries, the British operations, the post-independence developments, the insurgency and the integration into national life. The book is resourceful in understanding the social, cultural and political developments in the state of Mizoram.

In his article, '*Effects of shifting cultivation on the environment: With special reference to Mizoram*' (1997), Lianzela outlines the natural features of Mizoram and describes the cultivation systems employed and problems generated. He also mentions the need to preserve the forests thereby protecting the environment.

The above-mentioned publications deal with environmental protection and the role of humankind. However, in the case of Mizoram, an extensive and in-depth study of environmental degradation needs to be carried out. Limited publications are available thus requiring a further study and analysis to delve into the problems being faced by the people of Mizoram due to environmental degradation.

### **Objectives**

The objectives for the proposed study are as follows:

- i) To examine the various measures taken by the Government at the District Level.
- ii) To assess the role of community towards environmental protection in Aizawl District.
- iii) To study the initiatives for environmental protection among the people of Mizoram.
- iv) To analyse the role of voluntary organisations in Aizawl District.
- v) To recommend effective measures for environmental protection.

### **Scope of study**

The proposed research study will focus on environmental problems and the measures being taken by the District Administration and the voluntary organisations, viz. the Environment and Forest Department, Pollution Control Board, YMA and the NLUP Board. Besides, the study will also take up a thorough study of environmental protection for the people of Mizoram in general and Aizawl District in particular through personal interviews.

## **Hypotheses**

- i) Environmental degradation has increased due to lack of community participation.
- ii) A holistic approach towards environmental protection may be effective in the protection of environment.
- iii) Environmental problems have arisen mainly due to increased population in Aizawl.

## **Methodology**

The research study will be carried out on the basis of primary and secondary data. Primary data will be collected from policy documents and official records of the concerned Departments of the State Government and important information collected by the voluntary organisations. Interviews with key functionaries viz. Deputy Commissioner, Divisional Forest Officer, Chairman of Pollution Control Board, President and Secretary of Central Young Mizo Association, President and Secretary of Mizo Hmeichhe Insuihkhawm Pawl (MHIP), President and Secretary of Mizo Upa Pawl (MUP) will be carried out for collection of primary data. The data will be collected through stratified random sampling from different categories of respondents. Books, magazines, articles and journals will be extensively used for collecting the secondary data of the research study.

## **Chapterisation**

Chapter I: Introduction

Chapter II: Nature of environmental problems in Aizawl District

Chapter III: Need and importance of community involvement in Aizawl District.

Chapter IV: Environmental education, awareness and information

Chapter V: Implementing agencies for the protection of environment in Aizawl District

Chapter VI: Problems of implementation of environmental protection in the community in Aizawl District

Chapter VII: Conclusion: Findings and Suggestions.



## **CHAPTER - II**

### **NATURE OF ENVIRONMENTAL PROBLEMS IN AIZAWL DISTRICT**

The previous chapter is the Introduction of the thesis. It deals with the review of literature, the objectives for the proposed study, the scope of study, the hypotheses made with regard to the study, the methodology that will be carried out in the findings of the study and the sequence of chapters of the study.

In this chapter, in order to have a better understanding of the environmental problems in Aizawl District, the profile of Mizoram, Aizawl, the problems faced at the global and national levels and those confronted in Mizoram are dealt with in detail.

#### **Profile of Mizoram**

The Mizos were originally known as the Lushais, though now they prefer to call themselves Mizo as the term generally includes all the sub-tribes of Mizo hills. Mizoram is the new name given to the hilly areas earlier known as the Lushai Hills.<sup>1</sup> By an Act of the Parliament, called the Lushai Hills District (Change of Name) Act No. 18 of 1954, the name of the “Lushai District” was changed to “Mizo District”, with effect from 29<sup>th</sup> April, 1954.<sup>2</sup> Mizoram became a Union Territory with the implementation of the North-Eastern Areas (Reorganisation) Act, 1971 on 21<sup>st</sup> January, 1972, prior to which it was one of the districts of Assam. Consequent upon the passing of the Constitution 53<sup>rd</sup> Amendment Bill and the State of Mizoram Bill

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<sup>1</sup> Lalkima. C. *Social Welfare Administration in A Tribal State: A Case Study of Mizoram*, Spectrum Publication, Guwahati, 1997, p.1

<sup>2</sup> Patnaik, K. Jagadish, *Mizoram Dimensions and Perspectives: Society, Economy and Polity*, Concept Publishing Company, New Delhi, 2008, p. 13

1986 by the Parliament on 7<sup>th</sup> August, 1986, statehood was conferred on 20<sup>th</sup> February, 1987. It became the 23<sup>rd</sup> State of the Indian Union.<sup>3</sup>

Mizoram lies in the north-eastern part of India. It is sandwiched between Myanmar (Burma) in the East, Bangladesh in the west, and on the north are the Cachar district of Assam and the State of Manipur, while on the north-west lies Tripura. It is geographically located between 92.15 to 93.20 degrees (E) Longitude and 21.58 to 24.35 degrees (N) Latitude. The Tropic of cancer passes just at the southern periphery of Aizawl, the state capital of Mizoram at 23.30 degree (N) Latitude. The total area of Mizoram is 21, 087 sq. km. It has 404 Km international boundary with Myanmar (Burma) and 306 Km with Bangladesh.<sup>4</sup>

### **Climate and Rainfall**

Mizoram has a pleasant climate, generally cool in summer and not very cold in winter.<sup>5</sup> The temperature ranges between 11 degrees centigrade to 21 degrees centigrade in winter and 20 degrees centigrade to 29 degrees centigrade in summer with heavy monsoon rain from mid April to October.<sup>6</sup> The average annual rainfall in Mizoram is 209 mm. The state capital, Aizawl, receives an average annual rainfall of 184.6 mm and Lunglei in the south receives an average rainfall of 192.7.<sup>7</sup>

### **Demography**

The Total population of Mizoram as per 2011 census is 1,097,206 of which male and female are 555, 339 and 541, 867 respectively. In 2001, the total population

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<sup>3</sup> Lalkima. C., *op. cit.*, p.1

<sup>4</sup> Lalkima. C., *op. cit.*, p.1

<sup>5</sup> Verghese. C. G & Thanzawna. R. L. *A History of the Mizos*, Vikas Publishing House Pvt Ltd, New Delhi, 1997, p.3.

<sup>6</sup> Verghese, C. G. & Thanzawna. R. L., *op. cit.*, p. 3.

<sup>7</sup> Statistical Handbook, Mizoram, 2014, p. 129-131.

was 888, 573 with 459,109 males and 429,464 females. The sex ratio in Mizoram is 976 female per 1000 male as per census 2011. In 2001, the sex ratio of female was 935 female per 1000 male in Mizoram. The total population growth in this decade was 23.48 percent while in previous decade it was 29.18 percent. The population of Mizoram forms 0.09 percent of India in 2011.

Out of total population of Mizoram, 52.11% people live in urban regions. The total figure of population living in urban areas is 571,771 of which 286,204 are males and while remaining 285,567 are females. The urban population in the last 10 years has increased by 52.11 percent. Sex Ratio in urban regions of Mizoram was 998 females per 1000 males.

Average Literacy rate in Mizoram for Urban regions was 97.63 percent in which males were 97.98% literate while female literacy stood at 97.02%. Total literates in urban region of Mizoram were 484,841.

Of the total population of Mizoram state, around 47.89 percent live in the villages of rural areas. In actual numbers, males and females were 269,135 and 256,300 respectively. Total population of rural areas of Mizoram state was 525,435. The population growth rate recorded for this decade (2001-2011) was 47.89%. In the rural regions of Mizoram state, female sex ratio per 1000 males was 952.

In rural areas of Mizoram, literacy rate for male and female stood at 88.16 % and 75.23 %. Average literacy rate in Mizoram for rural areas was 84.10 percent. Total literates in rural areas were 363,334.<sup>8</sup>

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<sup>8</sup> www.census2011.co.in › States Accessed on 20<sup>th</sup> November, 2014

## **Administration**

The capital of Mizoram is Aizawl which is also the headquarters of Aizawl District. The Mizoram State Legislative Assembly has 40 seats. Mizoram is now represented at the Parliament by two members, one in the Lok Sabha and the other in the Rajya Sabha.

Mizoram has witnessed vast constitutional, political and administrative changes during the past years. The traditional chieftainship was abolished and the District and Regional Councils created under the Sixth Schedule of the Constitution of India give a substantial measure of local control. Mizoram is divided into 8 (eight) Districts viz. Aizawl, Lunglei, Chhimituipui, Lawngtlai, Champhai, Kolasib, Mamit and Serchhip. There are 3 (three) Autonomous District Councils, viz. the Lai District Council, the Mara District Council and the Chakma District Council.<sup>9</sup>

## **Topography**

The physical set-up of Mizoram is composed predominantly of mountainous terrain of tertiary rocks. The mountains ranges are inclined north to south direction in parallel series. The ranges are separated from one another by narrow deep river valleys. The elevation ranges from 40 meters at Bairabi to 2157 meters at Phawngpui. There are only few small patches of flat lands, which are mostly intermont-plains.

The terrain of Mizoram is young and immature. It shows prominent relief features with steep slopes, and is still undergoing denudation in response to various exogenetic (isostatic gravity) processes. Since the terrain is young, geomorphic features of a state do not show much diversity in the formation of landforms, but one

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<sup>9</sup> aizawl.nic.in/mizoram.htm, Accessed 20<sup>th</sup> March 2013.

distinct features observed in Mizoram is that the western slopes of the mountain ranges all have a higher degrees of slopes. Most of the landforms observed are erosional in nature. The most dominant process in evolution of these forms is the action of running water, and is operating from upper tertiary periods onwards, till today.

Based upon relief, drainage, lithologic and structural set-up, the landforms of Mizoram can broadly be classified into the following units:<sup>10</sup>

i) *Mountainous Terrain Province*

The eastern half of the state can be classified as mountainous Terrain Province. The overall relief in the province is higher and the slopes are much steeper than in the western half. The altitude here scales from 400-2157 meters. The high points are generally over 1000 meters. Average elevation in this province is in the order of 1500 meters. The slopes are very steep, and elevation difference between ridge top and valley varies between 200-600 meters. The ranges are aligned mostly in north-south direction. The important mountain ranges in Mizoram can be briefly described as follows:

In the north east corner, bordering Manipur and Myanmar runs the Sialkang range. The highest peak of this range is called Lengteng, Which stood at 2149 metres above the sea level. The other high peaks are Naunuarzo and Sur with the height of 2141 meters and 2018 meters respectively. In the middle east of Aizawl district there Chalfilh Range and Tawi range with the elevation of 1905 meters and 1889 meters respectively.

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<sup>10</sup> Pachuau Rintluanga. *Mizoram: A Study in Comprehensive Geography*, Northern Book Centre, New Delhi, 2009, p.30.

The other conspicuous ranges are Mawmrang, located in the midst of Chalfilh and Sialkal Range in the Aizawl district, Hmuifang Range in the Central part of the region, and Reiek Range in the west of Aizawl Mountain. Phawngpui (also known as Blue Mountain) with an altitude of 2157 metres in the eastern part of Chhimituipui district is the highest peak in Mizoram.

The drainage flows either towards north or south, due to over-all structural and lithologic control on the drainage. Large scale structural control is evident. Due to relief and moderately heavy precipitation, the dissection is very high. The width of the valley increases towards both ends on the north and south.<sup>11</sup>

ii) *Ridge and Valley Province*

The western part of Mizoram depicts characteristic ridge and valley type of topography. Nearly half of the area of the state is covered by this province. The relief in this province varies between 40-1550 meters, and the average elevation is 700 meters. The relief is low in the western part and rises higher towards the east. The hill trend is approximately NNW-SSE to NNE-SSW direction, higher in the central part and tapering towards north and south. The slopes are generally steep on the western side of the ridge; and elevation difference between valley floor and hill top is in the order of 100-200 meters. Yet, conspicuous mountain ranges are observed in this province. They are Mamit Range and Hachhek Range in the western part of Aizawl district.

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<sup>11</sup> Pachuau Rintluanga, *op. cit.*, p.34.

iii) *The Flat Lands*

Although the flat lands cannot be grouped as occupying a definite province, we will try to describe them as there are few patches of flat lands scattered at places in Mizoram. They are mostly intermont valley plains located in the midst of hills and narrow valleys. These plains are believed to have been formed in the beds of silted up lakes as they are covered by rich alluvial soils.

The largest plain in Mizoram is located at Champhai, about 195 kilometers east of Aizawl town. Champhai plain, bordering Myanmar in the east has a length of only 11.27 kilometers and the widest part is 4.83 kilometers across. The whole area of this plain has been converted into permanent rice cultivation.

The second largest plain is situated at North Vanlaiphai in the south eastern corner of Aizawl District. Thenzawl is another important plain in the southern part of Aizawl District which is also permanent wet rice cultivation. Mention also may be made to numerous small flat patches like Tuisenhnar near Khawzawl in the east, Zawlpui by the side of Mat River, Phaisen and Chhimluang, west of Bikhawthlir village in the north, Hortoki and Bairabi etc. along the river Tlawng.<sup>12</sup>

There is a vast area called Chambur in the western part of Chhimtuipui district, which at present is thickly vegetated.

iv) *The Lakes*

Amidst the precipitous terrain of Mizoram, there are only few natural lakes. They are formed at places, where hills and ridges served as natural embankment on all sides. The large lakes to be mentioned in the states are Palak, Tamdil and

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<sup>12</sup> Pachuau Rintluanga, *op. cit.*, p.35.

Rengdil. There are small lakes such as Rengdil and Vachadil. Among these, only Tamdil, located 100 kilometers away east of Aizawl has been developed and created as the most important and productive fish –pond managed by the state government.

## **Drainage**

Surface configuration like relief, slope and dissection are important factor which affect the development and patterns of drainage system of the area.

The state of Mizoram is drained by a number of rivers, streams and rivulets of various patterns and length. The area receives a considerable amount of rainfall during summer, and most of the streams are ephemeral in nature. Their volume is very limited in dry season, whereas they swell rapidly during monsoon season. It has been observed that running water is the most decisive agent which has sculptured landforms of the region.

Most of the drainage line originated in the central part of the state; and flow either towards north or south directed by the north-south trending ridges. The valleys are narrow and have been carved out in softer formations. The rivers at various places formed deep gorges, and cut across the striking ridges forming water-gaps. The upper courses of the rivers are often intervened by waterfalls. As the drainage course is controlled by parallel ranges, the drainage of ephemeral and consequent types show trellis, dentretic as well as parallel drainage patterns.

The northern portion of the region is drained by river Tlawng (with its tributaries Teirei, and Tut); Tuivawl, Tuirial, Langkaih and Tuivai, all flowing northward and eventually fall into Barak river in Cachar plain of Assam. The southern



hills are drained by rivers Chhimtuipui on the east with its tributaries Mat, Tuichawng, Tlau and Tuipui; while Khawthlangtuipui with its tributaries Kawrpui, Tuichawng, Phairuang, Kau and De formed the western boundaries with Tripura and Bangladesh; whereas the rivers Tiau and Chhimtuipui (also known as Koladyne) formed the natural boundary with Myanmar in the east and south.

The major drainage systems in Mizoram can be described as follows<sup>13</sup>:

i) *Tlawng Drainage System*

River Tlawng is the longest river in Mizoram which measures about 102 kilometers inside the region. It originates from Zopui hill, some 8 kilometers east of Lunglei town, at the height of about 1395 metres . Flowing towards north, it divides the region into two almost equal parts. After the confluence with tributaries Tut and Teirei from the western bank, it enters Cachar district, Where it is known as Dhaleswari) and eventually falls into Barak near Badarpur. The river is navigable by small boat throughout the year, and is regarded as the most important channel of water transport in Mizoram. Rivers Tut and Teirei flow in the parallel with river Tlawng for about 60 kilometers and 40 kilometers respectively before they join the main river Tlawng.

ii) *Tuirial Drainage System*

Tuirial is also navigable by small boat to a considerable length. Its span inside the state is about 67 kilometers. Originating from north Chawilung hill in Aizawl district, it flows northward too in Barak River in Assam. An important

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<sup>13</sup> Pachuau Rintluanga, *op. cit.*, p.36.

tributary is Tuirini, which joins the main stream from the eastern bank after flowing parallel to it from about 29 kilometers.

*iii) Tuivawl Drainage System*

This system drains the north east portion of the region. The main river, Tuivawl, which rises near Chhawrtui village flows towards north where the tributary Tuivai joins it at Manipur border and later confluent with Barak River.

*iv) Tiau Drainage System*

The eastern fringe of Mizoram is drained by the Tiau drainage system. River Tiau which spans for about 83 kilometers is a demarcating line between Mizoram and Myanmar. Rising from the north east corner near Khuangphah village, it takes a southward direction. After the confluence with main tributary, R. Tuipui, it meets R. Chhimtuipui in an opposite direction. This point gives quite an interesting scene as the two currents encountered with an opposite forces.

*v) Chhimtuipui Drainage System*

The system drains the south-eastern part of Mizoram. The main river, Chhimtuipui is the biggest river in Mizoram by volume. It originates from the western part of Myanmar near Vanum village at an altitude of 2325 meters, and flows in south direction. It enters Mizoram near Sabawngte village from which it takes the north direction marking the international boundary, and meets Tiau river in the opposite direction. From this point, the flow direction is diverted towards north west and meets Tuichang river near Hnahthial village, and eventually flows southern-wards where tributaries Mat and Mengpui confluent it. The river Tuichawng and Mat originate

from the central part of Aizawl district. Mengpui river rises near Lunglei town and meets the main stream in Chhimtuipui district.

vi) *Khawthlangtuipui Drainage System*

The Khawthlangtuipui represents the drainage system of the whole south western part of Mizoram. Originating from Saithah village in Aizawl district, the river flows towards south, forming a boundary line between Mizoram and Bangladesh. After taking about 105 kilometers course, it turns towards south west entering Bangladesh through Tlabung, a sub divisional headquarters.

Khawthlangtuipui has numerous important tributaries such as Kawrpui, Tuichawng and Phairuang which associates it from the south. River Kau and De flow parallel to it from the south for considerable length. The drainage system shows rectangular and parallel drainage pattern. The river is navigable by small boat and serves as useful transport routes, as far as trade with Bangladesh is concerned.

The whole drainage system of Mizoram on a large scale depicts parallel drainage patterns. This is the outcome of the characteristics parallel mountain ranges. But one should not overlook the presence of trellis drainage pattern produced by numerous consequent and subsequent streams, which flow parallel either to the dip or strike of the ridges. Dendretics drainage system is also observed at Chhimtuipui drainage system where tributaries such as Tiau, Tuichang, Mat and a number of streams united with the main channel.

The soils of Mizoram are dominated mainly by loose sedimentary formations. They are generally young, immature and sandy. Derived soils with red, loamy texture

is also found with high level of laterite. The soil acidity is high; low in potash and phosphorus. But in an uneroded soil, the content of Nitrogen is quite high fostered by accumulation of organic matters. The soils in the valleys are heavier as they were brought down by the rain water from the high altitudes.

## **Vegetation**

The natural factors which influence the geographical distribution of forest in Mizoram are latitude, elevation, rainfall and natural of soil. There is a marked difference between vegetation of the western and eastern part of the state. The influence of altitude, soil and moisture is obvious.

Mizoram has and abundant growth of vegetation. Out of the total geographical area (21, 081 sq.km) as much as 15,955 sq.km is covered by vegetation which accounts for about 75 percent of the area of the state. It tropical location, which furnish conductive climatic condition such as an adequate rainfall moderate temperature etc. favours the luxuriant growth of vegetation. The type of vegetation which thrives in Mizoram ranges from Tropical trees to Sub-Tropical trees. They comprise valuable species of timber, lumber, medicinal herbs and domestic resources.

On the broad scale, the forest of Mizoram can be simply described as wooded forests in the lower ridges – normally below 600 meters; including riverine low lands. However, according to the vegetation, they can be further classified into six types:<sup>14</sup>

- a) Tropical Evergreen Forest
- b) Sub- Himalayan Semi-Evergreen Forest

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<sup>14</sup> Pachuau Rintluanga, *op. cit.*, p.49.

- c) Sub-Tropical Pine Forest
- d) Sub-Tropical Hill Forest
- e) Mixed Forest, and
- f) Overlapping Bamboos

The simple classification of forests in Mizoram falls under three broad types:

- i) Tropical Wet-Evergreen Forest
  - ii) Tropical Semi-Evergreen Forest
  - iii) Mountain Sub- Tropical Forest
- i) *Tropical Wet-Evergreen Forest*

This type of forest is found at places where precipitation is high. It is found abundantly in western part adjoining Bangladesh and Tripura as well as Assam. Important timber species of this forest type are: Thlanvawng, Ngiau, Sahatah, Lawngthing, Muk etc.<sup>15</sup> Some important bamboo species of this classification are: Mautak, Rawthing, Rawnal, Phulrua and Rawthla. Some species of ecological importance are Khuangthli, Lenhmui, Theivawkmit, Thingvawkpui, Banphar, Tufar, Nganbawm, Theitat, Hmawng etc. Other common species found in the Tropical Wet-Evergreen Forest are Tatkawng, Thingthi, Pualeng, Thingkha, Pang, Kangtek, Zairum, Kawlkar, and Pangkai. Species of the under-growth such as Hnahthial, Tum or Meihle, Tartiang thrive under the thick jungles. Hmunphiah (*Thysonoloena agrestic*) used as broomstick is also abundant in this type of forest; and in fact, it is one of the sources of revenue of the state.

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<sup>15</sup> Pachuau Rintluanga, *op. cit.*, p.49

ii) *Tropical Semi-Evergreen Forest*

Tropical Semi-Evergreen Forest covers about 50 percent of the total area of Mizoram. It occupies the central part of the region of Chhimtuipui River in the south to Manipur border in the north. Apart from timber species which thrive well in tropical wet evergreen forest, the dominant species are Khiang, Zuang, and Thingdawl. Valuable domestic species available are: Vaiza, Kawhtebel, Zawngtah, Bil, Thil etc. Among the variety of this forest type, the most common are: Tlangham, Hlai, Tiar, Fartuah, Sialhma, Vang, Zihnghal, Kharuan, Thal, Thingsia, Vaube, Phunchawng, Khaukhim, Thingsir etc.

iii) *Mountain Sub-Tropical Forest*

This type of forest is found on a higher elevation, mostly confined in the eastern fringe of the region. They are also found in strips of ranges in the western part around W. Bungmun and isolated in Sangau area in the south. The vegetation of this type is dominated by Chhawkhei, Fah, Tlaizawng, Keifang, Phen, Sunhlu, Khawmhma, Thualthu. Only few species like Far, Then etc. are sawn. Other common species of this classification are: Sihneh, Phuihnam, Hmutau, Hulhu, and Sialinichhu, Katchat etc.

It is to be noted that many of the species mentioned above are to be found growing here and there irrespective of the classifications of forest types. For instance, bamboo is found almost everywhere except at the higher ridges; and in fact, covers about 80 percent of the total vegetated area of Mizoram. Normally, lower slopes of the ridges and former jhummed areas, and low valley sites are covered with bamboo

patches of different growth; depending when the jhum was practiced at respective plots.

The main timber species mentioned earlier are found on sandstone and limestone on the crest of slopes of the ridges as well as on the higher slopes. First patch, where the composition is a mixture of moist deciduous, semi-evergreen and bamboos are delineated as mixed forests. They are distributed in patches – at Chalfilh range, Dampa range, Mawmrang range, Tawi and Sur Range; and at Phawngpui mountainous range further south.

Ironically, the vegetation of Mizoram has undergone a serious change due to continuous onslaughts by man, clearance for jhumming, heavy exploitation and maltreatment by burning, and over grazing at scattered places. Most of the natural thick forests comprising of heterogeneous and valuable species have been degenerated and become an almost barren lands. Traditional jhum system, lumbering and fueling are the major factors that accelerate the degeneration and degradation of the green forests.<sup>16</sup>

## **Forest**

The forest cover in the country is monitored at the interval of every two years by the Forest Survey of India, Dehradun, based on the interpretation of Satellite Imageries. Based on ‘India State of Forest Report-2015’ published by Forest Survey of India, Dehradun, about 91.47% of the State’s total geographical area is covered under forests & tree cover. However, the forests have suffered serious depletion and degradation due to traditional practice of shifting cultivation, uncontrolled fire,

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<sup>16</sup> Pachuau Rintluanga, *op. cit.*, p.53.

unregulated fellings etc. as per the “India State of Forest Report-2015” published by Forest Survey of India, the state has 12, 752 sq.km. Open forests.<sup>17</sup>

**Table 1.1**  
**Abstract of Forest Cover in Mizoram as Per Indian State of Forest Report 2015**

Forest Cover	Area in Sq. km
Very dense forests	138
Moderately dense forests	5858
Open forests	12752
Total forest cover	18748
Tree cover	535
Total forest and tree cover	19283
Per capita forest and tree cover	1.769
Of States geographical area	91.47
Of India’s forest and tree cover	2.43

**Source:** *Economic Survey Mizoram, 2015-16*

Forestry forms the basic resource of the region’s economy. The important forest produce of Mizoram, mostly in the form of raw materials, are bamboo, timber, firewood, sungrass and broomsticks. Since data of production quantity is not available for all the forest produces. The analysis is carried out here mostly in terms of revenue collected by the state government from certain forest produces. By and large, bamboo is the most important forest produce of Mizoram in terms of revenue collection. In fact, it is the only forest resource which can support the future forest – based industry. Important bamboo species are Mautak, Phulrua. Rawthing, Rawnal *etc.* The sustained yield of *Mautak* is estimated at 1 million metric ton annually. The important timber species found in Mizoram are Ngiau, Khiang, Tei, Zuang, Thlanvawng, Sahatah, Char, Assam Sal, Lawngthing, *etc.*<sup>18</sup>

<sup>17</sup> *Economic Survey 2015-16*, Planning & Programme Implementation Department, Government of Mizoram, p. 77.

<sup>18</sup> Pachuau Rintluanga, *op. cit.*, p. 93-94.



## **Development of Forest Economy**

Traditional shifting cultivation, widespread lumbering and mismanagement of forestry have been the main drawback in keeping the forest wealth alive. Attempts have been made by state Forest Department to regenerate the forest either naturally wherever there occurs good seed bearers in particular area, or artificially through plantation or both. Apart from the local species, the Forest Department also introduced in this plantation programme exotic species like teak and eucalyptus.<sup>19</sup>

## **Agriculture**

Paddy continues to remain the principal food crop and the staple food of the people of Mizoram. Whereas the minimum Rice requirements of the state per year is estimated to be about 1, 80,000 MT, the present Rice production is only 60, 679 MT per year which could meet only 33.71% of its rice requirement. The remaining 66.29% has to be imported from outside the State.

During 2014-15, area under Wet Rice Cultivation has been recorded as 16866 Ha or 32.80%. Rice production has increased by 28.55%. The area under Jhum cultivation has decreased from 44,947 hectare at the beginning of the 11<sup>th</sup> Plan to 20,064 hectare during 2014-15 which account for above 55.36% reduction. The significant reduction in Jhum area is mainly due to the implementation of Oil Palm development programme, Sugarcane cultivation programme, Rashtriya Krishi Vikas Yojana (RKVY) & New Land Use Policy (NLUP).<sup>20</sup>

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<sup>19</sup> Pachuau Rintluanga. *Geography of Mizoram*, R. T. Enterprise, Aizawl, Mizoram, 1994, p.77

<sup>20</sup> *Economic Survey 2015-16*, Planning & Programme Implementation Department, Government of Mizoram, p.

Majority of the population, more than 60% of the total population, in Mizoram depends on the Agricultural sector as it is the major source of livelihood for rural areas. Various kinds of crops grown in Mizoram are rice, maize, pulses and oilseeds. The cultivation is done using jhuming, wet rice cultivation and terraced cultivation. The practice of Jhuming is still prevalent among many farmers. During 2014-15, more than 38% of the total Rice production comes from Jhuming. As such, it is proposed to incentivize the farmers through improved cultivation of rice on hill slopes/improved jhum cultivation wherein subsidy assistance on critical inputs like improved seed, fertilizers, PP chemicals, Herbicides etc. will be provided thereby resulting in higher production and productivity.

Low consumption of fertilizers, low seed replacement, low availability of farm power, and dearth of potential area connectivity, marginal land holding, poor market linkage, and lack of assured irrigation are the major constraints of agriculture development.<sup>21</sup> Increasing rice production and diversification of agriculture farming would therefore enhance rural livelihood and reduce poverty in villages and is imperative for food security of the State.<sup>22</sup>

### **Aizawl District: A Brief Profile**

Aizawl district is one of the eight districts of Mizoram state in India. The district is bounded on the north by Kolasib district, on the west by Mamit district, on the south by Serchhip districts and on the east by Champhai district. The district occupies an area of 3,576.31 square kilometres (1,380.82 sq mi). The headquarters of

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<sup>21</sup> *Economic Survey 2015-16*, Planning & Programme Implementation Department, Government of Mizoram, p. 40.

<sup>22</sup> *Ibid.*, p.8

the district is Aizawl city, the capital of Mizoram. As of 2011 it is the most populous district of Mizoram (out of 8 districts).<sup>23</sup>

In 2011, Aizawl had population of 400,309 of which male and female were 199,270 and 201,039 respectively. In 2001 census, Aizawl had a population of 325,676 of which males were 166,877 and remaining 158,799 were females. Aizawl District population constituted 36.48 percent of total Maharashtra population. In 2001 census, this figure for Aizawl District was at 36.65 percent of Maharashtra population.<sup>24</sup>

There was change of 22.92 percent in the population compared to population as per 2001. In the previous census of India 2001, Aizawl District recorded increase of 38.07 percent to its population compared to 1991. The initial provisional data released by census India 2011, shows that density of Aizawl district for 2011 is 112 people per sq. km. In 2001, Aizawl district density was at 91 people per sq. km. Aizawl district administers 3,576 square kilometers of areas. Average literacy rate of Aizawl in 2011 were 97.89 compared to 96.51 of 2001. If things are looked out at gender wise, male and female literacy were 98.11 and 97.67 respectively. For 2001 census, same figures stood at 96.75 and 96.26 in Aizawl District. Total literate in Aizawl District were 340,595 of which male and female were 169,547 and 171,048 respectively. In 2001, Aizawl District had 269,699 in its district.

With regard to Sex Ratio in Aizawl, it stood at 1009 per 1000 male compared to 2001 census figure of 952. The average national sex ratio in India is 940 as per

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<sup>23</sup> [https://en.wikipedia.org/wiki/Aizawl\\_district](https://en.wikipedia.org/wiki/Aizawl_district), Accessed 20<sup>th</sup> March, 2014.

<sup>24</sup> [www.census2011.co.in](http://www.census2011.co.in) > Mizoram > District List, Accessed on 20<sup>th</sup> March, 2014.

latest reports of Census 2011 Directorate. In 2011 census, child sex ratio is 979 girls per 1000 boys compared to figure of 973 girls per 1000 boys of 2001 census data.<sup>25</sup>

Out of the total Aizawl population for 2011 census, 78.63 percent lives in urban regions of district. In total 314,754 people lives in urban areas of which males are 155,490 and females are 159,264. Sex Ratio in urban region of Aizawl district is 1024 as per 2011 census data. Similarly child sex ratio in Aizawl district was 985 in 2011 census. Child population (0-6) in urban region was 39,179 of which males and females were 19,738 and 19,441. This child population figure of Aizawl district is 12.69 % of total urban population. Average literacy rate in Aizawl district as per census 2011 is 98.27 % of which males and females are 98.44 % and 98.11 % literates respectively. In actual number 270,820 people are literate in urban region of which males and females are 133,633 and 137,187 respectively.

As per 2011 census, 21.37 % population of Aizawl districts lives in rural areas of villages. The total Aizawl district population living in rural areas is 85,555 of which males and females are 43,780 and 41,775 respectively. In rural areas of Aizawl district, sex ratio is 954 females per 1000 males. If child sex ratio data of Aizawl district is considered, figure is 963 girls per 1000 boys. Child population in the age 0-6 is 13,178 in rural areas of which males were 6,712 and females were 6,466. The child population comprises 15.33 % of total rural population of Aizawl district. Literacy rate in rural areas of Aizawl district is 96.40 % as per census data 2011. Gender wise, male and female literacy stood at 96.89 and 95.90 percent respectively.

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<sup>25</sup> *Ibid.*

In total, 69,775 people were literate of which males and females were 35,914 and 33,861 respectively.<sup>26</sup>

## **Global Environmental Problems**

### **Global Warming**

Global warming is the gradual increase in world temperatures caused by greenhouse gases (GHGs). The main greenhouse gas is carbon dioxide (CO<sub>2</sub>)\*; others are nitrous oxide, CFCs (chloroflourocarbons), methane, and some organochloride compounds like perfluorocarbons (PFCs) and sulphuric fluoride. GHGs come from various sources, mostly from burning fossil fuels. These gases trap the sun's rays in the atmosphere causing the temperature to rise resulting in, what is known as greenhouse effect of global warming.<sup>27</sup>

Before the Industrial Revolution, human activities released very few gases into the atmosphere and all climate changes happened naturally. After the Industrial Revolution, through fossil fuel combustion, changing agricultural practices and deforestation, the natural composition of gases in the atmosphere is getting affected and climate & environment began to alter significantly. Over the last 100 years, it was found out that the earth is getting warmer and warmer. The key greenhouse gases (GHG) causing global warming is carbon dioxide. CFC's, even though they exist in very small quantities, are significant contributors to global warming. Carbon dioxide, one of the most prevalent greenhouse gases in the atmosphere, has two major anthropogenic (human-caused) sources: the combustion of fossil fuels and changes in land use. Net releases of carbon dioxide from these two sources are believed to be

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<sup>26</sup> [www.census2011.co.in](http://www.census2011.co.in) > Mizoram > District List Accessed on 20<sup>th</sup> March 2014

<sup>27</sup> Uberoi. N. K., *Environmental Management*, Excel Books, 2003, p. 86.

contributing to the rapid rise in atmospheric concentrations since Industrial Revolution. Because estimates indicate that approximately 80 percent of all anthropogenic carbon dioxide emissions currently come from fossil fuel combustion, world energy use has emerged at the center of the climate change debate.<sup>28</sup>

## **Ozone Depletion**

Earth's atmosphere is divided into three regions, namely troposphere, stratosphere and mesosphere. The stratosphere extends from 10 to 50 kms from the Earth's surface. This region is concentrated with slightly pungent smelling, light bluish ozone gas. The ozone gas is made up of molecules each containing three atoms of oxygen; its chemical formula is O<sub>3</sub>. The ozone layer, in the stratosphere acts as an efficient filter for harmful solar Ultraviolet B (UV-B) rays. Ozone is produced and destroyed naturally in the atmosphere and until recently, this resulted in a well-balanced equilibrium. Ozone is formed when oxygen molecules absorb ultraviolet radiation with wavelengths less than 240 nanometers and is destroyed when it absorbs ultraviolet radiation with wavelengths greater than 290 nanometers. Ozone is highly reactive and easily broken down by man-made chlorine and bromine compounds. These compounds are found to be most responsible for most of ozone layer depletion. The ozone depletion process begins when CFCs (used in refrigerator and air conditioners) and other ozone-depleting substances (ODS) are emitted into the atmosphere. Winds efficiently mix and evenly distribute the ODS in the troposphere. These ODS compounds do not dissolve in rain, are extremely stable, and have a long life span. After several years, they reach the stratosphere by diffusion. Strong UV light

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<sup>28</sup> Khan Ahmad Zulfequar, M. D. *Global Environmental Issues and its Remedies*, International Journal of Sustainable Energy and Environment, Vol. 1, No. 8, September 2013, p. 121.

breaks apart the ODS molecules. CFCs, HCFCs, carbon tetrachloride, methyl chloroform release chlorine atoms, and halons and methyl bromide release bromine atoms. It is the chlorine and bromine atom that actually destroys ozone, not the intact ODS molecule. It is estimated that one chlorine atom can destroy from 10,000 to 100,000 ozone molecules before it is finally removed from the stratosphere. The major effects of ozone layer depletion are: Effects on Human and Animal Health: - Increased penetration of solar UV-B radiation is likely to have high impact on human health with potential risks of eye diseases, skin cancer and infectious diseases. Effects on Terrestrial Plants: In forests and grasslands, increased radiation is likely to change species composition thus altering the bio-diversity in different ecosystems. It could also affect the plant community indirectly resulting in changes in plant form, secondary Metabolism, etc. Effects on Aquatic Ecosystems: High levels of radiation exposure in tropics and subtropics may affect the distribution of phytoplankton, which form the foundation of aquatic food webs. It can also cause damage to early development stages of fish, shrimp, crab, amphibians and other animals, the most severe effects being decreased reproductive capacity and impaired larval development.<sup>29</sup>

## **Pollution**

This is perhaps the most obvious, yet most ignored global environmental issue in this list of environmental problems. The term 'pollution' in itself has several other aspects, prominent ones among which include air pollution, water pollution and land pollution. On one hand air pollution can be attributed to the large amount of carbon

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<sup>29</sup> Khan Ahmad Zulfequar, M. D., *Global Environmental Issues and its Remedies*, International Journal of Sustainable Energy and Environment, Vol. 1, No. 8, September 2013, PP: 120 – 126.

dioxide released into the atmosphere by industries and vehicles, water pollution and land pollution is caused as a result of waste disposal from factories, oil-carrying vessels etc. Basically, mankind is to be blamed for this issue as our activities tend to hamper the environment at an alarming rate. If this trend continues, we will be very soon left without any fresh air to breathe, and clean water to drink.<sup>30</sup>

### **Land Degradation**

Land pollution, owing to human activities, and desertification, due to loss of vegetation has left the surface of the planet unsuitable for human use. Land degradation can be attributed to the fact that we have become too laid-back in terms preservation of the nature. Improper soil use, haphazard waste disposal, large-scale deforestation and other such human activities harmful for nature are on the rise, something which is invariably taking a toll on our natural surroundings.<sup>31</sup>

### **Overpopulation**

Yet another major global environmental issue is overpopulation. As the population of world continues to soar at an alarming rate, the pressure on the resources of the planet is increasing. The problems associated with overpopulation range from food and water crisis to lack of space for natural burial. Incessant population growth will not just result in depletion of natural resources, but will also put more pressure on the economy. The world's population has been booming for years. The population is now threatening to reach the stage where there are simply too many people for the planet to support. The United Nations Population Fund predicts

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<sup>30</sup> Anand S.V., *Global Environmental Issues*, 2: 632 doi:10.4172/scientificreports.632, 2013, p.4.

<sup>31</sup> *Ibid.*, p. 4.



that by the middle of the next century, the world's population will stabilize at about 14 million people. If fertility rates were decreased to 2.1 births per woman, population stabilization could be achieved sooner. Overpopulation has been disastrous for the planet. Greater populations have polluted and consumed more, ruining the environment and creating or intensifying a variety of problems. Also, with the food supply limited, increases in population make shortages in many parts of the world even worse.<sup>32</sup>

### **Hazardous Wastes**

As population increases, human activities increase, which eventually increases the amount of waste produced. This waste does not just include those harmful gases let out in the atmosphere or toxic waste released in water bodies, but also includes nuclear waste, e-waste, medical waste and even the waste from our homes. With limited area available on the planet, and most of it being inhabited by us, we are left with no space to dispose this type of waste. The rate at which this waste is produced is far more than the rate at which it is being treated, and these just results in piling up of waste, which eventually pollutes the environment. These were some of the major global environmental issues and problems which have been threatening the planet for quite some time now. In addition to releasing gases and particles into the atmosphere, humans produce waste that is dumped on the environment. Often, this waste is hazardous and dangerous to both nature and human life. The levels of dangerous wastes continue to grow. Industries and individuals continue to be largely unaware of

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<sup>32</sup> Khan Ahmad Zulfequar, M. D., *Global Environmental Issues and its Remedies*, International Journal of Sustainable Energy and Environment, Vol. 1, No. 8, September 2013, p.124.

this major environmental problem. As a result, many people and industries are failing to prevent the creation of hazardous waste or to limit the negative effects it produces. Individuals often throw out goods without realizing that they are headed for a landfill and could be dangerous for the environment. No matter where people put these hazardous waste materials, there is always a chance that they could find their way into the ground, and eventually into our bodies. Corporations usually want to avoid the costs associated with having to limit creation of hazardous waste. Consequently, they build landfills on site and fill them with waste, or sometimes pay to have their waste removed. Often, hazardous materials are transported to areas that accept money to take the waste. It may prove very difficult to reduce hazardous waste in the future. Unlike many other environmental problems, waste creation is something people do not often think about. IN near future, people may have to reduce not only their generation of hazardous waste, but also their consumption of many products that end up in landfills.<sup>33</sup>

## **Acid Rain**

The term acid rain refers to what scientists call acid deposition. It is caused by airborne acidic pollutants and has highly destructive results. Scientists first discovered acid rain in 1852, when the English chemist Robert Agnus invented the term. From then until now, acid rain has been an issue of intense debate among scientists and policy makers. Acid rain, one of the most important environmental problems of all, cannot be seen. The invisible gases that cause acid rain usually come from automobiles or coal-burning power plants. Acid rain moves easily, affecting locations

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<sup>33</sup> Khan Ahmad Zulfequar, M. D., *Global Environmental Issues and its Remedies*, International Journal of Sustainable Energy and Environment, Vol. 1, No. 8, September 2013, p. 123.

far beyond those that let out the pollution. As a result, this global pollution issue causes great debates between countries that fight over polluting each other's environments. For years, science studied the true causes of acid rain. Some scientists concluded that human production was primarily responsible, while others cited natural causes as well. Recently, more intensive research has been done so that countries have the information they need to prevent acid rain and its dangerous effects. The levels of acid rain vary from region to region.<sup>34</sup>

## **Deforestation**

The deforestation of forest particularly tropical rainforests is a major global problem-each year millions of hectares are lost. Deforestation rates in some countries continue to increase despite worldwide pressures. Rainforests are destroyed for wood products, and to make way for agricultural activities, mining and dams. The impacts of deforestation include:

- a) Loss of livelihood for local inhabitants
- b) Variable environmental conditions (susceptibility to flood, aggravated droughts, soil erosion etc.)
- c) Loss of biodiversity and disturbance to ecosystems
- d) Loss of carbon sink<sup>35</sup>

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<sup>34</sup> Khan Ahmad Zulfequar, M. D., *Global Environmental Issues and its Remedies*, International Journal of Sustainable Energy and Environment, Vol. 1, No. 8, September 2013, p. 123.

<sup>35</sup> Khan Ahmad Zulfequar, M. D., *Global Environmental Issues and its Remedies*, International Journal of Sustainable Energy and Environment, Vol. 1, No. 8, September 2013, p. 124.

## **Environmental Problems in India**

A country's environmental problems vary with its stage of development, structure of its economy, production, technologies in use and its environmental policies. While some problems may be associated with the lack of economic development (e.g. inadequate sanitation and clean drinking water), others are exacerbated by the growth of economic activity (e.g. air and water pollution). Poverty presents special problems for a densely populated country with limited resources.<sup>36</sup> Though there are certain issues affecting us globally, the problems faced by developed countries differ from those of developing countries. The major environmental problems faced in India are as follows:

### **Population Growth**

It is known that population growth and economic development are affecting the environment. The interplay between population growth, resource depletion/environmental damage has been much debated. There are those who think that high population growth causes stress on environment, and there are those who put less blame on population and more blame on economic development, industrial and agricultural practices that result in environmental damage. The fact is that both population growth and unsustainable economic development are cause for concern especially in developing countries.

India's population has crossed the one billion mark. More people means more pressure on resources, more consumption of energy, more production of wastes, including greenhouse gases-all having adverse effects on environment. Thus, the

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<sup>36</sup> [indiabudget.nic.in/es98-99/chap1103.pdf](http://indiabudget.nic.in/es98-99/chap1103.pdf)

population has to be stabilized in order to ensure sustainable development reflecting equity, environmental concern and social responsibility.<sup>37</sup>

## **Air Pollution**

Pollution refers to the presence of substances in air, water and land, whether they result from human activity or occur naturally which have adverse effects on human and on environment.<sup>38</sup> Air pollution is thus the state of environment in which the outer atmosphere gets contaminated with gases and other materials in concentration which are harmful to man and environment. The contamination of air occurs because the contaminants cannot be absorbed by natural environmental cycles.

The atmosphere is being polluted by the discharge of emissions originating from industrial plants, domestic sources, mobile vehicles and thermal power plants. In India, air pollution is widespread in urban areas where vehicles are the major contributors and in other areas with high concentration of industries and thermal power plants. The number of motor vehicles has increased from 0.3 million in 1951 to 37.2 million in 1997.<sup>39</sup>

Air pollution in India is a serious issue with the major sources being fuelwood and biomass burning, fuel adulteration, vehicle emission and traffic congestion. Air pollution is also the main cause of the Asian brown cloud, which is causing the monsoon to be delayed. India is the world's largest consumer of fuelwood, agricultural waste and biomass for energy purposes. Traditional fuel (fuelwood, crop

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<sup>37</sup> Uberoi. N. K. *Environmental Management*, Excel Books, 2003, p. 3.

<sup>38</sup> Uberoi. N. K., *op. cit.*, p. 134

<sup>39</sup> Uberoi. N. K. *Environmental Management*, Excel Books, 2003, p. 134

residue and dung cake) dominates domestic energy use in rural India and accounts for about 90% of the total. In urban areas, this traditional fuel constitutes about 24% of the total. Fuel wood, agricultural waste and biomass cake burning releases over 165 million tonnes of combustion products into India's indoor and outdoor air every year. These biomass-based household stoves in India are also a leading source of greenhouse emissions contributing to climate change.

Annual crop burning practice in northwest India, north India and eastern Pakistan, after monsoons, from October to December, are a major seasonal source of air pollution. Approximately 500 million tons of crop residue is burnt in open, releasing smoke, soot, NO<sub>x</sub>, SO<sub>x</sub>, PAHs and particulate matter into the air. This burning has been found to be a leading cause of smog and haze problems through the winter over Punjab, cities such as Delhi, and major population centers along the rivers through West Bengal. In other states of India, rice straw and other crop residue burning in open is a major source of air pollution.

Vehicle emissions are another source of air pollution. Vehicle emissions are worsened by fuel adulteration and poor fuel combustion efficiencies from traffic congestion and low density of quality, high speed road network per 1000 people.

On per capita basis, India is a small emitter of carbon dioxide greenhouse. In 2009, IEA estimates that it emitted about 1.4 tons of gas per person, in comparison to the United States' 17 tons per person, and a world average of 5.3 tons per person. However, India was the third largest emitter of total carbon dioxide in 2009 after China and the United States. With 17 percent of world population, India contributed

some 5 percent of human-sourced carbon dioxide emission; compared to China's 24 percent share.

The Air (Prevention and Control of Pollution) Act was passed in 1981 to regulate air pollution and there have been some measurable improvements. However, the 2012 Environmental Performance Index ranked India as having the poorest relative air quality out of 132 countries.<sup>40</sup>

### **Water Pollution**

Water is one of the most important industrial materials required in the manufacturing process, and so, many industries are established around the water bodies. These industries pollute the water resources by discharging toxic effluents causing health hazard to living beings. These wastes contain mercury, lead, arsenic, chlorinated hydrocarbons and many other toxic substances which are dangerous for human, animal and plant life.<sup>41</sup>

Many rivers in India have sacred names. Yet they are subjected to misuse and converted into polluted water bodies. Holy Ganges, is the most polluted even after the clean up programme. Urbanization and industrialization have been the cause of pollution of these water resources.

Water Quality Classification studies carried out by CPCB in regard to pollution levels of Yamuna River at different locations record presence of DDT, BMC and

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<sup>40</sup> [https://en.wikipedia.org/wiki/Environmental\\_issues\\_in\\_India](https://en.wikipedia.org/wiki/Environmental_issues_in_India).

<sup>41</sup> Sengar S. Dharmendra, *Environmental Law*, PHI Learning Private Limited, 2014, p.14.

metals at almost every location. The water is treated at treatment plants but many a times one or the other plant had to be shut down due to high level of pollutants.<sup>42</sup>

### **Soil Pollution**

Land is a subject within the legislative and administrative jurisdiction of the States as per the VII Schedule of the Constitution, empowering the states to develop policies and enact laws. Of India's reporting area for land use about 46.6% is under agriculture, 22.6% is under forests, and 13.6% is not available for cultivation. Approximately 41 million hectares of land are considered totally unfit or not available for vegetation or cultivation. The per capita availability of land declined from 0.89 hectare in 1951 to 0.3 hectares in 2001; the per capita availability of agriculture land declined from 0.48 hectare in 1951 to 0.14 hectare in 2001. Besides the pressure of human population, there are about 50 million cattle and other livestock living off the biomass from the land.<sup>43</sup>

### **Solid Wastes**

Trash and garbage is a common sight in urban and rural areas of India. It is a major source of pollution. Indian cities alone generate more than 100 million tons of solid waste a year. Street corners are piled with trash. Public places and sidewalks are despoiled with filth and litter, rivers and canals act as garbage dumps. In part, India's garbage crisis is from rising consumption. India's waste problem also points to a stunning failure of governance.

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<sup>42</sup> Uberoi. N. K. *Environmental Management*, Excel Books, 2003, p. 178.

<sup>43</sup> Uberoi. N. K. *Environmental Management*, Excel Books, 2003, p. 224.



In 2000, India's Supreme Court directed all Indian cities to implement a comprehensive waste-management programme that would include household collection of segregated waste, recycling and composting. These directions have been simply ignored. No major city runs a comprehensive programme of the kind envisioned by the Supreme Court.

Indeed, forget waste segregation and recycling directive of the India's Supreme Court, the Organisation for Economic Cooperation and Development estimates that up to 40 percent of municipal waste in India remains simply uncollected. Even medical waste, theoretically controlled by stringent rules that require hospitals to operate incinerators, is routinely dumped with regular municipal garbage. A recent study found that about half of India's medical waste is improperly disposed of.

Municipalities in Indian cities and towns have waste collection employees. However, these are unionised government workers and their work performance is neither measured nor monitored.

Some of the few solid waste landfills India has, near its major cities, are overflowing and poorly managed. They have become significant sources of greenhouse emissions and breeding sites for disease vectors such as flies, mosquitoes, cockroaches, rats, and other pests.

In 2011, several Indian cities embarked on waste-to-energy projects of the type in use in Germany, Switzerland and Japan. For example, New Delhi is implementing two incinerator projects aimed at turning the city's trash problem into electricity resource. These plants are being welcomed for addressing the city's chronic problems of excess untreated waste and a shortage of electric power. They are also being

welcomed by those who seek to prevent water pollution, hygiene problems, and eliminate rotting trash that produces potent greenhouse gas methane. The projects are being opposed by waste collection workers and local unions who fear changing technology may deprive them of their livelihood and way of life.

Along with waste-to-energy projects, some cities and towns such as Pune, Maharashtra, are introducing competition and the privatisation of solid waste collection, street cleaning operations and bio-mining to dispose the waste. A scientific study suggests public private partnership is, in Indian context, more useful in solid waste management. According to this study, government and municipal corporations must encourage PPP-based local management through collection, transport and segregation and disposal of solid waste.<sup>44</sup>

### **Environmental Problems in Mizoram: Aizawl District**

Environmental problems like air, water and land pollution or municipal waste disposal are the major concerns of countries today and Aizawl District is no exception to it. The magnitude of these problems varies in degrees from place to place. The causes of environmental problems identified in Aizawl are as follows:

#### **Jhuming**

The age-old traditional method of shifting cultivation is still practiced in Mizoram. This is because the economic life of the people of Mizoram has always centered on jhum cultivation.<sup>45</sup> It is also closely related to the Mizo culture as the festival of Chapchar Kut is celebrated between the clearing of the jungle and the

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<sup>44</sup> [https://en.wikipedia.org/wiki/Environmental\\_issues\\_in\\_India](https://en.wikipedia.org/wiki/Environmental_issues_in_India). Accessed on 25<sup>th</sup> April, 2015

<sup>45</sup> [www.nerlp.gov.in/notice/Final Livelihood Study Report/ Mizoram](http://www.nerlp.gov.in/notice/Final_Livelihood_Study_Report/Mizoram), Accessed on 27<sup>th</sup> July 2015.

burning of jhum. In olden days with the availability of vast area of land including forest land, smaller size of population and in view of self-sustaining families/rural economy, the Jhum practices were a viable proposition. However, the problem with this method of slash and burn farming is that it affects the fertility of the soil as the land becomes barren once the produce is harvested and it takes a decade for the recovery of the Jhum cycle. Moreover, the fumes and dust concentrations of agricultural burning have led to air pollution posing a threat to biodiversity and human health.

### **Increase in the Number of Motor Vehicles**

Air pollution is usually caused by urbanization, rapid economic development, increasing and higher levels of energy consumption.<sup>46</sup> Over the years, there has been a considerable increase in the number of vehicles in Mizoram, particularly in Aizawl. The tremendous craze for ownership of vehicles such as cars as well as two-wheelers among the Mizos is prominent with the recent economic prosperity. This is especially so in Aizawl city which is mired in vehicular traffic jams in the recent past. The increase in vehicles has resulted in air pollution in Aizawl City.

Upto January 2015, there are as many as 1, 50,529 vehicles in Mizoram. The marginal increase of vehicles from March, 2011 to January, 2015 is 56, 661.<sup>47</sup> This confirms to a certain extent that vehicles are one of the main contributors of air pollution in Mizoram. The tardy growth of road infrastructure, their lack of scope for extension and the increase in the number of vehicles has created a problem leading to a point where the state has utilized all its existing spatial capacities.

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<sup>46</sup> Uberoi. N. K. *Environmental Management*, Excel Books, 2003, p. 135.

<sup>47</sup> [www.transport.mizoram.gov.in.](http://www.transport.mizoram.gov.in.), Accessed 20<sup>th</sup> November, 2015

## **Lack of Proper Town Planning**

Over the years, Aizawl City has undergone a lot of changes without proper town/country planning. This has resulted in mushrooming of concrete jungle, leaving no breathing space for the residents in various localities. Moreover, the lack of proper town/country planning has aggravated inconveniences to the residents even as the roads/streets are narrow without proper drainage/sewerage system, effluent disposal and sanitation. The hilly nature of the city entails accumulation of wastes/garbage flowing from the upper to the lower areas, resulting to unhygienic living condition for the residents.

The State Government with its Town/Country Planning Wing of Urban Development and Poverty Alleviation has initiated an ambitious Master Plan of the City of 128.9 Sq.km. Apparently; this Master Plan is likely to take several years before completion of the Plan. The Master Plan for Aizawl City is now undertaken by the Aizawl Municipal Corporation.<sup>48</sup> Meanwhile, the residents of Aizawl have to bear with the minimal basic amenities coupled with the lack of proper town/country planning. The treacherous monsoon season causes miseries to the people due to overflowing by ill-constructed drainage system and sporadic landslides in and around the District.

## **Rapid Population Growth**

Another factor owing to the need for environment protection in Aizawl is the rapid increase in population. There is an unprecedented influx of migration of the rural

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<sup>48</sup> *Economic Survey 2015-16*, Planning & Programme Implementation Department, Government of Mizoram, p. 205.

population to Aizawl city, in search of better opportunities and livelihood. This demographic phenomenon is to a certain extent justified by the deterioration/erosion of soil caused by Jhuming and lack of opportunities for earning a living in the rural areas. Meanwhile, the tremendous urbanization has resulted to extreme congestion and over-population of Aizawl City with its limited scope for expansion and lack of basic amenities such as water and power, apart from the growing unemployment problem.

According to the 2001 census, the population of Aizawl was 3, 25,676 of which 1, 66,877 were males and 1, 58,799 were females. In the 2011 census, the population of Aizawl increased to 4, 00,309 of which 1, 99,270 constituted the male population and 2, 01,039 constituted the female population.

The decadal growth of Aizawl population in 2011 census was 22.92 percent and the density of Aizawl District for 2011 is 112 people sq. km. The comparison between 2001 census and 2011 census is as below.<sup>49</sup>

**Table 1.2**

**Comparison of 2011 Census and 2001 Census**

<b>Description</b>	<b>2011</b>	<b>2001</b>
Actual Population	400,309	325,676
Male	199,270	166,877
Female	201,039	158,799
Population Growth	22.92%	38.07%
Area Sq. Km	3,576	3,576
Density/km <sup>2</sup>	112	91
Proportion to Mizoram Population	36.48%	36.65%
Sex Ratio (Per 1000)	1009	952
Child Sex Ratio (0-6 Age)	979	973
Average Literacy	97.89	96.51

<sup>49</sup> www.census2011.co.in › States. Accessed on 20<sup>th</sup> November, 2014

Male Literacy	98.11	96.75
Female Literacy	97.67	96.26
Total Child Population (0-6 Age)	52,357	46,223
Male Population (0-6 Age)	26,450	23,428
Female Population (0-6 Age)	25,907	22,795
Literates	340,595	269,699
Male Literates	169,547	138,783
Female Literates	171,048	130,916
Child Proportion (0-6 Age)	13.08%	14.19%
Boys Proportion (0-6 Age)	13.27%	14.04%
Girls Proportion (0-6 Age)	12.89%	14.35%

*Source: [www.census2011.co.in/census/district/388-aizawl.html](http://www.census2011.co.in/census/district/388-aizawl.html)*

### **Lack of proper Sewerage system**

One of the environmental concerns in Aizawl is that the district has no sewerage system. Sewage commonly flows in the open drains and groundwater pollution from sewage is common. About 90% of households have toilets, and most of these are either bucket or cistern flush. However, as many as 5-10% of households depend upon pit latrines or open places for their toilet needs. Pigs and other livestock, abattoirs and hospitals also generate substantial high strength organic waste. About 80% of households have septic tanks. It is common for kitchen and wash water to be disposed in surface drains, while toilet wastes are treated in septic tanks and then discharged either through soak pits or to the nearest drain.

Ever increasing population and increased water supply is boosting wastewater generation. Surface drains are carrying polluted water even during wet season. Some quantity of polluted water is joining Tlawng River at locations of pick up point for city's water supply. Because of the type of soil and steep terrain, sewage disposed

through septic tanks and soak pits is often found emerging in the precincts of households in lower reaches causing serious health hazards.<sup>50</sup>

The narrow roads and lanes of Aizawl leave very limited scope for infringement of the existing drainage system. During monsoon season, the roads and streets are rain inundated resulting in the heavy over-flowing of the poor drainage and sewage system.

## **Programmes and Schemes for Environmental Protection in Mizoram**

### **National Ambient Air Monitoring Programme (NAMP)**

Under National Ambient Air Monitoring Programme (**NAMP**), the Board established air monitoring stations at three locations within Aizawl city and the work of air quality monitoring has been undertaken regularly twice a week since **June 2005**. Monthly data is furnished regularly to CPCB. Online data submission is also done regularly through Environmental Data Bank.<sup>51</sup>

### **National Water Monitoring Programme (NWMP)**

Under National Water Monitoring Programme (NWMP), the Board has been undertaking regular water quality monitoring from the following six water monitoring stations.<sup>52</sup>

- i) River Tlawng upstream, Aizawl.
- ii) River Tlawng Downstream, Aizawl.

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<sup>50</sup> [www.sipmiu.org](http://www.sipmiu.org). Accessed on 19<sup>th</sup> May, 2014.

<sup>51</sup> *Activities of the Mizoram Pollution Control Board*, Mizoram State Pollution Control Board, 2011, Aizawl, Mizoram, p. 3.

<sup>52</sup> *Activities of the Mizoram Pollution Control Board*, Mizoram State Pollution Control Board, 2011, Aizawl, Mizoram, p. 4.

- iii) River Tuirial Upper Catchment
- iv) River Tuirial Lower Catchment
- v) Ramhlun North Tuikhur (Ground Water )
- vi) Mission Vengthlang Tuikhur (Ground Water)

Regular data submission in hard copies as well as through EDB is maintained by the Board.

### **National Green Corps' Programme (ECO- CLUBS)**

Ministry of Environment & Forests, Government of India has launched an innovative scheme of National Green Corps to enlist involvement of students for spreading the message of environmental protection by setting up of Eco-Clubs in schools. In Mizoram, Mizoram Pollution Control Board has been entrusted the job of implementation of the scheme and was nominated as Nodal Agency with the Member Secretary as the Nodal Officer under the scheme.

Within the initial year, 2002 -2003, 800 schools each with teacher in charge were identified from all the eight districts of Mizoram and Eco-Clubs were set up in each school. As the Ministry sanctioned additional number of eco-clubs @ 150 eco-clubs per district, the total existing number of eco-clubs in Mizoram is 1200. The programme is highly successful and the Eco-Clubs have been actively performing various activities such as, Awareness Programmes, Plantation, Cleanliness drives, Outdoor activities, Essay & Painting competitions & other Environment related activities.<sup>53</sup>

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<sup>53</sup> *Activities of the Mizoram Pollution Control Board*, Mizoram State Pollution Control Board, 2011, Aizawl, Mizoram , p. 4.



## **Environmental Information System (ENVIS)**

Mizoram State Pollution Control Board was entrusted by the State Government to carry out the establishment of Environmental Information System (ENVIS) Node in Mizoram which was assigned the task of collection, collation, storage, retrieval & dissemination of information on status of environment and its related issues. The ENVIS Node had created two websites, one on Environment & Forests Mizoram and the other on Mizoram Pollution Control Board having URL: <http://www.mizervis.nic.in>

The Envis Node was upgraded by the Ministry to Envis Centre presently engaging four staff. The Envis Centre has introduced a newsletter named 'MIZENVIS'.<sup>54</sup>

## **National Afforestation Programme**

The MoEF was operating four centrally sponsored afforestation schemes during the 9<sup>th</sup> Plan, i.e. Integrated Afforestation and Eco-development Project Scheme (IAEPS), Area Oriented Fuel wood and Fodder Project Scheme (AOFFPS), Conservation of Non-Timber Forest Produce including Medicinal Plants (NTFPS), and Association of ST and Rural Poor in Regeneration of Degraded Forests (ASTRPS). The Mid-Term Evaluation of the projects under these Schemes recommended a decentralised approach and speedy fund transfer mechanism. Taking cue from these recommendations, a Pilot Scheme, Samnavit Gram Vanikaran Samridhi Yojana (SGVSY) was launched in 2000-01 utilising the delivery mechanism of Forest Development Agency (FDA) and Joint Forest Management Committee

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<sup>54</sup> *Ibid.*

(JFMC). Pilot projects launched during 9<sup>th</sup> Plan were highly successful in terms of achievement of the set objectives.

As per 10<sup>th</sup> Plan document of Planning Commission relating to the Forests and Environment sector, the National Afforestation Programme (NAP) Scheme was initiated by scaling-up the SGVSY project experience and converging all afforestation schemes of the 9<sup>th</sup> Plan period to avoid duplicity or redundancy, and at the same time keeping in focus the decentralization agenda of the government. NAP is being operated as a 100% Central Sector Scheme.<sup>55</sup>

### *Objectives*

The overall objective of the scheme is to develop the forest resources with people's participation, with focus on improvement in livelihoods of the forest-fringe communities, especially the poor. NAP Scheme aims to support and accelerate the ongoing process of devolving forest protection, management and development functions to decentralized institutions of Joint Forest Management Committee (JFMC) at the village level, and Forest Development Agency (FDA) at the forest division level.

### *Components*

Financial support under NAP Scheme is available for:

- a) Mobilisation of village JFMC, and Micro-planning in project villages
- b) Afforestation of Aided Natural Regeneration, Artificial Regeneration, Bamboo plantation, Cane Plantation, Mixed Plantation of trees having

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<sup>55</sup> <https://forest.mizoram.gov.in>, Accessed 20<sup>th</sup> November, 2015.

MFP & medicinal value, Regeneration of perennial herbs & shrubs of medicine value and Pasture Development/ Silviculture.

c) Soil & Moisture Conservation

d) Entry Point Activity (for village development; average assistance Rs. 1.6 lakh per village)

e) Fencing, Monitoring & Evaluation, Training, Awareness raising, Overheads.<sup>56</sup>

### *Institutional framework and its strengthening*

The NAP is being implemented through a 2-tier structure of Forest Development Agency (FDA) at the forest division level, and Joint Forest Management Committee (JFMC) at the village level. Thus, FDA is the confederation of JFMCs in that forest division. FDAs are registered under the Societies Registration Act. JFMCs are registered either with the Forest Department or under statutory provisions. The district-level officers of relevant line departments of the State Govt. and Panchayat Raj Institution are members of FDA.

The recent experience with present institutional framework of FDA at the forest division level and JFMC at the village level is encouraging. All 28 States have adopted this institutional framework including in the Autonomous Hill Districts in Assam, Meghalaya and Mizoram. The institutions of FDAs and JFMCs are highly innovative resource transfer mechanisms whereby the Government of India channels funds directly to the grass root level implementing agency for the afforestation activities.

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<sup>56</sup> <https://forest.mizoram.gov.in>. Accessed on 20<sup>th</sup> November, 2015.

The structure of FDAs and JFMCs also caters to the gender concerns, whereby women membership to the extent of 50% has been made mandatory in these bodies. Members of Schedule Castes and Schedule Tribes are the focus group in JFMCs.<sup>57</sup>

Training of FDA and JFMC members is organized by State Forest Departments, as well as by the Regional Centres of National Afforestation and Eco-development Board (7 Regional Centres in the country). To help and guide the FDAs and JFMCs, there is also a National-level Steering Committee of NAP and another at State level called State-level Coordination committee chaired respectively by Secretary (Environment and Forests), Government of India, and Chief Secretary of the State Government.

The following additional steps are being undertaken to further strengthen these institutions:-

- a) A Training Needs Assessment exercise is being undertaken by the Regional Centres of National Afforestation and Eco-development Board to identify the needs and capacities of different categories of staff and members of JFMCs and FDAs for efficient implementation of NAP, and subsequently develop training modules for the same.
- b) It is proposed to encourage linkage of JFMCs with other rural development programme. JFMCs may leverage outside funds to augment Entry Point Activity component of NAP for this purpose.

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<sup>57</sup> *Ibid.*

- c) It is also proposed to formulate a financial management manual for FDAs and JFMCs so as to strengthen account keeping at the local level, and thus, empower communities for local-level decision making.
- d) A national level JFM study has also been launched to assess strengths and weaknesses of implementation of JFM, and the progress of empowerment of the local communities in decision-making.
- e) Establish a system of e-governance in National Afforestation and Eco-development Board.

*Monitoring and evaluation mechanism*

- (a) With a view to increasing the efficiency of NAP to meet the above goals, the monitoring and evaluation (M&E) exercise of the FDA projects is undertaken both by the State and Central Governments.
- (b) National Afforestation and Eco-development Board undertakes the first independent mid-term evaluation of the FDA projects within 24 months of sanction of the project with focus on people's participation, functioning of JFMCs/ EDCs and the micro-planning exercise.
- (c) The final evaluation is required to be carried in the fourth year of the Project.
- (d) So far, National Afforestation and Eco-development Board has launched mid-term evaluation in respect of 250 FDA projects (including 47 Projects under SGVSY Scheme of the IX Plan).

- (e) In addition, the Forest Survey of India (FSI) has randomly selected 60 FDAs each in 2003-04, 2004-05 and 2005-06 for monitoring of area coverage and forest cover increase therein.<sup>58</sup>

### **Intensification of Forest Management Scheme**

The Central Ministry has formulated a new scheme entitled *Intensification of Forest Management* which is to be continued in the 12<sup>th</sup> Plan as well. The Scheme is implemented on a 90:10 sharing basis. The main components of the scheme are:

- A. Forest Fire Control Management.
- B. Strengthening of Infrastructure for Forest Protection.
- C. Working Plan Preparation/Survey & Demarcation.
- D. Conservation and Restoration of Unique Vegetation and Eco-system.<sup>59</sup>

### **Green Mizoram Programme**

Until the last two decades, the beautiful Aizawl City and its contiguous belts enjoyed a fairly lush and beautiful green cover of trees. However, as a result of growing urbanization, increase in population, jhumming as well as the sharp increase in the number of vehicles and developmental activities, forests in and around the city began to dwindle at an unprecedented rate resulting in rapid destruction of ecological, environmental and aesthetic richness of the city. Recognising the imminent ill effects of these factors, the Govt. of Mizoram considered it necessary to launch a massive venture to make Aizawl green by planting trees at every available space. Consequently, the Govt. of Mizoram constituted 'Green Aizawl Committee' on 27th May, 1998 to restore the greenery and improve the aesthetic beauty of the city for

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<sup>58</sup> <https://forest.mizoram.gov.in>. Accessed on 20<sup>th</sup> November, 2015.

<sup>59</sup> *Ibid.*

making Aizawl a better place to live. Pu Lalthanhawla, the Chief Minister was the Chairman and Pu Lalbiakzuala, the then Minister, E & F was the Vice Chairman. Pu C. Ramhluna, Conservator of Forests, Northern Circle was Member Secretary and twenty seven (27) members were appointed therein. The Environment & Forests Department was the Nodal Department. In its year of constitution, the Green Aizawl Committee, as its first drive, planted 94,063 seedlings within the city and displayed 100 signboards to create public awareness of the importance of maintaining green cover. Besides, the Committee conducted ring painting, labelling and naming of 4000 trees in Aizawl city.

Each year, a particular day during the first or second week of June is observed as Green Mizoram Day, dedicated for planting of trees and for maintenance of the trees planted in the previous years. Since its constitution in 1999, planting of trees have been carried out by the Government Departments, Semi Government Departments, NGOs, Educational Institutions and public on identified locations which includes Government lands, roadsides, private lands etc. And in the entire Mizoram, as many as 13, 52,618 seedlings have so far been planted under Green Mizoram Programme upto 2008.<sup>60</sup>

### **National Bamboo Mission**

The National Bamboo Mission runs its programme through the State Bamboo Mission. The State Bam-boo Mission is the nodal agency for carrying out all the activities mandated to the bamboo mission. In Mizoram, a state where bam-boo plays

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<sup>60</sup> <https://forest.mizoram.gov.in>. Accessed on 20<sup>th</sup> November, 2015.

a very important role in everyday's life, the role of the State Bamboo Mission can only be imagined.

**Role of State Bamboo Mission:**

- i) Creation of awareness through newspapers/television, preparation of documentary film, sponsorship, etc.
- ii) Promotion of local industries as well as local home-based industries (bamboo ply, solid bamboo timber, handicraft, etc).
- iii) Employment generation for local people, especially the rural un-employed.
- iv) Increase in bamboo forests cover in the state through plantations.<sup>61</sup>

Except for a few, the programmes for environmental protection of the Central Government are being carried out in Mizoram. The concerned departments have been taking active steps in the successful realisation of the programmes.

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<sup>61</sup> *Ibid.*



## **CHAPTER - III**

### **NEED AND INVOLVEMENT OF THE COMMUNITY IN AIZAWL DISTRICT**

The previous chapter highlights the nature of environmental problems faced at the international level and national level in general; and those faced in Mizoram in particular. In order to have a better perspective, it is necessary to deal with and provides a profile of the state of Mizoram and Aizawl District and the programmes and schemes for environmental protection in India and Mizoram.

In this chapter, emphasis is laid on the need, role and importance of the community in the successful implementation of governmental programmes for environmental protection. The governmental programmes for protecting the environment facilitate participation of the community. A community may be defined as a group of people coming together on the basis of a geographical area, a work place, even an idea or a theme/issue, or on the basis of gender/age. The shape and size of a community varies, and hence definitions of communities have also varied.<sup>1</sup>

#### **Community: Concept**

A community is an inclusive form of social organisation that is territorially based and; through which most people satisfy their common needs and desires, deal with their

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<sup>1</sup> [www.unep.or.jp/ietc/kms/data/1459.pdf](http://www.unep.or.jp/ietc/kms/data/1459.pdf). Accessed on 20<sup>th</sup> July, 2015.

common problems; seek means to advance their well-being, and relate to their society.<sup>2</sup>

According to Nabeel Hamdi, the term community has both “social and spatial dimensions” and that generally the people within a community come together to achieve a common objective, even if they have certain differences.<sup>3</sup>

Nick Wates defines community as a group of people sharing common interests and living within a geographically defined area.<sup>4</sup>

### **Community Participation: Meaning and Definition**

Community participation is most widely seen as a way to mobilize resources for social welfare that would otherwise not be available.<sup>5</sup> Community participation calls for people to participate in planning, implementing and managing their local environment. Community participation means a readiness on the part of both local governments and the citizens to accept equal responsibilities and activities in managing their surroundings. It also means a commitment to bring to the table resources, skills and knowledge for this purpose, and a respect for the capabilities and capacities of all partners.<sup>6</sup>

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<sup>2</sup> Norlin J. & Chess W., *Human Behavior and the Social Environment: Social Systems Theory*, Allyn & Bacon, Boston, 1997, p.55.

<sup>3</sup> Hamdi Nabeel & Goethert Reinhard, *Action Planning for Cities: A Guide to Community Practice*, John Wiley & Sons, 1997, p.67.

<sup>4</sup> Wates Nick, *The Community Planning Handbook: How people can shape their cities, towns and villages in any part of the world*, The Urban Design Group & the Prince's Foundation, London, 2000, p. 184.

<sup>5</sup> Goel S. L. & Jain R. K., *Social Welfare Administration, Vol.1.*, Deep and Deep, New Delhi, p. 319.

<sup>6</sup> [www.unep.or.jp/ietc/kms/data/1459.pdf](http://www.unep.or.jp/ietc/kms/data/1459.pdf), Accessed 20<sup>th</sup> July, 2015.

Charles Abrams defines community participation as, “the theory that the local community should be given an active role in programs and improvements directly affecting it”.<sup>7</sup>

Oakley and Marsden defined community participation as the process by which individuals, families, or communities assume responsibility for their own welfare and develop a capacity to contribute to their own and the community’s development.<sup>8</sup> In the context of development, community participation refers to an active process whereby the beneficiaries influence the direction and execution of development projects rather than merely receive a share of project benefits.<sup>9</sup>

### **Importance of Community Participation**

Community participation is an effective tool for realizing the plans of the government as well as the requirements of a community. It is the involvement of the members of a particular community in planning, implementing and managing of local resources and their environment. Community participation is the process in which individual; families assume responsibility for their own welfare. They come to know their own situation better and are motivated to solve their common problems. This enables them to become agents of their development instead of passive beneficiaries of development aid. They have to acquire the capacity to appraise a situation, weigh the

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<sup>7</sup> Abrams Charles, *The Language of Cities: A Glossary of Terms*, Viking Press, New York, 1971, p. 63.

<sup>8</sup> Oakley, P. and Marsden, D., *Approaches to Participation in Rural Development*, Geneva: ILO, 1984.

<sup>9</sup> Paul Samuel, *Community Participation in Development Projects: The World Bank Experience*, The World Bank, Washington D. C., p. v.

various possibilities and estimate what their own contribution can be. The purposes served by encouraging community participation can be studied as follows:<sup>10</sup>

- i) Creating will and determination among the members of the community for improvement in their present and future life.
- ii) Identification and development of the local resources, thereby generating self-reliance among the community.
- iii) Achieving integrated area co-ordination among various agencies interested in social welfare measures.
- iv) Mobilizing the available manpower for productive and useful activities.
- v) Keeping the members of the community constantly informed about the development in the area.
- vi) Arranging functional literacy programmes which can help them in understanding new technology.
- vii) Organizing various clubs of youth, individuals, women, to serve as centres of discussion and development.
- viii) Providing an open forum for the community to discuss its problems and indigenous solutions which may be efficient and economical.
- ix) To develop local leaders who can further educate and mobilize the people in the area.

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<sup>10</sup> Goel S. L. & Jain R. K., *Social Welfare Administration, Vol.1.*, Deep and Deep Publications, New Delhi, 2002, p.320.

- x) Encouraging the people to adopt modern changes which can accelerate their socio-economic development.
- xi) Arranging extra-curricular activities to generate social awareness through well-designed publicity.
- xii) Encouraging the people to develop themselves rather than depend upon the Government for all activities and thus become self-reliant which is the key to development.

From the above, it is clear that the successful implementation of governmental programmes largely depends on the involvement of the community.

### **The Mizo Community**

In Lushai language, “Zo” means “high altitude” and “Mi” means “Man”. According to the Lushai-English Dictionary by Lorrain and Savidge, “Zo” means the name of the Lushais and surrounding hill tribes”. Many people take the term, Mizo to mean “highlander” or a “hill man”.<sup>11</sup>

The Mizos are said to be the Assam-Burman sub-group that had branched off from the Tibeto-Burman group of the main Tibeto-Chinese race. Some authors have classified them as Tibeto-Burman, because of the affinity of the language, even though they have described them as people who once lived in Chhinlung (Exact location of this place has not yet been proved, but it is believed to be the Chin Lung Mountain Range in Central

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<sup>11</sup> Verghese. C. G & Thanzawna. R. L. *A History of the Mizos*, Vikas Publishing House Pvt Ltd, New Delhi, 1997, p.45.

China). It has been universally accepted that the Mizos came to Mizoram from the Chin Hills of Burma in the 18<sup>th</sup> century, having been ousted from there by stronger tribes. Some were in search of a better and safer “jhum” lands.<sup>12</sup>

The Mizos are a distinct community and the social unit was the village. Around it revolved the life of a Mizo. Mizo village was usually set on top of a hill with the chief's house at the centre and the bachelor's dormitory called 'Zawlbuk' prominently located in a central place.<sup>13</sup> 'Zawlbuk' is a Mizo word which means “Bachelor's House”.<sup>14</sup> The focal point of the village was 'Zawlbuk' where all young bachelors of the village slept. Zawlbuk was the training ground and indeed the cradle where the Mizo youth was shaped into a responsible adult member of the society.<sup>15</sup> The Mizo elders wanted to project the assimilation of cherished traditional norms, social morals and values before the youth through 'Zawlbuk'. As formal education and teaching had not yet been established, the family was responsible for the education of their young men.<sup>16</sup> The annexation of the then Lushai Hills by the British in 1891 decreased the importance of the indigenous spirit of Zawlbuk, which became completely extinct after the abolition of chieftainship in Mizoram.

The Mizo society has undergone a lot of changes over the years. The rapid changes have produced highly emotional and indignant groups of tribesmen.<sup>17</sup> The Mizos

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<sup>12</sup> Verghese. C. G & Thanzawna. R. L. *op. cit.*, p. 47.

<sup>13</sup> [aizawl.nic.in/mizoram.htm](http://aizawl.nic.in/mizoram.htm). Accessed on 20<sup>th</sup> July, 2014.

<sup>14</sup> Verghese. C. G & Thanzawna. R. L., *op. cit.*, p. 18.

<sup>15</sup> Joshi H. G., *Mizoram: Past and Present*, Mittal Publications, New Delhi, 2005, p. vii.

<sup>16</sup> Verghese. C. G & Thanzawna. R. L., *op. cit.*, p. 19.

<sup>17</sup> Verghese. C. G & Thanzawna. R. L., *op. cit.*, p. 15

are a still a conglomeration of the past and the present. Old practices and traditional customs are followed till date.

One of the most noteworthy aspects of the Mizo society is the presence of “Tlawmngaihna”. “Tlawmngaihna” to a Mizo stands for that compelling moral force which finds expression in self-sacrifice for the service of others.

Tlawmngaihna has been regarded as the guiding principle of the social life of the Mizos. It is a part and parcel of the Mizo society. The origin of Mizo Tlawmngaihna could not be ascertained in the absence of authentic records of the Mizo society. However, it was believed that its origin could be Zawlbuk according to Mr. V. L. Siana, a retired school teacher and church elder. In his book, ‘Mizo History 1961’ Tlawmngaihna originated from the Zawlbuk system of Mizo life. The insecure and unsafe Mizo life in the semi-primitive society necessitated the evolution of a kind of security system which bounded the community together in times of security needs. The spirit of sacrifice for others permeates the whole community.<sup>18</sup> It is the spirit of Tlawmngaihna which motivates men in performing any social voluntary work in the society.<sup>19</sup>

Tlawmngaihna is still prevalent in the present Mizo society. The spirit of sacrificing for the needy is practiced and forms an integral part of the Mizo community.

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<sup>18</sup> Lianzuala P. L. Rev. Dr., *Theology of Mizo Tlawmngaihna*, Mizo Theological Conference, Aizawl, 1989, p. 59.

<sup>19</sup> Lalkima. C. *Social Welfare Administration in A Tribal State: A Case Study of Mizoram*, Spectrum Publication, Guwahati, 1997, p. 17.

A distinctive feature of Mizo society is its unusually strong community bonds, evident in all aspects of life, both urban and rural. This is a trait dating back to the pre-Christian society and continues to thrive despite the change in religion. It is the strength of social relationships that translates into collectivity as an integral element of resource use, an element that has been reinforced by the formation of village councils. Conversely, the very concept of these institutions and their successful functioning may be almost entirely attributed to cohesive community relations.<sup>20</sup>

Preservation of collectivity in Mizo culture has much to do with the formation of the Young Lushai Association in 1935. This was an organisation on the lines of the Young Welsh Association, sponsored and blessed by the missionaries who headed the organisation for the first ten years, later making room for local leaders. The association soon established a broad based, multi-tiered, democratic institutional structure with wide membership. It renamed as the Young Mizo Association in 1947. The organisation was and still is a purely apolitical voluntary body engaging in religious, social and cultural activities. The Young Mizo Association lists its aims and objectives as the useful occupation of spare time, the all round development of Mizoram, and promotion of Good Christian Life. The Association assumed the task of reviving the pre-Christian cultural traditions of the Mizos, notably festivals, songs, dances, as well as '*tlawmngaihna*'.<sup>21</sup>

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<sup>20</sup> Singh Daman, *The Last Frontier: People and Forests in Mizoram*, Tata Energy Research Institute, New Delhi, 1996, p. 77.

<sup>21</sup> Singh Daman, *op. cit.*, p. 78.



## **Festivals and Dances**

The festivals of the Mizos revolve around the “jhum” operation and are closely connected with their agricultural operations. Mizos have three main festivals, Mim Kut, Chapchar Kut and Pawl Kut. These festivals or Kuts, as they call them, are in one way or the other, associated with their “jhuming”. Practicing “jhum” or the slash and burn system of primitive method of cultivation, they slash the jungle, burn the dried trunks and leaves and till the soil. It is from this pre-occupying affair that the festivals have evolved.<sup>22</sup>

### *Mim Kut*

Mim Kut or Maize Festival is usually celebrated during the month of August and September, after the harvest of Maize. Mim Kut is celebrated with great fanfare by drinking rice-beer, singing, dancing and merrymaking. Samples of previous year’s harvest are consecrated to the departed souls of their community.

### *Chapchar Kut*

Chapchar Kut is another festival celebrated sometime in March after completion of their most arduous task of Jhum operation, i.e. jungle clearing. This is a spring festival celebrated with great éclat.

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<sup>22</sup> Verghese. C. G & Thanzawna. R. L., *op. cit.*, p. 23

### *Pawl Kut*

A harvest festival is celebrated during December to January after the harvests are over. It is perhaps the greatest festival. With plenty of grains in the barn and all the labours of the year, the villagers rest and enjoy the fruit of their labour.<sup>23</sup>

### **Dances**

The Mizos blessed as they are with a beautiful surrounding and environment and rich culture, are a vibrant and sociable people. A number of folk and community dances have been handed down from one generation to the other through the ages. The dances are expressions of the gay, carefree spirit of the Mizos.

Some of the common dances are as follows:<sup>24</sup>

### *Cheraw*

This is also known as the “Bamboo Dance” for bamboos are used in this dance. The dancer moves by stepping alternately in and out from between and across a pair of horizontal bamboos, held against the ground by people sitting face to face at either side. They tap the bamboos open and close in rhythmic beats. The bamboos, placed horizontally, are supported by two bases, one at each end. The bamboos, when clapped, produce a sharp sound which forms the rhythm of the dance. It indicates the timing of the dance as well. The dancer steps in and out to the beats of the bamboos with ease and grace. The patterns and steppings of the dance have many variations. Sometimes the

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<sup>23</sup> Joshi H. G., *op. cit.*, p. 88.

<sup>24</sup> Joshi H. G., *op. cit.*, p. 89.

steppings are made in imitation of the movements of birds, sometimes the swaying of trees and so on.

### *Khuallam*

Khual, in Mizo language, means 'guest' and lam stands for dance. Khuallam is the dance of the guest. To have a place in heaven, one had to prove one's mettle either in war or in hunting or by being a man of distinction in society. To claim a distinguished place in society, one had to perform various ceremonies which included offering community feasts and dances, these ceremonies taken together, were known as 'Khuangchawi'. While performing 'Khuangchawi', one was obliged to invite relatives from nearby villages. The dance is normally performed by men dressed in 'puandum' (traditional Mizo clothes with red and green stripes) to the accompaniment of a set of gongs known as Darbu.

### *Chheih Lam*

Chheihlam' originated after the year 1900 on the lines of the songs known as 'Puma Zai' and the dance known as 'Tlanglam'. It is a dance that embodies the spirit of joy and exhilaration. It is performed to the accompaniment of a song called 'Chheih hla'. People squat around in a circle on the floor, sing to the beat of a drum or bamboo tube while a pair of dancers stands in the middle, and recite the song and dance along with the music.

It was a dance performed over a round of rice beer in the cool of the evening. The lyrics are impromptu and spontaneous on the spot compositions recounting their heroic deeds and escapades and they also praise the honored guests present in their midst. While singing the song accompanied by sound produced by beating of the drum or clapping of hands, an expert dancer performs his dance chanting verses with various movements of the body, with limbs close to the body and crouching low to the ground. As the tempo rose and the excitement increases, people squatting on the floor leave their seats and join him. Guests present are also invited to join the dance. Today 'Chheihlam' is performed on any occasion with colorful costumes, normally in the evening when the day's work is over.

### **Role and Importance of the Community in Aizawl District**

The community has a vital role to play in the implementation of any developmental programme and environmental protection is no exception to it. Unless there is an active involvement of the community, environmental protection is bound to have limited success.

Aizawl District alone has half of the total population of Mizoram State; and it is inhabited by nearly one-third of the Mizoram population. The people in other parts of Mizoram are normally influenced by the practices and trends followed in Aizawl. The efforts for environmental protection undertaken by the community in Aizawl would soon be practiced in other parts of Mizoram. As such, the community of Aizawl District has a

vital role to play for setting an example on environmental protection for the entire state of Mizoram.

The Mizo community normally prefers working in groups. Environmental programmes should be designed in such a way that it requires the involvement of the community as a whole.

The community is still influenced by the spirit of “Tlawmngaihna”. The practice of rendering service to others without expecting anything in return is still prevalent in Mizoram. This distinctive feature mobilizes the people to work towards the development of the society.

Aizawl City is divided into a number of localities. The members of each locality play an active role in maintaining the cleanliness of their locality. The State Government makes a survey of the sanitation of each locality, and consequently decides and awards the cleanest locality every year.

The relatively educated people of Aizawl District are fairly aware of the ecological imbalance due to rampant deforestation and lack of proper planning of towns and villages. So much so there has been a recent awareness of the need for community participation/involvement in environmental protection in the district. Such awareness is being enhanced by the compelling need of improvement of the quality of life.

The Mizo community is more or less homogeneous. The community is the driving force in most of the developmental programmes of the Government.

## **Practices and Activities of the Community in Environmental Protection in Aizawl District**

Practices and activities of a community differ from place to place. The activities that are helpful in one community might not be as effective in another. Depending on the need, nature and available resources of a community, programmes and activities should be prepared accordingly. The various practices and activities of the Community in Environmental Protection in Aizawl District are as follows:

Community Service/Work (Hnatlang) is a common practice of the community. In Aizawl, each locality installs an information microphone through which the people within the locality are notified to participate in community work through the initiative of the Young Mizo Association or the Local Council.

‘Faina Hapta’ (Cleanliness Week) is conducted by the Young Mizo Association and recently by the Local Council in all the localities in Aizawl every year. In 2015, following the Central Government’s universal sanitation programme of the Swachh Bharat Mission launched in 2014, the Government of Mizoram organized ‘Faina Hapta’ (Cleanliness Week) in all the Districts of Mizoram to commemorate Mahatma Gandhi’s birthday, from 2<sup>nd</sup> to 9<sup>th</sup> October, 2015.

In the district of Aizawl, the residents also take the initiative of cleaning their own residential premises. Garbage disposal is carried out through the Public Private Partnership Mode by the State Government through the Local Council.

The members of the locality often clean their local premises on the Young Mizo Association Day i.e. 15<sup>th</sup> June, on the initiation of either the Central Young Mizo Association or their respective Young Mizo Association Branch.

One of the significant efforts of the community in Aizawl is cleaning and decorating of their respective graveyards. This is carried out in the month of December by the leaders of the respective Young Mizo Association Branch or the Local Council. Family members and relatives also take the initiative of cleaning the surroundings of the graves of their departed family members.

There has been an encouraging trend of development for environmental protection through the efforts of local councils in the Aizawl City and village councils in the neighbouring villages- construction of drains and pavements and tighter control of domestic animals.

The growing deteriorating condition of ecology in Aizawl District demands urgent action for environmental protection. So much so the community ought to be actively involved so as to prevent further deterioration of the environment.

The role of the Community is imperative in the protection of the environment in Aizawl. To understand the importance of their role, the opinions of the people in the urban and rural areas and the students in Aizawl were collected through structured questionnaires separately consisting of 28 questions for the people at large and 14 questions for the students in Aizawl. In all, the questionnaires were distributed to 350

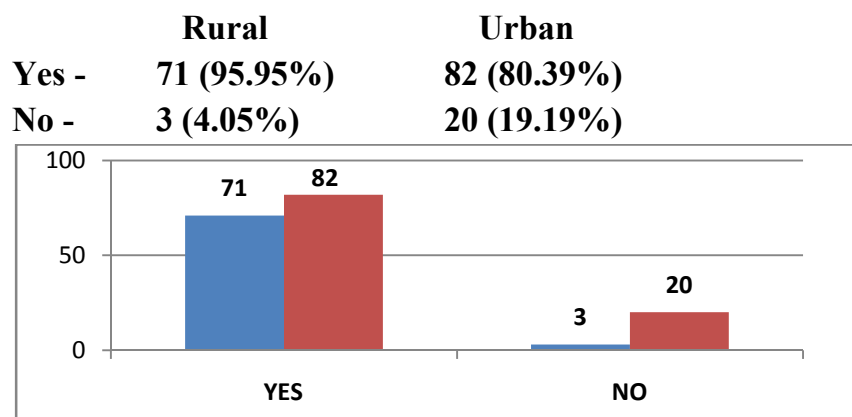
respondents, out of which 300 responses were received, 73 from the rural areas, 102 from the urban areas and 125 from the students in Aizawl. It should be noted that the responses of the students are separately dealt with in the following chapter.

### **Perceptions on the Environment of Aizawl District by the Community- Urban and Rural**

The general perception on the environment by the community is necessary to understand the need for its protection. The main reason for environmental degradation as perceived by the people demands the priority areas to be concerned within the urban and rural areas of Mizoram. Concerning the environment of Aizawl, 80.39% of respondents in the urban and 95.95 % in the rural areas felt it deteriorating while a minimal percentage of 19.19 % in the urban and 4.05% in the rural areas have responded as not deteriorating (Table 1.3).

**Table 1.3**

#### **Responses on whether the environment is deteriorating in Aizawl**



*Source: Field Work*

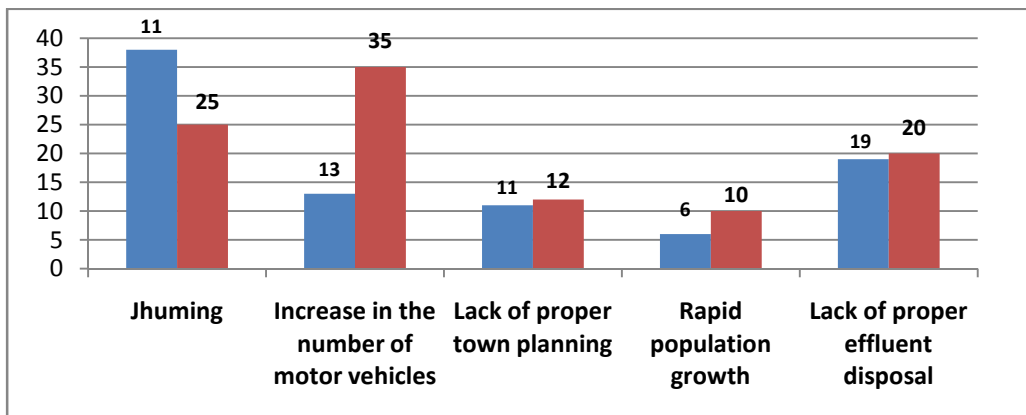


A number of problems can be attributed to the degradation of the environment in Aizawl. Jhuming, increase in the number of motor vehicles, lack of proper town planning, rapid population growth, ignorance of the people and lack of proper effluent disposal have been listed as disturbing the environment. Regarding the issue of environmental problems in Aizawl, 38 (52.05%) people in the rural areas consider jhuming as the main cause of environmental problems while 35 (34.31%) people felt the increase in the number of motor vehicles as the main factor causing it (Table 1.4).

**Table 1.4**

**Responses on the Main Cause of Environmental Problems in Aizawl District**

	<b>Rural</b>	<b>Urban</b>
<b>Jhuming</b>	<b>38(52.05%)</b>	<b>25(24.50%)</b>
<b>Increase in the number of motor vehicles</b>	<b>13(17.80%)</b>	<b>35(34.31%)</b>
<b>Lack of proper town planning</b>	<b>11(15.06%)</b>	<b>12(11.76%)</b>
<b>Rapid population growth</b>	<b>6 (8.21%)</b>	<b>10 (9.80%)</b>
<b>Lack of proper effluent disposal</b>	<b>19 (26.02%)</b>	<b>20(19.60%)</b>



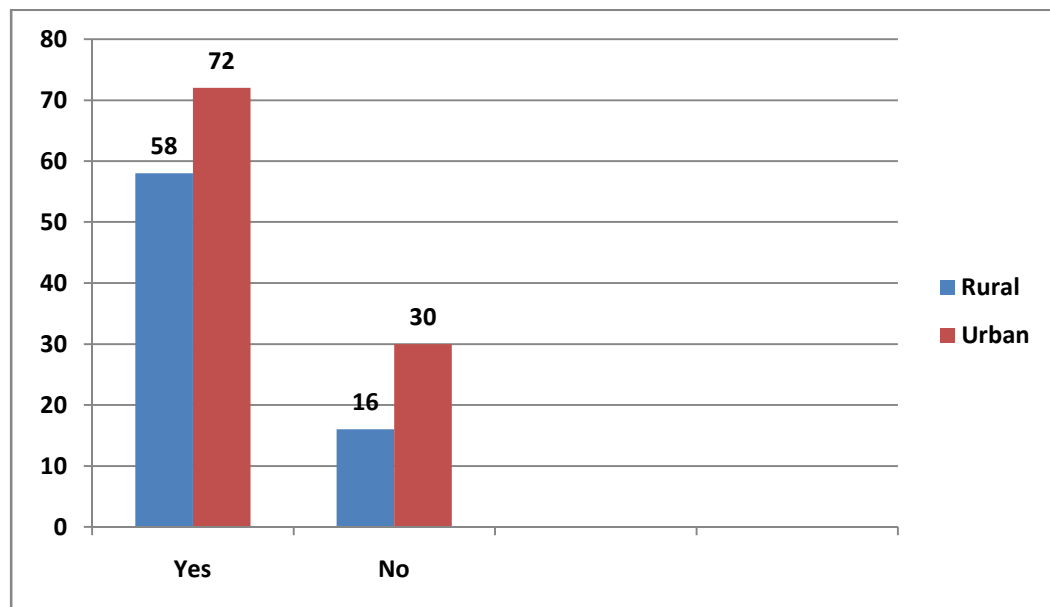
*Source: Field Work*

Regarding human health in Aizawl, 79.45% and 70.58% of respondents in the rural and urban areas believe that the environmental problems in Aizawl are the reasons behind human health problems, while 21.91% and 29.41% in the rural and urban areas think of it otherwise as shown in Table 1.5.

**Table 1.5**

**Responses on whether the human health problems are due to environmental problems in Aizawl District**

	<b>Rural</b>	<b>Urban</b>
<b>Yes</b>	<b>58 (79.45%)</b>	<b>72 (70.58%)</b>
<b>No</b>	<b>16 (21.91%)</b>	<b>30 (29.41%)</b>



*Source: Field Work*

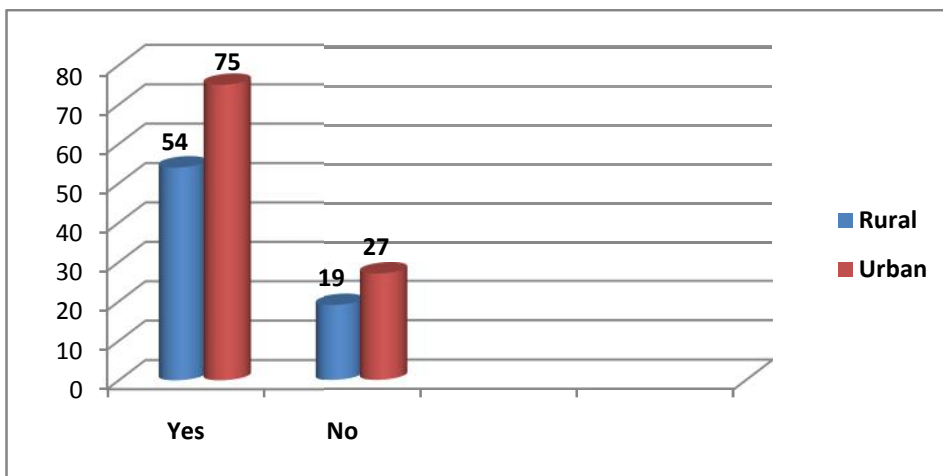
## II. Perceptions on the Involvement of the Community in Environmental Protection

The participation of the people is vital in mitigating the environmental problems faced in the community. The community in Aizawl, being more or less homogeneous, the perceptions of the people, both in the urban and rural areas, is helpful in understanding the level of participation and the initiatives taken by the individual for environmental protection. With regard to the concern of environmental issues (as shown in Table 1.6), 73.52% of people in the urban have claimed the community as being concerned and 73.97% of the rural population has considered the community being concerned with environmental issues in the rural areas.

**Table 1.6**

### **Responses on whether the community is concerned with environmental issues**

	<b>Rural</b>	<b>Urban</b>
<b>Yes -</b>	<b>54 (73.97%)</b>	<b>75 (73.52%)</b>
<b>No -</b>	<b>19 (26.02%)</b>	<b>27 (26.47%)</b>



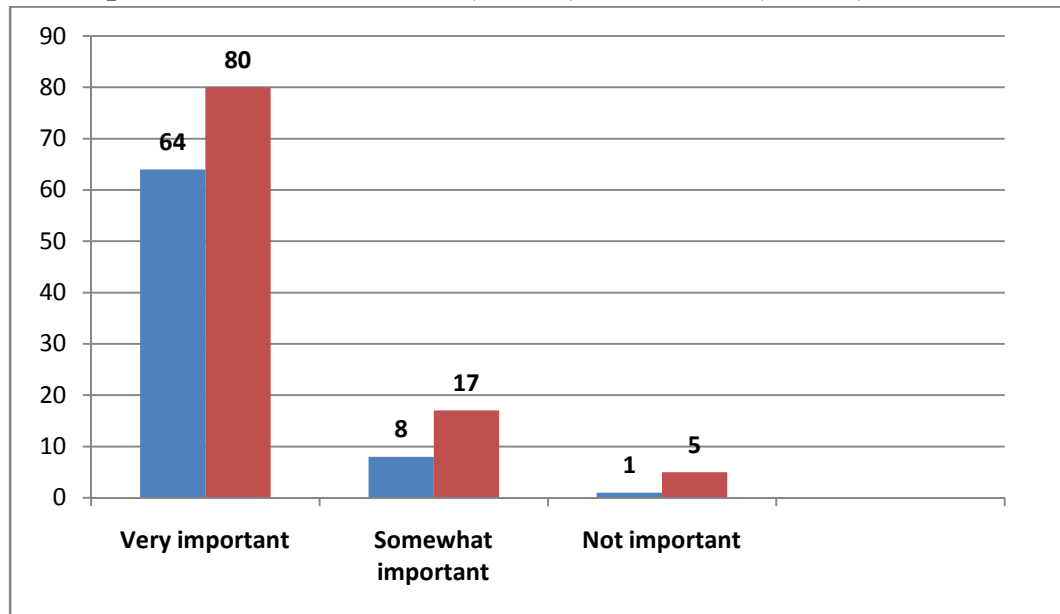
*Source: Field Work*

Responses on the concern for environmental issues by the community, the respondents believe the involvement of the community in environmental protection as extremely important in the rural and urban areas of Aizawl. As shown in Table 11.7, as many as 64 (87.67%) from the rural and 80 (78.43%) from the urban areas consider it imperative to involve the community in environment protection.

**Table 1.7**

**Responses on the importance of the involvement of the community in environmental protection**

	<b>Rural</b>	<b>Urban</b>
<b>Very important</b>	<b>64 (87.67%)</b>	<b>80 (78.43%)</b>
<b>Somewhat important</b>	<b>8 (10.95%)</b>	<b>17 (16.6%)</b>
<b>Not important</b>	<b>1 (1.36%)</b>	<b>5 (4.90%)</b>



*Source: Field Work*

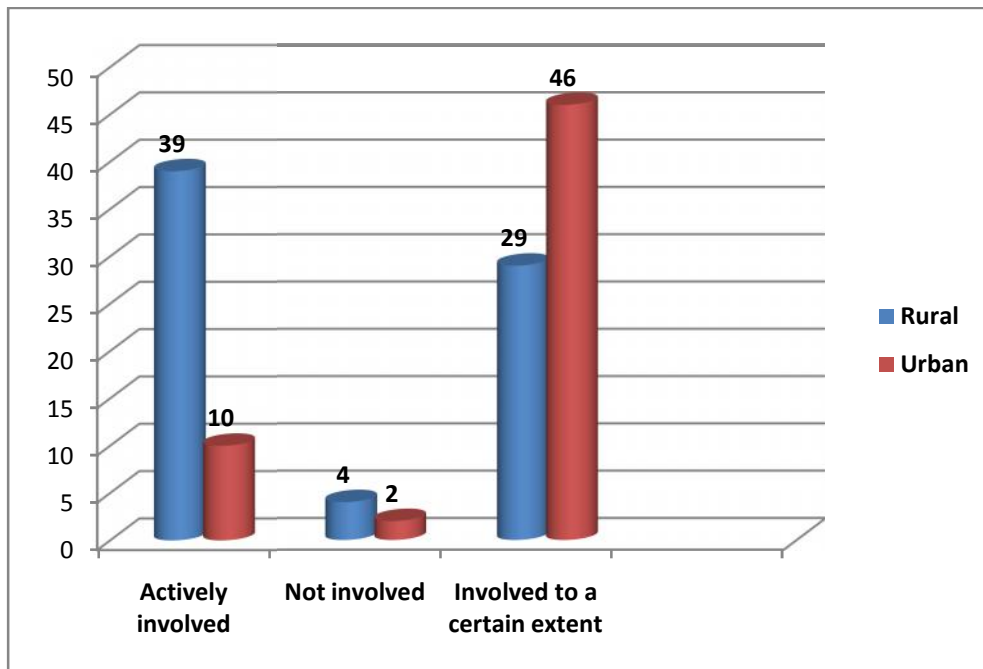
Concerning their involvement in the environmental cleanliness of the community, the people are more or less actively involved in the rural and urban areas of Aizawl. As

clearly shown in Table 1.8, in the rural areas there are 39 (53.42%) respondents who were actively involved while 54 (52.94%) claimed as being actively involved in the urban areas.

**Table 1.8**

**Responses on the participation of the people of the community towards environmental cleanliness/protection**

	<b>Rural</b>	<b>Urban</b>
<b>Actively involved</b>	<b>39 (53.24%)</b>	<b>54 (52.94%)</b>
<b>Not involved</b>	<b>4 (0.054%)</b>	<b>2 (0.019%)</b>
<b>Involved to a certain extent</b>	<b>29 (39.72%)</b>	<b>46 (45.09%)</b>



*Source: Field Work*

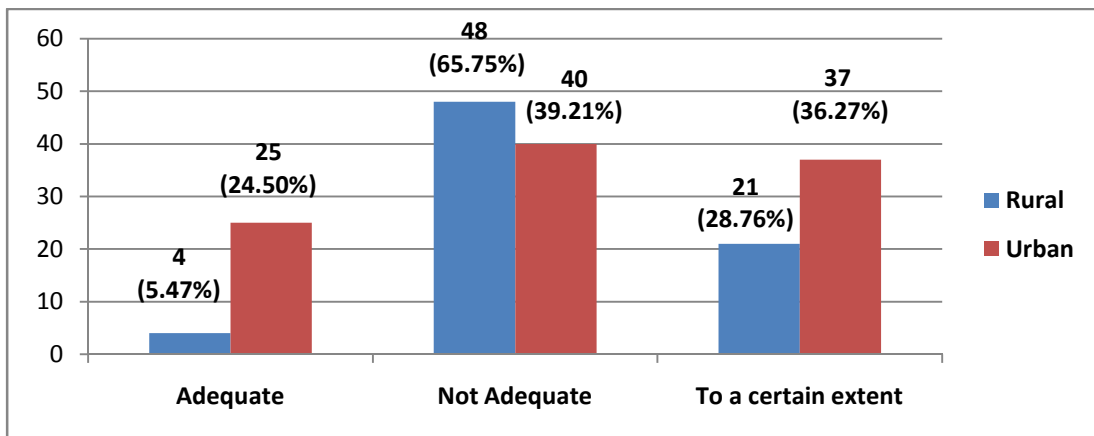
### III. Perceptions on the efforts for Environmental Protection by the Leaders in the Community

The efforts taken by the key functionaries of the Community in Aizawl such as the Local Council, the Presidents of the Young Mizo Association, MHIP and MUP is crucial in improving the environment of Aizawl. They are important mechanisms of influencing and mobilizing the people of the community towards environmental protection.

In relation to the efforts undertaken by the leaders of the community, more efforts have to be made by the leaders as the respondents in both the rural and urban areas felt the need for a more proactive role of the leaders. 48 (65.75%) considered their efforts inadequate in the rural areas while 40 (39.21%) (as shown in Table 1.9), felt the efforts of the leaders inadequate in the urban areas.

**Table 1.9**

**Responses of the people on whether the efforts undertaken by the leaders of the locality were adequate in protecting the environment of Aizawl District**



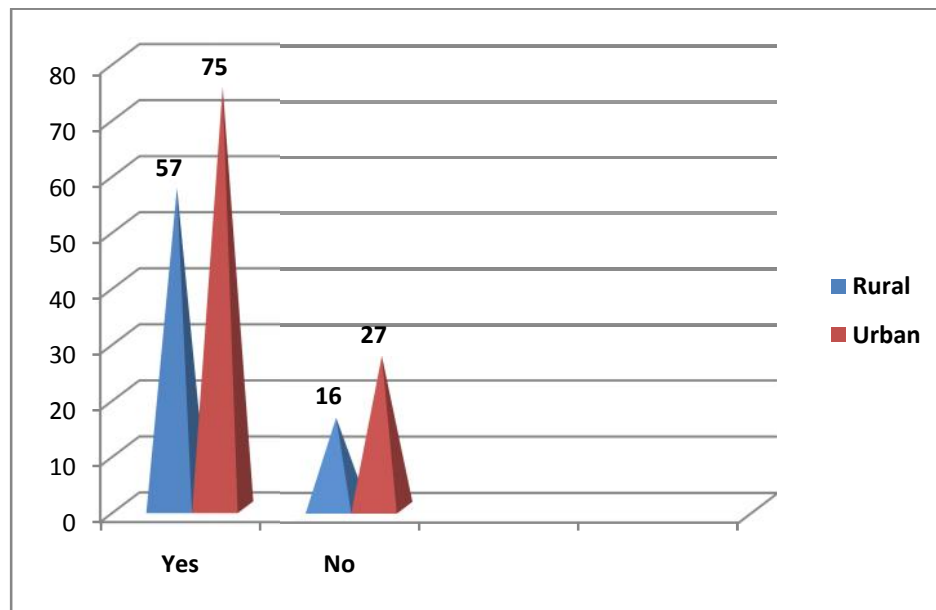
*Source: Field Work*

Regarding environmental programmes 57 (78.08%) and 75 (73.52%) people in the rural and urban areas have responded as being conducted in their locality with 16 (21.91%) and 27 (26.47%) people in the rural and urban areas claiming of not having such awareness programmes (Table 2.0).

**Table 2.0**

**Responses on whether environmental awareness programmes are conducted in the locality**

	<b>Rural</b>	<b>Urban</b>
<b>Yes -</b>	<b>57 (78.08%)</b>	<b>75 (73.52%)</b>
<b>No -</b>	<b>16 (21.91%)</b>	<b>27 (26.47%)</b>



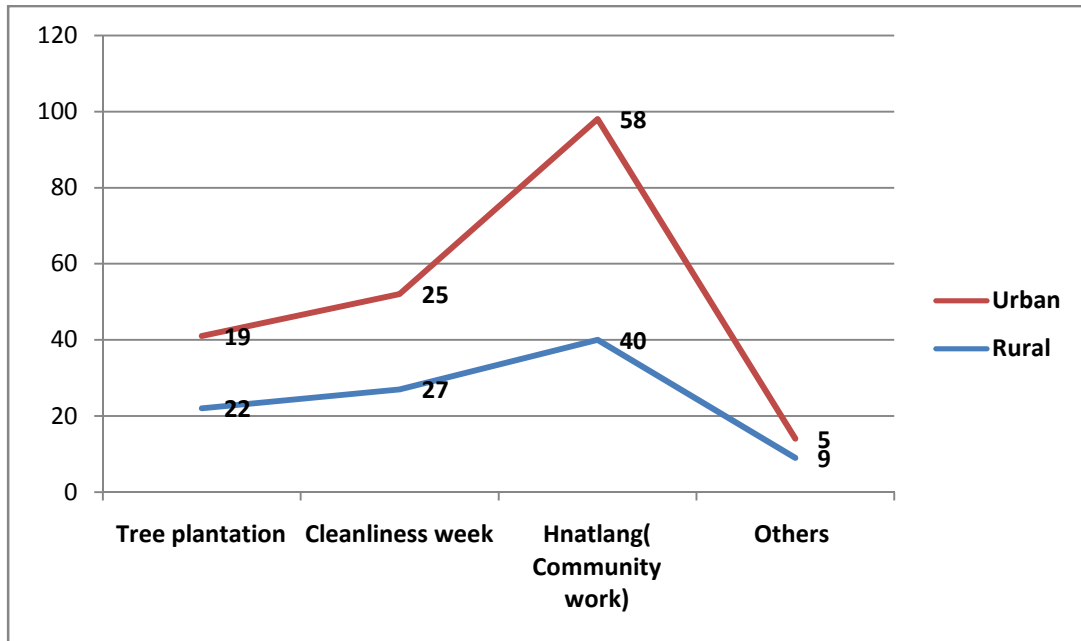
*Source: Field Work*

Various activities have been carried out for environmental protection in Aizawl. Concerning the efforts undertaken for environmental protection, Hnatlang (Community Work) is mostly carried out in improving the environment both in the rural 54.79% and urban 56.86% areas (Table 2.1).

**Table 2.1**

**Activities undertaken by the community for environmental protection**

	<b>Rural</b>	<b>Urban</b>
<b>Tree plantation</b>	<b>22 (30.13%)</b>	<b>19 (18.62%)</b>
<b>Cleanliness week</b>	<b>27 (36.98%)</b>	<b>25 (24.50%)</b>
<b>Hnatlang( Community work)</b>	<b>40 (54.79%)</b>	<b>58 (56.86%)</b>
<b>Others</b>	<b>9 (12.32%)</b>	<b>5 (4.90%)</b>



*Source: Field Work*

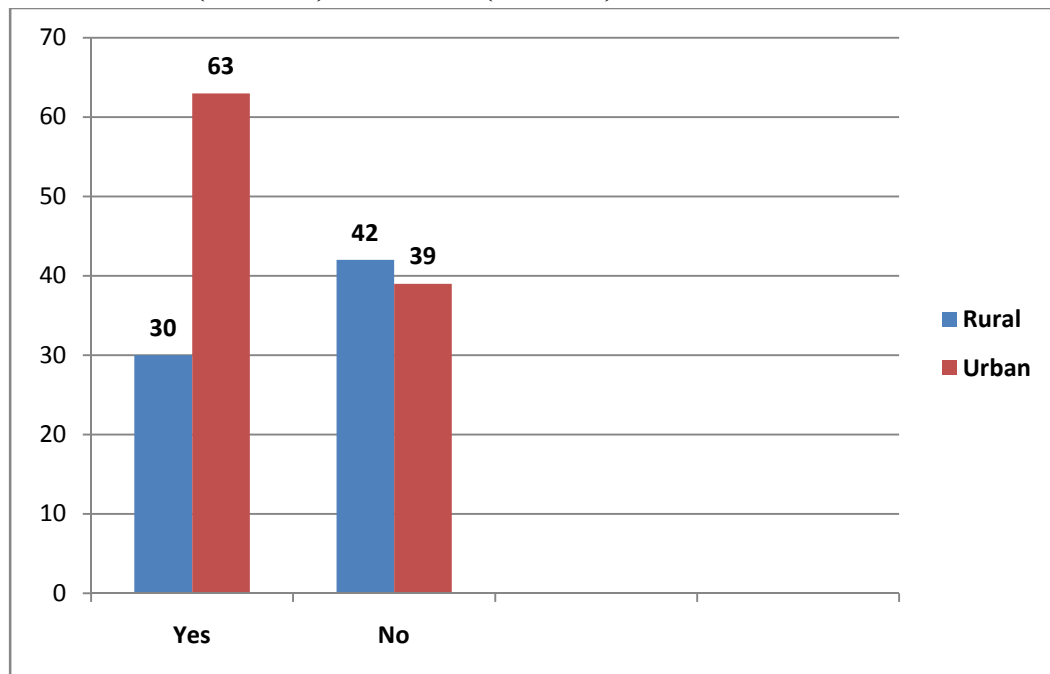


With regard to cleaners or sweepers for cleaning the premises of their locality, 63 respondents of the urban areas have claimed of hiring them. In the rural areas as shown in Table 2.2, the responses are at variance with 30 affirming sweepers being hired and 42 claiming of not hiring them.

**Table 2.2**

**Whether cleaners/sweepers are hired to clean the local premises**

	<b>Rural</b>	<b>Urban</b>
<b>Yes -</b>	<b>30 (41.09%)</b>	<b>63 (61.76%)</b>
<b>No -</b>	<b>42 (57.33%)</b>	<b>39 (38.23%)</b>



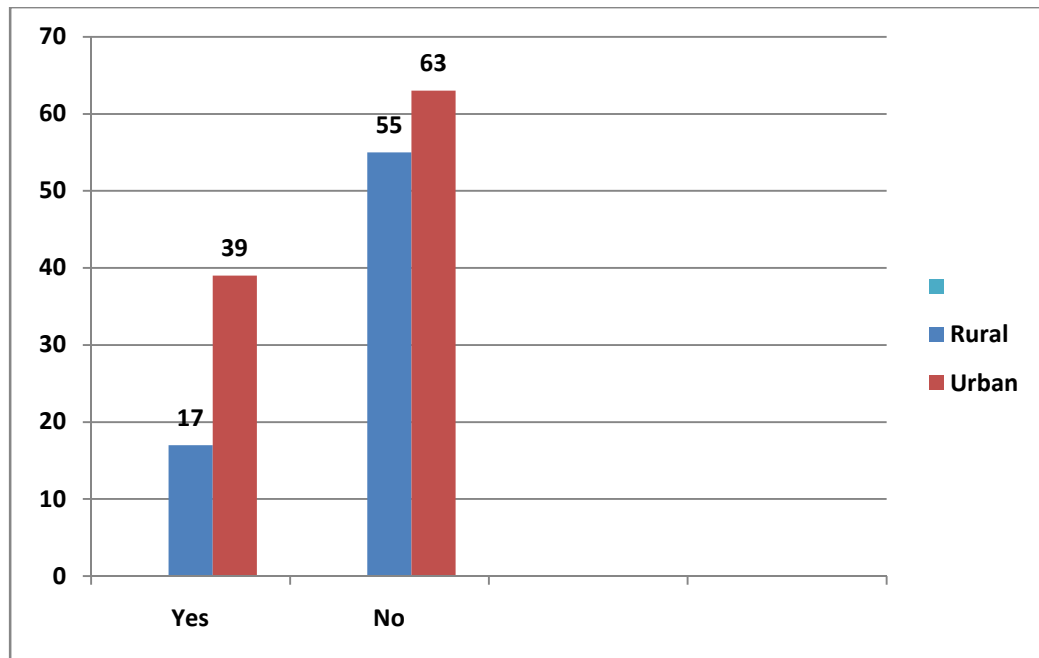
*Source: Field Work*

Due to lack of proper town planning, proper drainage systems are not constructed in many of the localities in Aizawl. This has been considered as one of the factors affecting the environment of Aizawl. 63 of the respondents from the urban areas and 55 from the rural areas have confirmed as not having proper drainage system in their locality (Table 2.3). The construction of proper drainage systems would be helpful in mitigating environmental hazards.

**Table 2.3**

**Responses on whether the community has proper drainage system**

	<b>Rural</b>	<b>Urban</b>
<b>Yes -</b>	<b>17 (23.61%)</b>	<b>39 (38.23%)</b>
<b>No -</b>	<b>55 (76.38%)</b>	<b>63 (61.76%)</b>



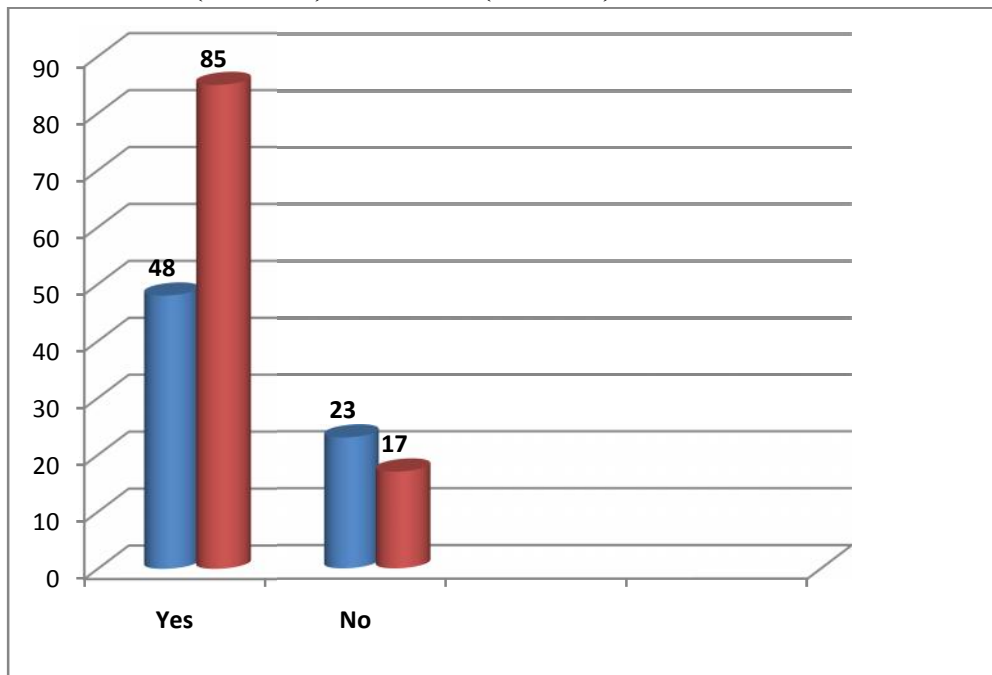
*Source: Field Work*

In many localities, Environmental Committees have been set up to protect and improve the environment of Aizawl in general and their locality in particular. This is one of the commendable achievements of the community towards environmental protection. 85 respondents in the urban areas have confirmed as having Environmental Committees and 48 respondents in the rural areas have affirmed the setting up of Environmental Committees in their locality (Table 2.4).

**Table 2.4**

**Responses on whether Environmental Committees are set up in the Community**

	<b>Rural</b>	<b>Urban</b>
<b>Yes</b>	<b>48 (65.75%)</b>	<b>85 (83.33%)</b>
<b>No</b>	<b>23 (31.50%)</b>	<b>17 (16.66%)</b>



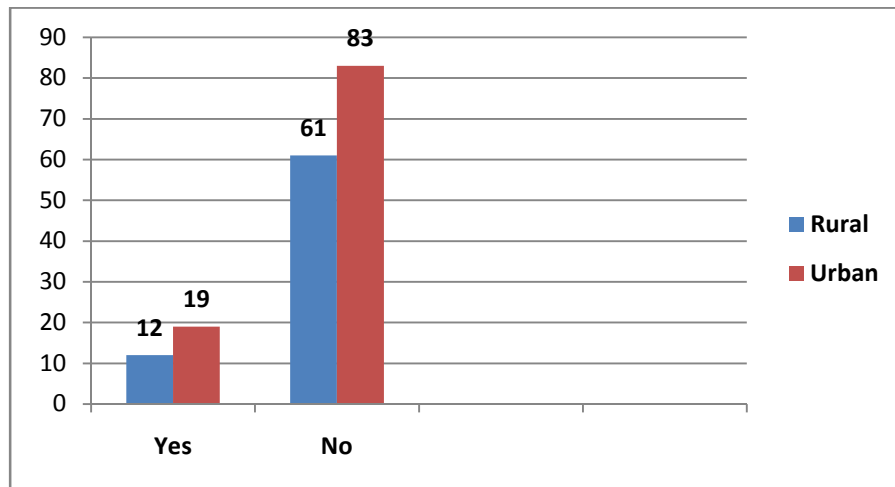
*Source: Field Work*

In relation to World Environment Day, many of the communities in Aizawl do not observe the day. The awareness and practices for protection of the environment of Aizawl would have been enhanced had the day been observed. In the urban areas, as shown in Table 2.5, there were 83 respondents who have asserted as not observing the day with 61 confirming of not observing the day in their community in the rural areas.

**Table 2.5**

**Responses on the Observation of World Environment Day in the community**

	<b>Rural</b>	<b>Urban</b>
<b>Yes</b>	<b>12 (16.43%)</b>	<b>19 (18.62%)</b>
<b>No</b>	<b>61 (83.56)</b>	<b>83 (81.37%)</b>



*Source: Field Work*

**IV. Awareness of Environmental Programmes and Initiatives of the State Government and the NGOs**

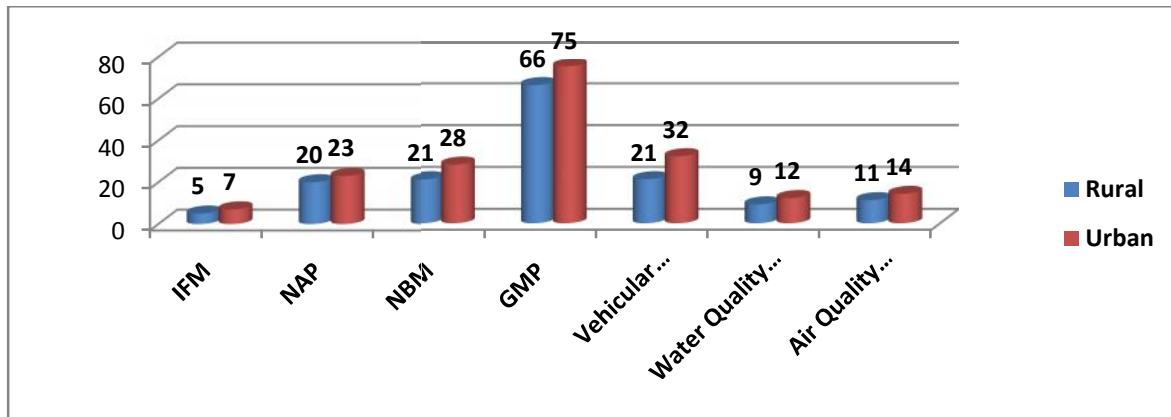
Most of the environmental programmes of the government are designed to involve the community at large. The awareness of these programmes by the community is

important in order to ensure their successful implementation. As for the familiarity with the programmes for environmental protection, while the people in the urban and rural areas were fairly familiar with the Green Mizoram Programme, they are not as familiar with the other programmes. As shown in Table 2.6 below, 66 (90.41%) and 75 (73.52%) in the rural and urban areas have asserted as being familiar with the Green Mizoram Programme.

**Table 2.6**

**Familiarity with the programmes for environmental protection**

	Rural	Urban
<b>Intensification of Forest Management</b>	<b>5 (6.84%)</b>	<b>7 (6.86%)</b>
<b>National Afforestation Programme</b>	<b>20 (27.39%)</b>	<b>23 (22.54%)</b>
<b>National Bamboo Mission</b>	<b>21 (28.76%)</b>	<b>28 (27.45%)</b>
<b>Green Mizoram Programme</b>	<b>66 (90.41%)</b>	<b>75 (73.52%)</b>
<b>Vehicular Pollution Monitoring</b>	<b>21 (28.76%)</b>	<b>32 (31.37%)</b>
<b>Water Quality Monitoring</b>	<b>9 (12.32%)</b>	<b>12 (11.76%)</b>
<b>Air Quality Monitoring</b>	<b>11 (15.06%)</b>	<b>14 (13.72%)</b>



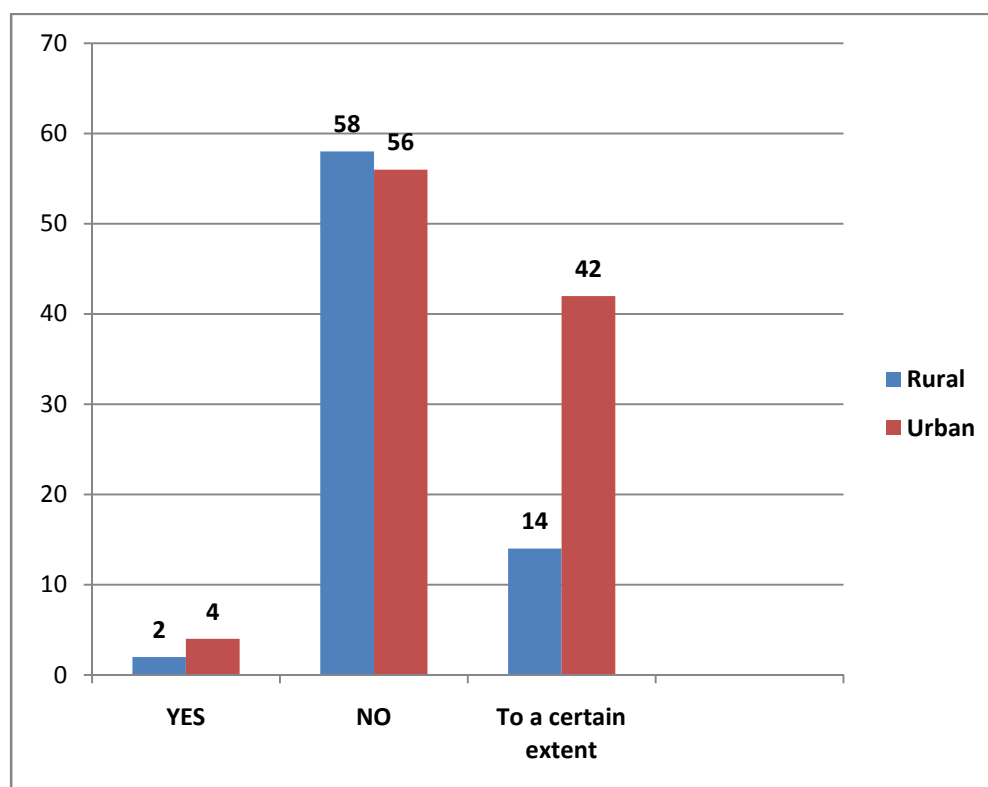
*Source: Field Work*

With regard to the execution of governmental programmes in the community, many consider them as not being carried out properly in the community. As shown in Table 2.7 below, 58 (79.45%) and 56 (54.90%) respondents in the rural and urban areas deem the programmes as not executed to its potential in the community.

**Table 2.7**

**Whether programmes of the government are carried out by the community**

	<b>Rural</b>	<b>Urban</b>
<b>Yes</b>	<b>2 (2.73%)</b>	<b>4 (3.92%)</b>
<b>No</b>	<b>58 (79.45%)</b>	<b>56 (54.90%)</b>
<b>To a certain extent</b>	<b>14 (19.17%)</b>	<b>42 (41.17%)</b>



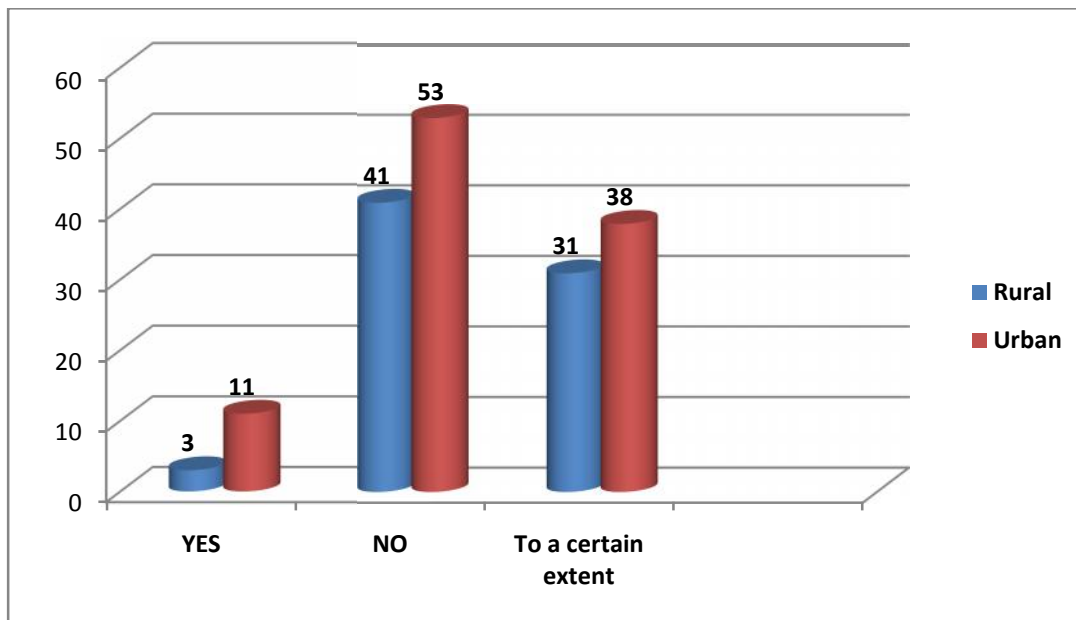
*Source: Field Work*

As the people in the rural and urban areas feel the need for proper execution of environmental programmes by the government (Table 2.7), with regard to their effectiveness they believe them to be ineffective in the protection of the environment. 41 (56.16%) and 53 (51.96%) in the rural and urban areas have claimed the inefficacy of the existing governmental programmes as shown in the Table below.

**Table 2.8**

**Whether programmes of the government are effective in the protection of the environment**

	<b>Rural</b>	<b>Urban</b>
<b>Yes</b>	<b>3 (4.10%)</b>	<b>11 (10.78%)</b>
<b>No</b>	<b>41 (56.16%)</b>	<b>53 (51.96%)</b>
<b>To a certain extent</b>	<b>31 (42.46%)</b>	<b>38 (37.25%)</b>



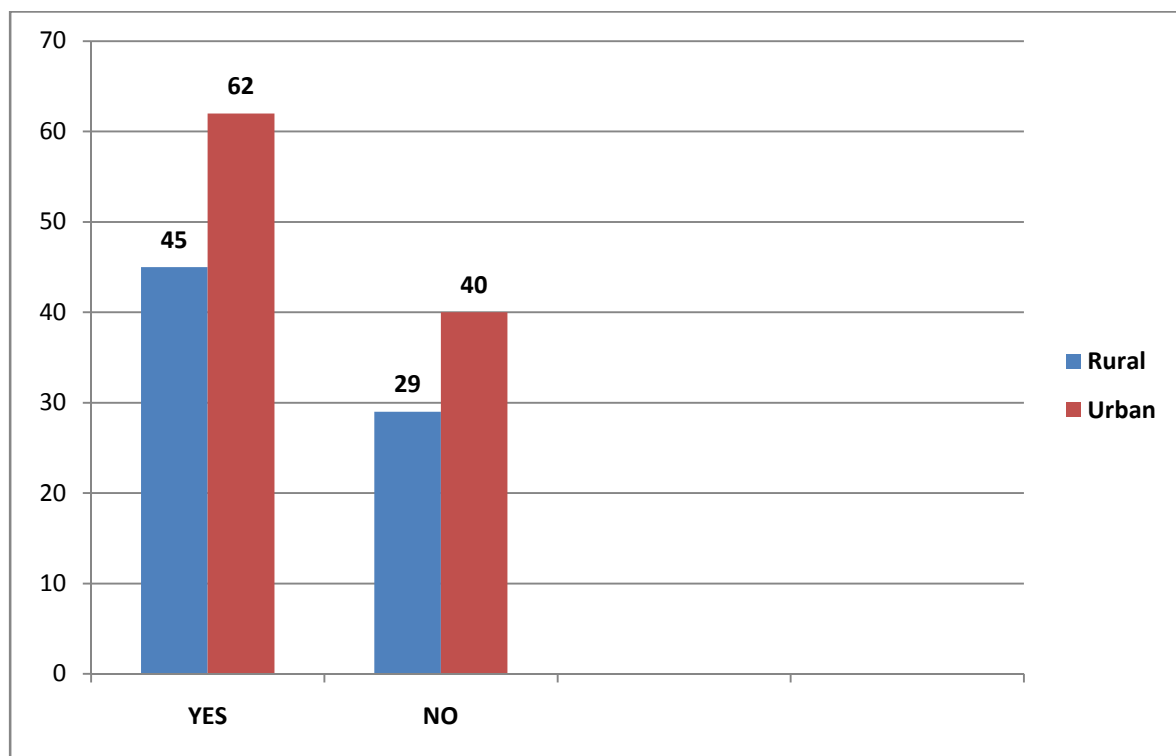
*Source: Field Work*

Contrary to the responses of the people on the lack of execution of governmental programmes, the advertisements for environmental protection by the government have been found useful by the people. Table 2.9 shows that as many as 45 (61.64%) and 62 (60.78%) in the rural and urban areas have confirmed as having an impact in the protection of the environment.

**Table 2.9**

**Whether advertisements for environmental programmes of the government has had an impact on the respondent**

	<b>Rural</b>	<b>Urban</b>
<b>Yes -</b>	<b>45 (61.64%)</b>	<b>62 (60.78%)</b>
<b>No -</b>	<b>29 (39.73%)</b>	<b>40 (39.21%)</b>



*Source: Field Work*

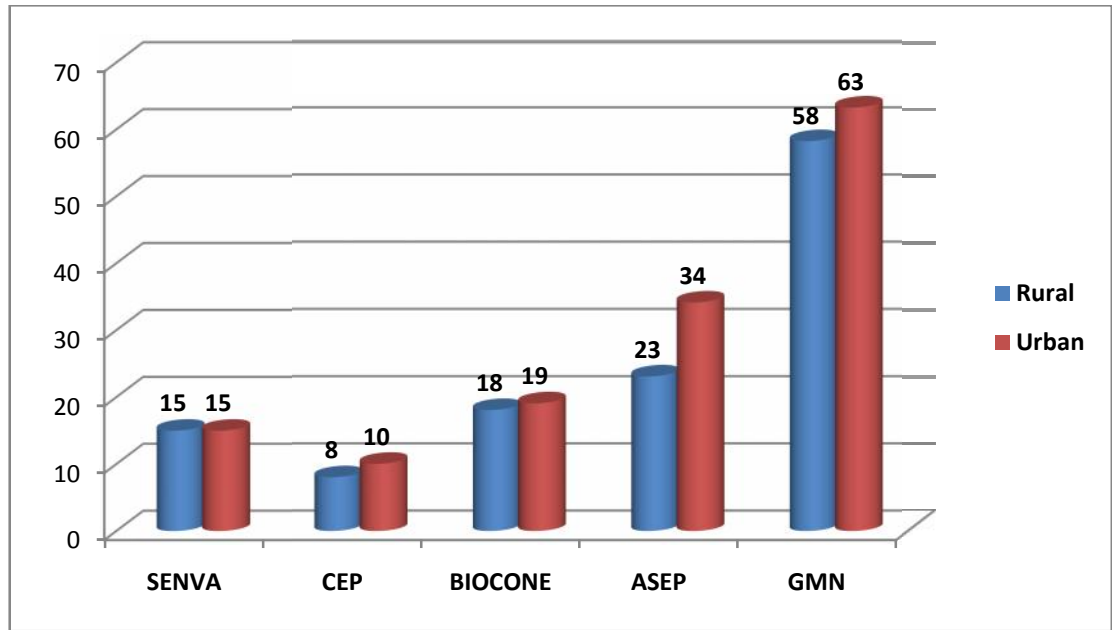


## V. Perceptions on the Environment Non-Governmental Organisations in Mizoram

In Mizoram, there are number of non-governmental organisations concerned with different issues affecting the society. Over the years, with the concern for protecting the environment, Environment Non-Governmental Organisations have been established. These organisations have been taking active steps in solving environmental issues faced by the people in Mizoram. The familiarity of these organisations by the community is necessary to understand their role in environmental protection and their influence on the mindset of the people. The Green Mizoram Network is fairly well-known in both the rural and urban areas with 58 (79.45%) and 63 (61.76%) number of respondents being familiar, respectively (Table 3.0). The question raises on whether the efforts undertaken by the Environment NGOs were effective, 39 in the rural areas and 55 in the urban areas believe them to be effective to a certain extent. However, more effort has to be made as there were 31 respondents in the rural areas and 39 respondents in the urban areas who felt their initiatives as ineffective (Table 3.1).

**Table 3.0**

<b>Familiarity with the Environment Non-Governmental Organisations</b>	<b>Rural</b>	<b>Urban</b>
<b>Save Environment Association</b>	<b>15 (20.54%)</b>	<b>15 (14.70%)</b>
<b>Centre for Environment Protection</b>	<b>8 (10.95%)</b>	<b>10 (9.80%)</b>
<b>Biodiversity and Nature Conservation Network</b>	<b>18 (24.65%)</b>	<b>19 (18.62%)</b>
<b>Association for Environment Protection</b>	<b>23 (31.50%)</b>	<b>34 (33.33%)</b>
<b>Green Mizoram Network</b>	<b>58 (79.45%)</b>	<b>63 (61.76%)</b>

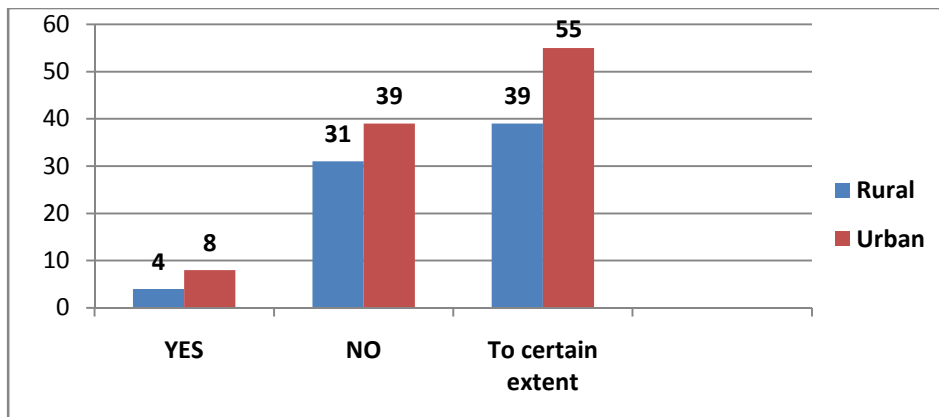


*Source: Field Work*

**Table 3.1**

**Whether the efforts undertaken by the NGOs are effective in the protection of the environment**

	Rural	Urban
Yes	4 (5.47%)	8 (7.84%)
No	31 (42.46%)	39 (38.23%)
To certain extent	39 (53.42%)	55 (53.92%)



*Source: Field Work*

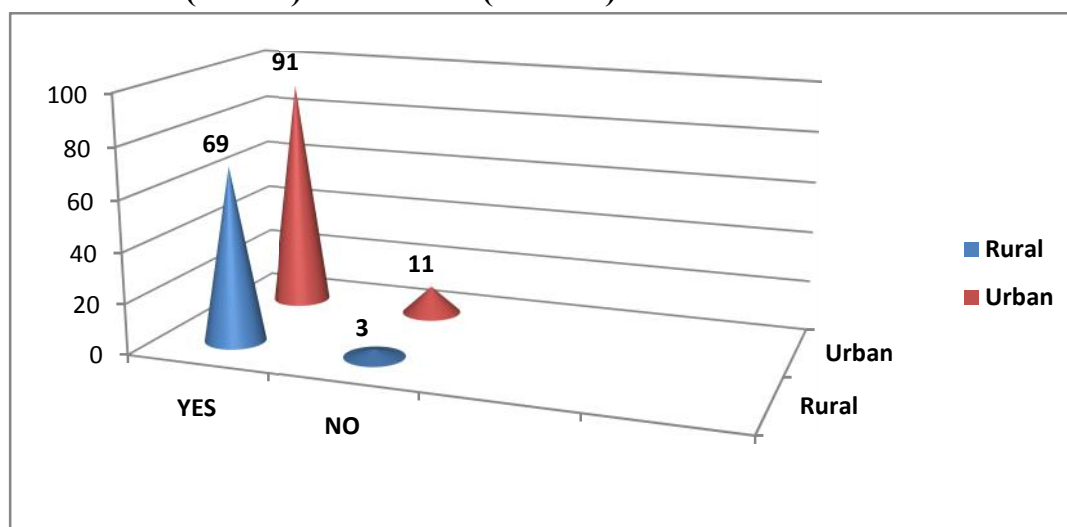
## VI. Perceptions of the Community with regard to the media

The propagation of environmental programmes is necessary for sensitizing and mobilising the people towards environmental protection. The people of Aizawl feel that the media is helpful in propagating the protection of the environment. As many as 69 respondents in the rural areas and 91 in the urban areas have affirmed its importance (Table 3.2). In relation to the medium of dissemination, the television has been considered as most important in propagating environmental awareness (Table 3.3).

**Table 3.2**

**Responses on whether the media is helpful in propagating environmental protection**

	Rural	Urban
Yes -	69 (94.52%)	91 (89.21%)
No -	3 (4.10%)	11 (10.79%)

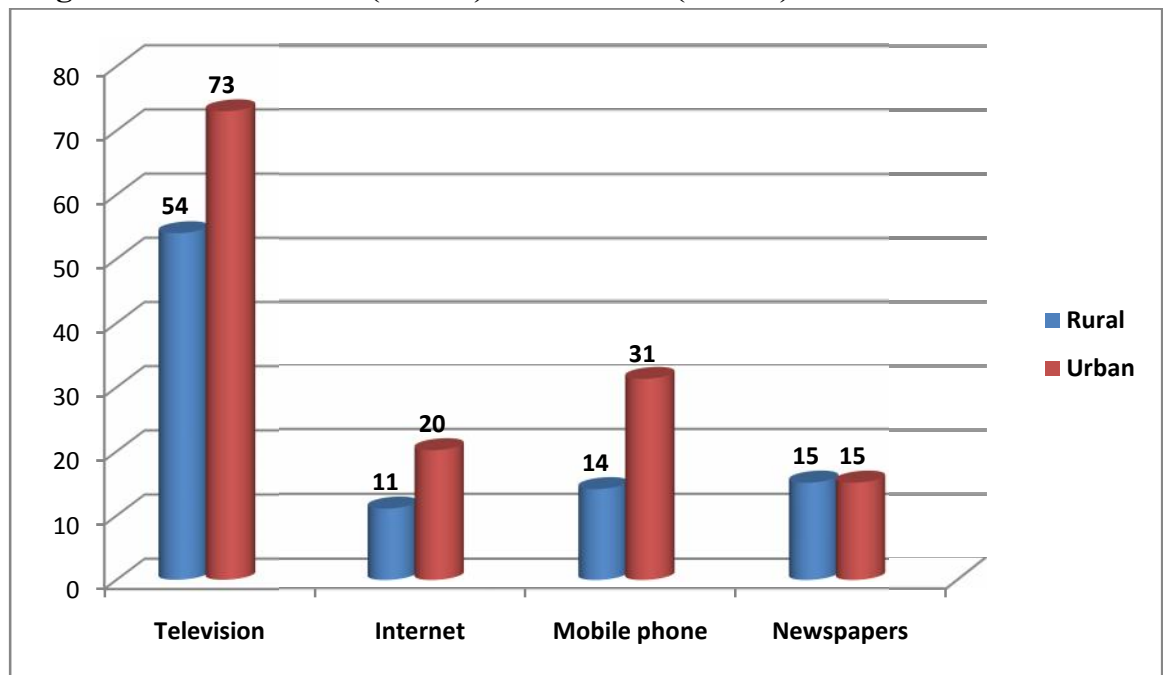


*Source: Field Work*

**Table 3.3**

**Responses on the most helpful media in solving environmental protection awareness**

	<b>Rural</b>	<b>Urban</b>
<b>Television</b>	<b>54 (73.97%)</b>	<b>73 (71.56%)</b>
<b>Internet</b>	<b>11 (15.06%)</b>	<b>20 (19.60%)</b>
<b>Mobile phone</b>	<b>14 (19.17%)</b>	<b>31 (30.39%)</b>
<b>Newspapers</b>	<b>15 (20.54%)</b>	<b>15 (14.70%)</b>
<b>Magazines</b>	<b>3 (4.10%)</b>	<b>10 (9.80%)</b>



*Source: Field Work*

The individuals in the community are important vehicles of environmental protection. The knowledge of personal initiatives taken by them is necessary in understanding their level of involvement in the community. From the responses received in relation to the personal initiatives of the individuals in the community in Aizawl, they are more or less involved in the protection of the environment (Table 3.4).

**Table 3.4**

**Personal initiative of the individuals in the Community**

Sl no	Questions	Responses	Rural	Urban
1.	Have you made an effort to clean the premises of your locality?	Yes	57 (78.08%)	67 (65.68%)
		NO	17 (23.38%)	35 (34.31%)
2.	Do you participate in the community work organized by the leaders of your locality?	Yes	57 (78.08%)	59 (57.84%)
		No	16 (21.91%)	43 (42.15%)
3.	If yes, what is/are your reasons for participation?	Priority for environmental cleanliness	44 (60.27%)	63 (61.76%)
		Due to pressure from the family	5 (6.84%)	39 (38.23%)
4.	If no, what is/are your reasons for not participating?	Time constraints	25 (34.24%)	55 (53.92%)
		Due to work/studies	45 (61.64%)	47 (46.07%)
5.	Do you consider the Community Work as effective in environmental protection?	Yes	67 (91.78%)	73 (71.56%)
		No	6 (8.21%)	29 (28.43%)
6.	Do you consider yourself responsible for the Environmental cleanliness of your locality?	Yes	73 (100%)	82 (80.39%)
		No	0	20 (19.60)

From the responses collected, the people of Aizawl are more or less concerned with environmental issues. However, the community has to be more aware of the environmental programmes of the government at the same time these programmes must be planned by the government keeping in view of the involvement of the community. The

non-governmental organisations, particularly the environment non-governmental organisations ought to play a more proactive role as they are barely recognized by the members of the community. The leaders of the community are responsible for mobilizing its members towards environmental protection. The responses of the people reveal the need for a more enthused and dedicated role of the leaders in influencing the members of the community in the protection of the environment. Individual initiatives are also vital in protecting the environment of Aizawl. Thus, the involvement of all the stakeholders i.e. the government, non-governmental organisations, the individual and the community is imperative in combating environmental hazards and improving the environment in Aizawl.

## **CHAPTER - IV**

### **ENVIRONMENTAL EDUCATION, AWARENESS AND INFORMATION**

In the last chapter, i.e. Chapter-III, the pivotal role of the community in general and the Mizo Community in particular in mitigating environmental problems has been discussed. Awareness and responses of the community with regard to the environment has also been highlighted in the previous chapter. The chapter IV deals with environmental education, awareness and information.

The pursuit of sustainable development and environmental conservation policies, objectives and targets requires the public to be sufficiently sensitized about the multiple dimensions of environment and development. Awareness and understanding of environmental issues provide the basis and rationale for commitment and meaningful action towards environmentally sound and sustainable development.<sup>1</sup>

#### **Environmental Education: Concept and Definition**

Environment concerns all generations of man. It covers both the rural population as well the urban population. A better understanding of its protection is necessary for arresting further degradation. Thus, Environmental education should be imparted at all levels of education so as to inculcate the significance of the

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<sup>1</sup> [www.unescap.org/sites/default/files/CH15.PDF](http://www.unescap.org/sites/default/files/CH15.PDF), Accessed on 20<sup>th</sup> July, 2015.

environment and the practical relevance of the role played by each member of the community/society in its protection. In order to have a clear perspective, following are some of the definitions of Environmental Education.

Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality. (*The International Union for the Conservation of Nature and Natural Resources Commission of Education, International Working Meeting on Environmental Education in the School Curriculum, Paris, UNESCO, 1970*)

Environmental Education means the educational process dealing with man's relationship with his natural and man-made surroundings, includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology and urban and rural planning to the total human environment. (*The United States Environmental Education Act, 1970*)

Environmental education is a way of implementing the goals of environmental protection. Environmental education is not a separate branch of science or field of study. It should be carried out according to the principles of lifelong integral education. (*Finnish National Commission for UNESCO Report of the National Seminar on Environmental Education, 1974*)



Environmental education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment with due regard to ethical values. (*The First Intergovernmental Conference on Environmental Education, Tbilisi, 1977*)

Environmental education includes information about the various impediments unhygienic and insanitary living conditions, lack of pure drinking water, impure air, absence of plant life etc.<sup>2</sup>

Environmental education increases public consciousness and knowledge of environmental issues and challenges. People profit, through environmental education, by gaining an understanding of how their individual actions affect the environment, acquiring skills that they can use to evaluate various sides of issues, and becoming better equipped to make informed decisions. Environmental education also gives people a deeper understanding of the environment, inspiring them to take personal responsibility for its conservation and restoration.<sup>3</sup>

### **Features of Environmental Education**

The basic features of Environmental Education are as follows:<sup>4</sup>

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<sup>2</sup> Kumar Arvind, *Environmental Management*, APH Publishing Corporation, New Delhi, 2004, p. 33.

<sup>3</sup> Mukherji S., *Fragile Environment*, Manak Publications, New Delhi, 2004.

<sup>4</sup> Aggarwal, J. C., *Education for Values, Environment and Human Rights*, New Delhi, Shipra Publications, 2013, p. 140.

1. Environmental Education is a learning process that expands individuals' information and mindfulness about nature's domain and related difficulties, creates the vital abilities and mastery to address the difficulties, instilled confidence and stewardship and cultivates demeanour, inspirations, and responsibilities to settle on educated choices and make dependable moves in the field that they are working with.
2. Environmental Education is an inter-disciplinary field that integrates fields such as biology, ecology, earth science, geography; atmospheric science and mathematics because understanding how environment works and keeping it healthy require knowledge and skills from many disciplines.
3. Environmental Education includes all efforts to make general public aware of the knowledge of the environment and environmental challenges through print materials, media, brochures, bulletins, videos, or other media techniques.
4. Environmental Education leads to responsible individual and group actions.
5. Environmental Education provides information about specific environmental concerns or problems to the general public instead of specific group, religion or community.
6. Environmental Education works to help you think critically, so that you aren't sitting there trying to fit everything into a neat little box.
7. Environmental Education involves students in different data-gathering techniques that help them to discuss, analyze, predict and interpret data about environmental issues.

8. Environmental Education is study-centred, promotes higher level thinking skills and relevant to student's everyday lives.
9. Environmental Education allows people to discuss about complex environment problems that have no simple answers.
10. Environmental Education is a process in which individuals gain information environmental awareness and acquire knowledge, skills, values, experiences, and determination which can help them to solve different environmental problems.

### **The Tbilisi Conference, 1977**

The world's first Intergovernmental Conference on Environmental Education organised by UNESCO in cooperation with the United Nations Environmental Programme (UNEP) was convened in Tbilisi, USSR from 14-26 October, 1977.

Delegates from 66 member states and observers from two non-member states participated. Representatives and observers from eight UN Agencies and programs also participated. Three other intergovernmental organisations and 20 international non-governmental organisations also were represented. In all, 265 delegates and 65 representatives and observers took part in the conference.<sup>5</sup>

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<sup>5</sup> [www.gdrc.org/uem/ee/tbilisi.html](http://www.gdrc.org/uem/ee/tbilisi.html). Accessed on 20<sup>th</sup> March, 2016.

## **The Role, Objectives and Characteristics of Environmental Education**

The Conference made important recommendations on the following:<sup>6</sup>

### *a) Role of Environmental Education*

The Tbilisi Conference recommended the adoption of certain criteria which will help to guide efforts to develop environmental education at the national, regional, and global levels:

- i) Whereas it is a fact that biological and physical features constitute the natural basis of the human environment, its ethical, social, cultural, and economic dimensions also play their part in determining the lines of approach and the instruments whereby people may understand and make better use of natural resources in satisfying their needs.
- ii) Environmental education is the result of the reorientation and dovetailing of different disciplines and educational experiences which facilitate an integrated perception of the problems of the environment, enabling more rational actions capable of meeting social needs to be taken.
- iii) A basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic, and cultural aspects, and acquire the knowledge, values, attitudes, and practical skills to participate in a responsible and effective way in

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<sup>6</sup> *Ibid.*

anticipating and solving environmental problems, and in the management of the quality of the environment.

- iv) A further basic aim of environmental education is clearly to show the economic, political, and ecological interdependence of the modern world, in which decisions and actions by different countries can have international repercussions. Environmental education should, in this regard, help to develop a sense of responsibility and solidarity among countries and regions as the foundation for a new international order which will guarantee the conservation and improvement of the environment.
- v) Special attention should be paid to understanding the complex relations between socio-economic development and the improvement of the environment.
- vi) For this purpose, environmental education should provide the necessary knowledge for interpretation of the complex phenomena that shape the environment, encourage those ethical, economic, and aesthetic values which, constituting the basis of self-discipline, will further the development of conduct compatible with the preservation and improvement of the environment. It should also provide a wide range of practical skills required in the devising and application of effective solutions to environmental problems.
- vii) To carry out these tasks, environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities

and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems.

viii) Environmental education should cater to all ages and socio-professional groups in the population. It should be addressed to (a) the general non-specialist public of young people and adults whose daily conduct has a decisive influence on the preservation and improvement of the environment; (b) to particular social groups whose professional activities affect the quality of the environment; and to scientists and technicians whose specialized research and work will lay the foundations of knowledge on which education, training, and efficient management of the environment should be based.

ix) To achieve the effective development of environmental education, full advantage must be taken of all public and private facilities available to society for the education of the population: the formal education system, different forms of non-formal education, and the mass media.

x) To make an effective contribution towards improving the environment, educational action must be linked with legislation, policies, measures of control, and the decisions that governments may adopt in relation to the human environment.

*b) Goals of Environmental Education*

The goals of environmental education according to the Tbilisi Declaration are:

- i) To foster a clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas.
- ii) To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
- iii) To create new patterns of behaviour individuals, groups and society as a whole towards the environment.

*c) Objectives of Environmental Education*

The categories of environmental education objectives are:

- i) Awareness – To help individuals and social groups acquire an awareness of and sensitivity to the total environment and its allied problems.
- ii) Knowledge –To help individuals and social groups acquire basic understanding of the total environment and its associated problems.
- iii) Attitude – To help individuals and social groups acquire social values, strong feelings of concern for the environment and the motivation for actively participating in its protection and improvement.
- iv) Skills – To help individuals and social groups acquire the skills for solving environment problems.
- v) Participation – To help individuals and social groups develop a sense of responsibility and urgency regarding environmental problems to ensure appropriate action to solve these problems.

*d) Guiding Principles of Environmental Education*

The Tbilisi Conference endorsed the following guiding principles of Environmental Education:

- i) Consider the environment in its totality- natural and built technological and social (economic, political, technological, cultural, historical, moral, aesthetic);
- ii) Be a continuous lifelong process, beginning at the preschool level and continuing through all formal and non-formal stages;
- iii) Be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
- iv) Examine major environmental issues from local, national, regional, and international points of view so that students receive insights into environmental conditions in other geographical areas;
- v) Focus on current and potential environmental situations while taking into account the historical perspective;
- vi) Promote the value and necessity of local, national, and international cooperation in the prevention and solution of environmental problems;
- vii) Explicitly consider environmental aspects in plans for development and growth;
- viii) Enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;



- ix) Relate environmental sensitivity, knowledge, problem-solving skills, and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;
- x) Help learners discover the symptoms and real causes of environmental problems;
- xi) Emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;
- xii) Utilize diverse learning environments and a broad array of educational approaches to teaching, learning about and from the environment with due stress on practical activities and first-hand experience.

### **Environmental Education in India**

In India, taking initiative from Stockholm Summit 1972, it incorporated environmental concern in the constitution through 42nd Amendment in 1976.<sup>7</sup> Protection and improvement of the natural environment including forests, lakes and wildlife; and living harmoniously with the environment is embedded in the Constitution of India in articles 48A and 51G.<sup>8</sup> It is duty of every citizen to protect and improve the natural environment. It was in this background that a Department of Environment was established by the government of India in 1980 and a Ministry formed in 1985. This ministry is the nodal agency in the Central Government for “Planning, Promotion, Coordination and Overseeing the implementation of various

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<sup>7</sup> Sonowal C. J., *Environmental Education in Schools: The Indian Scenario*, J Hum Ecol, 28(1), 2009, p.15.

<sup>8</sup> Almeida Christine Sylvia, *Environmental Education in a Climate of Reform: Understanding Teacher Educators' Perspectives*, p.29.

environmental programmes. The ministry recognized environmental education as a key to the success of any overall strategy. The principal responsibilities for environmental education through the formal educational system are responsibility of the ministry of HRD. The parallel responsibility of EE through non-formal efforts lies with the Ministry of Environment.<sup>9</sup>

Increasing concern on Environmental Education (EE) in India gained its momentum while its importance was recognized by the Government and policy was planned subsequently to introduce EE in schools. It is by now every one's general perception, rightly that, increasing population, unplanned growth of urban areas, ill planned industrialization and misconceived development paradigm have given rise to the contemporary environmental crisis world over.

A serious thought about EE in schools started after the National Council of Education Research and Training (NCERT) circulated its Discussion Document (2000) inviting comments from concerned agencies. It was revealed that the document was miserably lacking environmental concern at school curricula. Towards the end of the last century four major reviews of EE in the country were published by Centre for Environment Education, C.P.R. Environmental Education Centre (CPREEC 1999), Prativesh (1999) and Gill and Lahiry (1999). The National Curriculum for Elementary and Secondary Education — A Framework formulated in 1988 (NCERT; 1988) marked the first concerted and systematic effort to bring EE into the school curriculum. This took an “infusion” of environmental concerns and a whole range of

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<sup>9</sup> Jena Mohan Biswa, *Environmental Education, Awareness and Training: A General Perspective*, International Journal of Teacher Educational Research (IJTER), Vol.1, No.4, December, 2012, p. 13.

environmental concerns were infused into the NCERT model test books published between 1987 and 1989 (NCERT 1987-89).<sup>10</sup>

### **The National Council of Education Training and Research (NCERT)**

The National Council of Educational Research and Training (NCERT), established in 1961<sup>11</sup>, is an organisation set up by the Government of India, with headquarters located at Sri Aurobindo Marg in New Delhi, to assist and advise the central and state governments on academic matters related to school education. The National Council of Education Training and Research (NCERT), is the apex body in the area of developing curriculum for the formal education system. With regard to Environmental Education, its responsibilities are:<sup>12</sup>

- a) Strengthening Infusion of EE,
- b) Teacher Training for Effective EE,
- c) Introduction of Environment as a separate subject,
- d) Use of non-formal method of EE through the involvement of NGOs.

### **Centre for Environment Education (CEE)**

The Centre for Environment Education was created in recognition of the importance of environmental education in India's overall environment and

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<sup>10</sup> Sonowal C. J., *Environmental Education in Schools: The Indian Scenario*, J Hum Ecol, 28(1), 2009, p. 16.

<sup>11</sup> *Leading the Change: 50 years of NCERT*, NCERT, New Delhi, 2011

<sup>12</sup> Jena Mohan Biswa, *Environmental Education, Awareness and Training: A General Perspective*, International Journal of Teacher Educational Research (IJTER), Vol.1, No.4, December, 2012, p. 14.

development strategy. The CEE was established as a Centre of Excellence in 1984, supported by the Ministry of Environment and Forests (MoEF), Government of India. Mr. Kartikeya Sarabhai is the Director of CEE.

CEE has inherited the rich multi-disciplinary resource base and varied experience of Nehru Foundation for Development, its parent organisation, which has been promoting educational efforts since 1966 in the areas of science, nature study, health, development, and environment.

At the time it began its activities, CEE was perhaps the only organization actively engaged in environmental education in the country. While carrying out programmes in different parts of the country, it was located only at Ahmedabad. Within five years of activities, it was realized that for a country as vast and diverse as India, physical presence was important for effective implementation. Based on this, the first regional office was opened for the Southern region in 1988-89. Since then it has been a conscious effort to have an office or presence in the geographical area of work.

CEE's primary objective is to improve public awareness and understanding of the environment with a view to promoting the conservation and sustainable use of nature and natural resources, leading to a better environment and a better quality of life. To this end, CEE develops innovative programmes and educational material, and builds capacity in the field of Education and Sustainable Development (ESD). It undertakes demonstration projects in education, communication and development that

endorse attitudes, strategies and technologies which are environmentally sustainable. CEE is committed to ensuring that due recognition is given to the role of education in the promotion of sustainable development.<sup>13</sup>

### **Programmes, Policies and Schemes for Environmental Education in India**

A number of programmes for Environmental Education have been introduced by the Central Government which are as follows:

#### **National Policy on Education, 1986 (NPE)**

The National Policy on Education (NPE) was adopted by Parliament in May 1986.<sup>14</sup> The National Policy on Education (1986) has envisaged protection of the environment as the core element of education at all levels. It should be developed as one of values among the children. The policy has also recommended the creation of environmental consciousness among all ages starting with school education. The section of the policy document states: "There is a paramount need to create a consciousness of the environment. It must permeate all ages and all sections of society, beginning with the child. Environmental consciousness should inform teaching in schools and colleges. This aspect will be integrated in entire educational process".

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<sup>13</sup> [https://en.wikipedia.org/wiki/Centre\\_for\\_Environment\\_Education](https://en.wikipedia.org/wiki/Centre_for_Environment_Education). Accessed on 20<sup>th</sup> July 2015.

<sup>14</sup> [www.ncert.nic.in/oth\\_anoun/npe86.pdf](http://www.ncert.nic.in/oth_anoun/npe86.pdf). Accessed on 23<sup>rd</sup> July, 2015.

## **Environmental Orientation to School Education (EOSE)**

This is a programme of the Ministry of Human Resource Development, Government of India, which was introduced in the eighth plan. To make environmental education meaningful to the school level students throughout the country it was desirable to supplement the effort at national and state level by a more intensive locale-specific effort. The very background of the EOSE scheme lies with this requirement aiming at harmonizing the environmental education with local environmental situations.

The Scheme was based on the following perceptions:<sup>15</sup>

1) A compact area having uniform eco-system would have similar environmental concerns and therefore, can form the unit for designing one set of programs for implementation in schools and the community in that area.

2) The basic components for identification of a specific area are geological formation and features, crops grown, rainfall and plant life.

3) The success of the programme would largely depend on the involvement of and interest created among the teachers, students, educationists, voluntary agencies, environmental experts and the local communities.

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<sup>15</sup> Sonowal C. J., *Environmental Education in Schools: The Indian Scenario*, J Hum Ecol, 28(1), 200, p. 18.

## **Environmental Education, Awareness and Training (EEAT)**

The 'Environmental Education, Awareness and Training (EEAT)' is a flagship scheme of the Ministry of Environment and Forests for enhancing the understanding of people at all levels about the relationship between human beings and the environment and to develop capabilities/skills to improve and protect the environment. This scheme was launched in 1983-84 with the basic objective to promote environmental awareness among all sections of the society and to mobilize people's participation for preservation and conservation of environment.

EEAT Scheme has the following objectives:<sup>16</sup>

- i. To promote environmental awareness among all sections of the society;
- ii. To spread environment education, especially in the non-formal system among different sections of the society;
- iii. To facilitate development of education/training materials and aids in the formal education sector;
- iv. To promote environment education through existing educational/scientific/research institutions;
- v. To ensure training and manpower development for environment education, awareness and training;

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<sup>16</sup> envfor.nic.in > division > environmental.. Accessed on 21<sup>st</sup> July, 2015.

- vi. To encourage non-governmental organizations, mass media and other concerned organizations for promoting awareness about environmental issues among the people at all levels;
- vii. To use different media including films, audio, visual and print,, theatre, drama, advertisements, hoarding, posters, seminars, workshops, competitions, meetings etc. for spreading messages concerning environment and awareness; and
- viii. To mobilize people's participation for preservation and conservation of environment.

The objectives of this scheme are being realized through implementation of the following programmes launched over the years:<sup>17</sup>

***i) National Environment Awareness Campaign (NEAC)***

The NEAC was launched in mid 1986 with the objective of creating environmental awareness at the national level. In this campaign, nominal financial assistance is provided to NGOs, schools, colleges, universities, research institutes, women and youth organisations, army units, government departments etc. from all over the country for conducting awareness raising and action oriented activities. Thirty four Regional Resource Agencies (RRAs) appointed by the Ministry are involved in conducting, supervising

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<sup>17</sup> envfor.nic.in > division > environmental. Accessed on 21<sup>st</sup> July 2015.



and monitoring the NEAC activities. During NEAC 2013-2014, 11754 Organisations participated from across the country.

***ii) National Green Corps (NGC)***

**National Green Corps** is a major initiative of MOEFCC for creating environmental awareness launched in 2001-02 which aims at building cadres of young children working towards environmental conservation and sustainable development. The phenomenal response that National Green Corps has received and has made the network more than 1,00,000 Eco clubs across the country in 14 years, making it one of the largest conservation networks indicates its importance at grass root level in taking the environment awareness at mass.

The unique partnership between the MoEF, the state Government agencies along with the dedicated NGOs, working in the field of Environmental Education has contributed to the success of the programme. It is operated through Eco-clubs set up in schools registered as members of NGC, this programme exposes school children to in-depth field experiences, and provides opportunities to convert their ideas into creative action.

The programme has a cascading effect, seeks to redirect the consciousness of students towards environment friendly attitudes and actions and goes beyond schools, promoting school-society interactions to sensitize the society. Also in order to strengthen monitoring mechanism of NGC

programme, MoEFCC is in process to establish Management Information System (MIS) which will open up vistas in sharing and accessing the information on NGC among all stakeholders. The MIS reporting and monitoring would be interactive and creative in ensuring NGC mobility and services.

***iii) Seminars/Symposia/Workshops/Conference***

In Every financial year proposals for organising Seminar/Symposia/Conference/workshop are invited through a time bound open advertisement, whenever it is issued in leading Newspapers of the country, wherein proponents need to submit their proposals to the Centre of Excellence as per its area of jurisdiction.

The objective of the programme on “Seminars/Symposia/Workshops or Conferences” is to provide a forum to professionals, scientists, environmentalists, other groups of the society to share knowledge and experience on various aspects of environment. Under this programme, financial assistance is provided to universities, academic institutions/ colleges, non-governmental organisations, Government Departments etc. to create mass environment awareness for organisation of Seminars /Symposia/Workshops/Conferences on identified thrust areas

related to environment or any emerging area impinging on technology, innovation in regard to environment.

#### *Quantum of assistance*

Financial assistance is only for organizational expenses (excluding hospitality) of the proposed event and not for capital items like construction, equipment, automation etc. For State, National and International Level Events, a maximum of Rs. 1, 00,000/-, Rs. 3, 00,000/- and Rs. 5, 00,000/- respectively have been stipulated.

#### *iv) Other Awareness Programmes*

It is conceivable that concerned stakeholders, like NGOs and a host of other organizations, may propose awareness activities which are outside the purview of the aforementioned programmes. Such activities need to be supported by the Ministry based on merits and their conformity with the requirements of the Ministry in its endeavours to promote environment protection. Such proposals are received in the Ministry from time to time.

A suggestive list of such, “Other Awareness Programmes”, being supported by the Ministry includes:

Awareness cum action programmes in and around the protected area, in wildlife corridors, biodiversity hotspots, rivers and wetlands

Awareness programmes which focus on communities that are critical to conservation of forests/wildlife/environment, Quiz Programmes/Competitions, Yatras based on the environmental issues, organising appropriate awareness programmes on

the occasion of mass congregations like industrial exhibitions, trade fairs, health melas, sport meets, conferences, training inter-school/college/university competitions and any programme/activity that promotes awareness about environment.

Based on the scale of the proposed activity and merits of the proposals, financial assistance to be provided to each proposal shall be in the range of Rs.5.00 lakhs to Rs.10.00 lakhs.

### **Environmental Education, Awareness and Information in Mizoram: Aizawl District**

#### **The State Council of Educational Research & Training, Mizoram**

The State Council of Educational Research and Training (SCERT) was established on 20th January, 1980 under the Directorate of Education with an Officer-on-Special Duty (OSD) as Head of the office. The post of OSD was given the status of Deputy Director which was later on upgraded to Joint Director in 1989. Finally it was upgraded to full-fledged Directorate on 22.5.2008. The SCERT is housed in its own building which was completed in 1989 and inaugurated on 2 February, 1990 by the then Education Minister, Dr H. Thansanga. The SCERT is the state counterpart of the National Council of Educational Research and Training (NCERT), New Delhi, dealing with the academic aspects of different levels of education like Primary Education, Secondary Education, Teacher Education, In-service orientation programmes, and continuing education. It also concerned with the Curriculum and

Textbook development, Science Promotion, Vocational Education, Special Education, Social Sciences & Humanities, Computers and Information Technology and Educational Research.. Its main purview lies with Curriculum and Textbook Development, Science and Mathematics Education, Promotion of English, Vocational Education, Educational and Vocational Guidance and Counselling Services, Integrated Education for Disabled Children, Environmental Education, Computer Aided Education, Distance Education, Educational Research and Non-Formal Education for the general public on specific issues.

These objectives are realised through - Training and Research. Educational training provides for extension and in-service training programmes to teachers, teacher educators, educational supervisors and educational administrators. Research work has so far been restricted to action research, case studies and survey projects funded by the Government of India.

Since its inception, the SCERT has grown in size and stature. A new building constructed to house Educational Technology Studio and Science laboratory has been named the 'Silver Jubilee Building' to commemorate the SCERT's completion of 25 years of its existence in 2005. This building now proudly houses Teaching End Studio with Educational Satellite (EDUSAT) facilities set up by the Indian Space Research Organisation (ISRO) in collaboration with the Ministry of Human Resource Development. This is to provide educational programmes and video

conferencing between Teaching End Studio and 50 Satellite Interactive Terminals located in different parts of Mizoram.<sup>18</sup>

### **Department of Social Sciences and Humanities**

The Department of Social Sciences and Humanities is one of the departments under SCERT, Mizoram which comprises of wings/schemes such as Language Promotion Wing, Population Education, Adolescence Education Programme and *Environmental Orientation to School Education (EOSE)* and Child Rights Protection, Cell. Apart from fulfilling the assigned academic programmes, the department is also involved in implementing a number of co-curricular activities in schools. These co-curricular activities involve programmes and learning experiences that complement what students are learning in school, i.e. experiences that are connected to or mirror the academic curriculum. A few examples of these co-curricular activities include advocacy programmes & role-play competition connected to adolescence education, organising exhibitions, seminars and production of films related to environment education etc.

### **Environmental Orientation to School Education (EOSE)**

Environmental Orientation to School Education (EOSE) has its roots in the National Policy on Education 1986 which states that - ‘protection of the environment is a value which along with certain other values must form an integral part of curriculum at all stages of education.’ Thus, Environmental Education is a global

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<sup>18</sup> <https://scert.mizoram.gov.in>. Accessed on 21<sup>st</sup> July 2015.

subject and environmental awareness is now a very urgent issue everyone is confronted with. The world is exerting itself to tackle the problems posed by the misuse of the environment. As a result, the EOSE was launched in Mizoram during 1988 - 89. Environmental Studies is prescribed as a subject in Mizoram from Class III and is corporate in most of the subjects from Class VI. The faculty of State Council of Educational Research and Training (SCERT) plays a vital role in the production of these textbooks. In the current year i.e. 2012-13, Environmental Orientation to School Education Cell has developed Project Books of Environmental Studies and Social Studies to be implemented as a pilot project in selected schools.

**Objectives of the scheme are:**

1. Preparation of text books and instructional materials (print and non-print) to be used at the school level.
2. Preparation and review of curriculum to make it local-specific.
3. Preparation of slides, audio-tapes, video-tapes, film on environment conservation.
4. Preparation of general informative booklets, brochures and posters etc. on environment history and culture.
5. Creating environmental awareness among the community.
6. Sensitizing teachers on environmental issues for their personal development.<sup>19</sup>

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<sup>19</sup> Annual Report 2012-13, SCERT, Mizoram

**Table 3.5**

**Programmes Conducted by EOSE during 2012-13**

<b>Sl. No.</b>	<b>Name of Programme</b>	<b>Duration</b>
1	Inspection of Higher Secondary Schools in Aizawl and 4 Villages	September 2012
2	4-Day Workshop to finalise Project Books of Social Studies	25-28 September 2012
3	4-Day Workshop to finalise Project Books of Environmental Studies and Social Studies	4-9 October 2012
4	Monitoring Visits to 14 High Schools and Higher Secondary Schools within Aizawl	4-6 February 2013

*Source: Annual Report 2012-13, SCERT, Mizoram*

**Environmental Awareness in Schools: Perceptions of Students on the Environment**

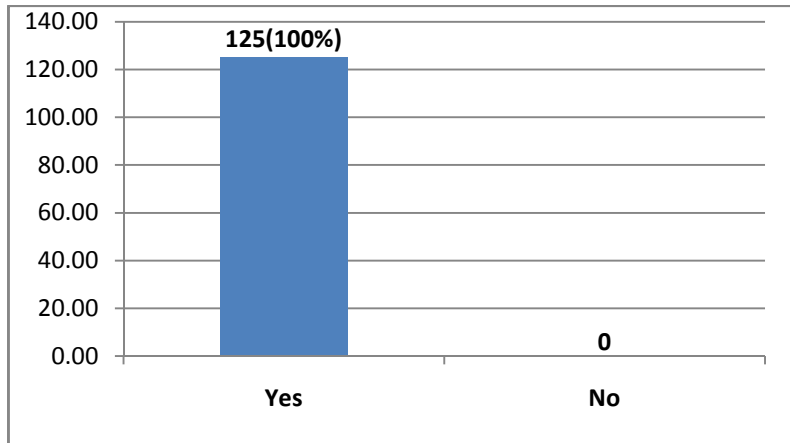
With the growing importance of Environmental Education in the school curricula, the perceptions, awareness and information of students in Aizawl on the environment have been sought through structured questionnaires. The students being an important stakeholder of environmental protection, their responses towards the environment are critical in improving the environment and understanding their role and responsibility in the community. Questionnaires were distributed and responses were collected from 125 students at the high school and higher secondary school levels. With regard to the environment of Aizawl, as shown in Table 3.6, all the respondents felt the need of protecting the environment.



**Table 3.6**

**Responses of students on whether the environment of Aizawl  
Needs to be protected**

<b>Yes</b>	-	<b>125 (100%)</b>
<b>No</b>	-	<b>0</b>



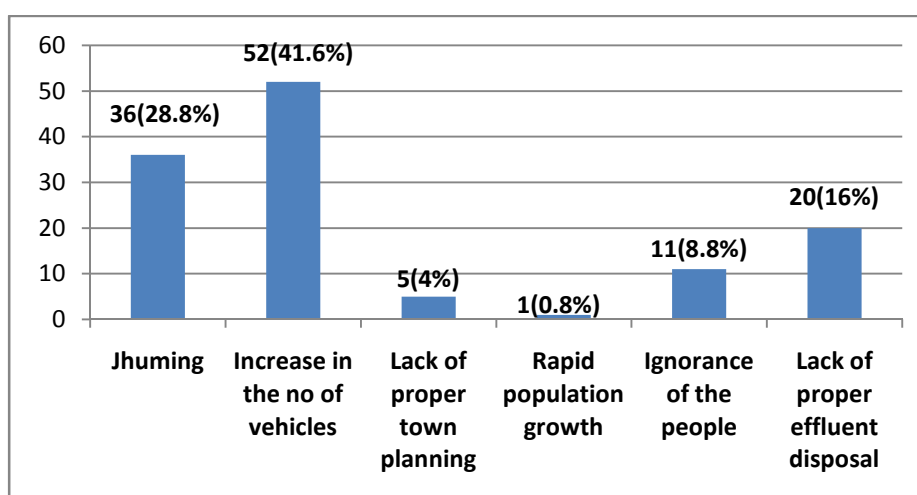
*Source: Field Work*

The intensity of environmental problems differs from place to place. Similarly, a number of problems affect the environment of Aizawl. Problems such as jhuming, increase in the number of motor vehicles, lack of proper town planning, rapid population growth, ignorance of the people and lack of proper effluent disposal have been listed as disturbing the environment. Increase in the number of motor vehicles has been recognised as having the highest impact causing environmental problems in Aizawl. 52 i.e. 41.6% of the respondents have regarded this factor as the main reason affecting the environment as shown in Table 3.7 below.

**Table 3.7**

**Perceptions of Students on the main cause of environmental problems in Aizawl**

<b>Jhuming</b>	<b>-36 (28.8%)</b>
<b>Increase in the number of motor vehicles</b>	<b>-52 (41.6%)</b>
<b>Lack of proper town planning</b>	<b>-6 (4%)</b>
<b>Rapid population growth</b>	<b>-1 (0.8%)</b>
<b>Ignorance of the people</b>	<b>-11 (8.8%)</b>
<b>Lack of proper effluent disposal</b>	<b>-20 (16%)</b>

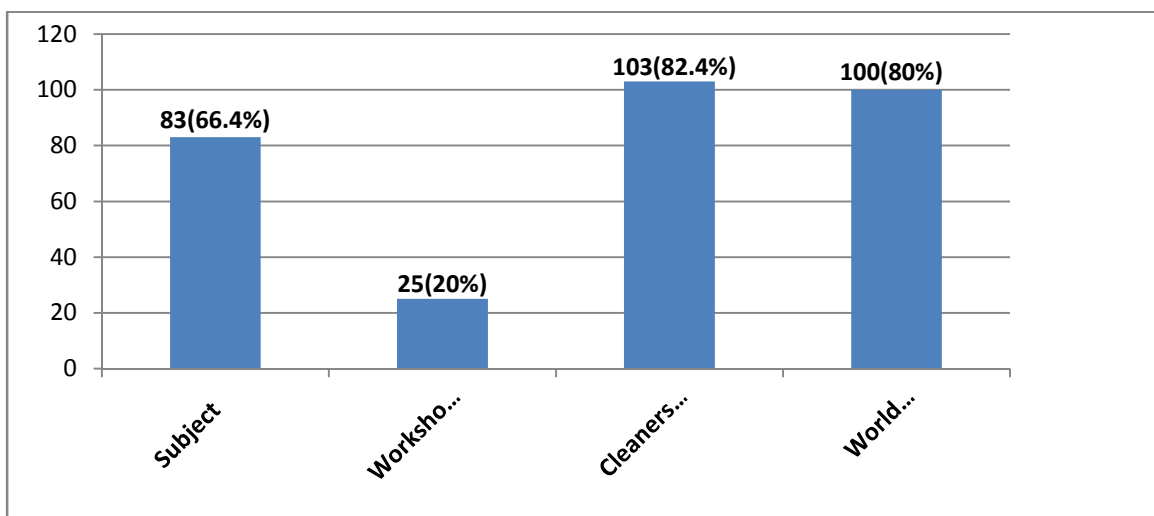


*Source: Field Work*

The awareness of students is crucial in curbing environmental issues. The knowledge of students reflects the efforts undertaken for propagating environmental protection in educational institutions to a large extent. As for subjects concerning environmental protection, 83 (66.4%) students have affirmed it being included in their syllabi. 95 (76%) of them have confirmed the conduct of workshops/seminars for

environmental protection in their school. With regard to the cleanliness of the surroundings of their school, 103 (82.4%) students have responded as having cleaners/sweepers to clean the classrooms and school premises. A significant finding is the absence of the observation of World Environment Day in schools. They were only 12 (0.096%) students who have responded as observing World Environment Day in their school (Table 3.8). The observation of the day would enhance the awareness of the need for protecting the environment of Aizawl and also the importance of the students' role in preventing environment problems.

**Table 3.8**  
**Knowledge of the students with regard to environmental protection in their school**



*Source: Field Work*

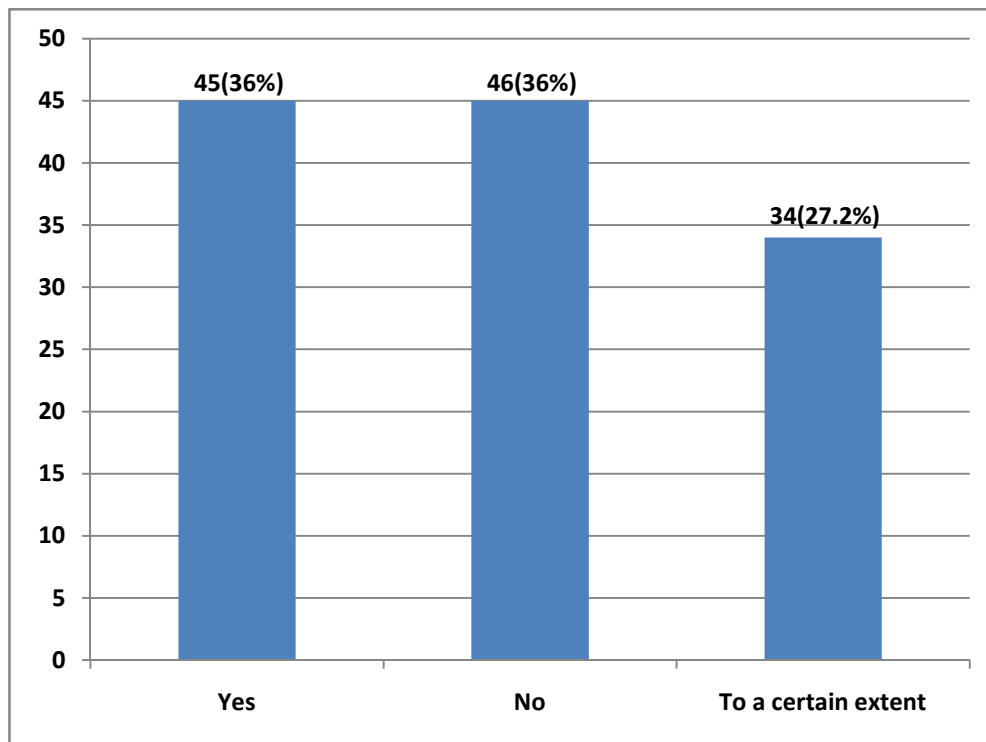
Imparting knowledge regarding the causes and effects of environmental hazards will enhance the responsibility of students towards the protection of the environment. From the responses received as indicated in Table 3.9, the opinions were at variance with 45 (36%) of them supporting environmental protection awareness as

being successfully imparted in schools, 45 (36%) considering it unsuccessful while 34 (27.2%) regarding it successful to a certain extent.

**Table 3.9**

**Responses of the students on whether environmental protection awareness is successfully imparted in schools**

<b>Yes</b>	-	<b>45 (36%)</b>
<b>No</b>	-	<b>45 (36%)</b>
<b>To a certain extent</b>	-	<b>34 (27.2%)</b>



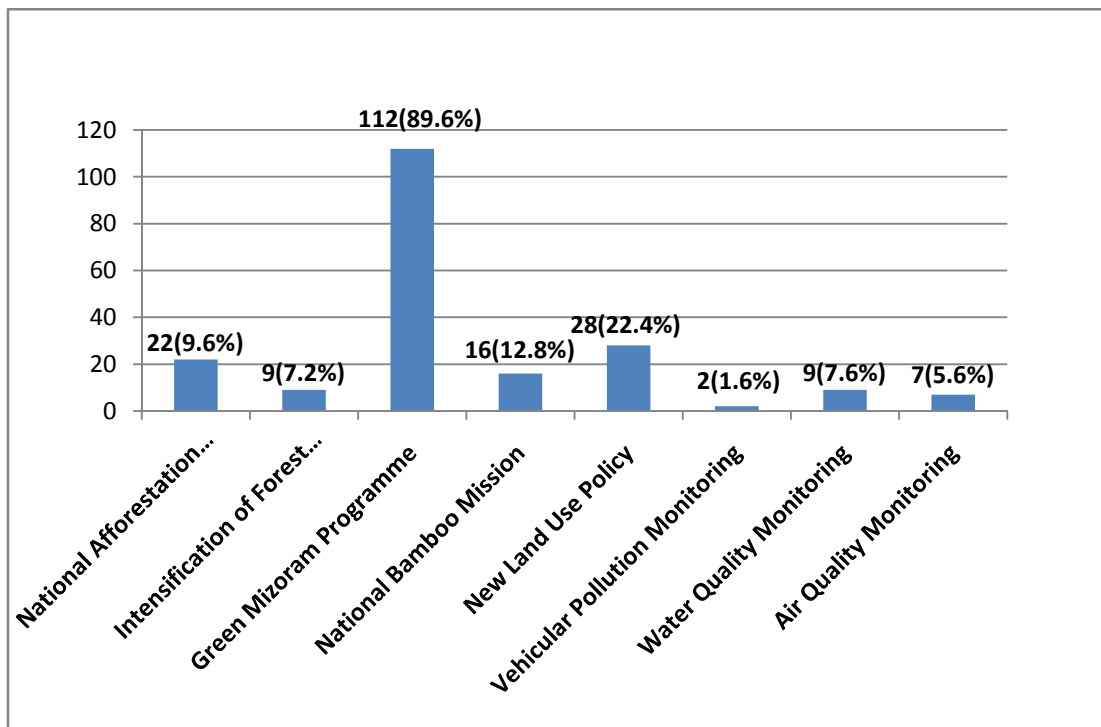
*Source: Field Work*

The familiarity with the programmes of the Government by the youth affects their implementation to a certain extent. As given in Table 4.0, amongst the 125 students, the Green Mizoram Programme and the New Land Use Policy were the programmes fairly well-known while being relatively ignorant of other programmes.

**Table 4.0**

**Knowledge of the programmes for Environmental Protection  
of the Government of Mizoram**

<b>National Afforestation Programme</b>	-	<b>22(17.6%)</b>
<b>Intensification of Forest Management Scheme-</b>		<b>9 (7.2%)</b>
<b>Green Mizoram Programme</b>	-	<b>112 (89.6%)</b>
<b>National Bamboo Mission</b>	-	<b>16 (12.8%)</b>
<b>New Land Use Policy</b>	-	<b>110 (88%)</b>
<b>Vehicular Pollution Monitoring</b>	-	<b>2 (1.6%)</b>
<b>Water Quality Monitoring</b>	-	<b>9 (7.2%)</b>
<b>Air Quality Monitoring</b>	-	<b>7 (5.6%)</b>



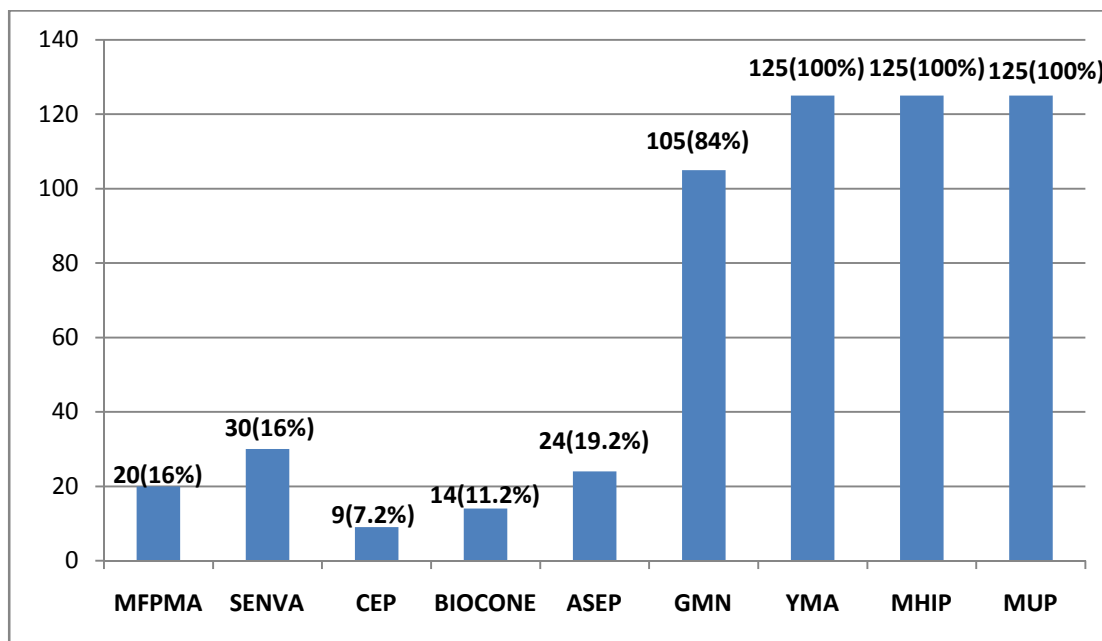
*Source: Field Work*

The non-governmental agencies particularly the environmental NGOs are instrumental in creating awareness among the youth and mobilising them towards environmental protection. Although these agencies have been taking active role, the

respondents are not well-acquainted with the environmental non-governmental organisations. From the six environmental NGOs listed, 105(84%) students responded as being familiar with the Green Mizoram Network while the rest of the environmental NGOs are also known by a few, ranging from 9(7.2%) to 30(24%). However, as shown in Table 4.1 below, the prominent non-governmental agencies such as the Young Mizo Association, the Mizoram Hmeichhe Insuihkhawm Pawl and the Mizoram Upa Pawl are recognized by all.

**Table 4.1**

**Students' knowledge of the Non-Governmental Agencies for Environmental Protection**



*Source: Field Work*

<b>Mizoram Forest Produce Marketing Agency (NFPMA)</b>	-	<b>20 (16%)</b>
<b>Save Environment Association (SENA)</b>	-	<b>30 (24%)</b>
<b>Centre for Environment Protection (CEP)</b>	-	<b>9 (7.2%)</b>
<b>Biodiversity and Nature Conservation Network (BIOCON)</b>	-	<b>14 (11.2%)</b>

<b>Association for Environment Preservation (ASEP)</b>	-	<b>24 (19.2%)</b>
<b>Green Mizoram Network (GMN)</b>	-	<b>105 (84%)</b>
<b>Young Mizo Association (YMA)</b>	-	<b>125 (100%)</b>
<b>Mizo Hmeichhe Insuihkhawm Pawl (MHIP)</b>	-	<b>125(100%)</b>
<b>Mizoram Upa Pawl (MUP)</b>	-	<b>125(100%)</b>

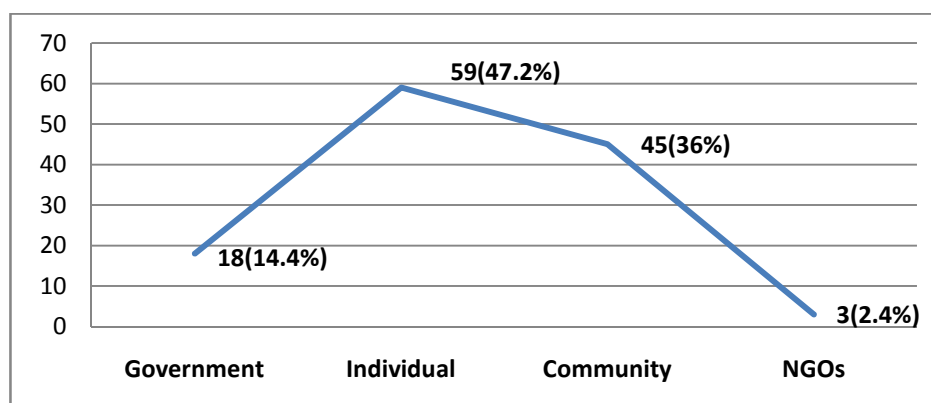
## II. Students' Perceptions on the Community

The protection of the environment is the responsibility of all. The government, the individual, the community and the non-governmental organisations are important mechanisms significant in ensuring environmental protection. With regard to the most important mechanism for protecting the environment, 59 (47.2%) as indicated in Table 4.2, students felt the individual as having the highest responsibility and impact, with 45 (36%) of them considering the community.

**Table 4.2**

**Students' perceptions on the most important mechanism for the protecting the environment**

<b>Government</b>	-	<b>18 (14.4%)</b>	<b>Individual</b>	-	<b>59 (47.2%)</b>
<b>Community</b>	-	<b>45 (36%)</b>	<b>NGOs</b>	-	<b>3 (2.4%)</b>



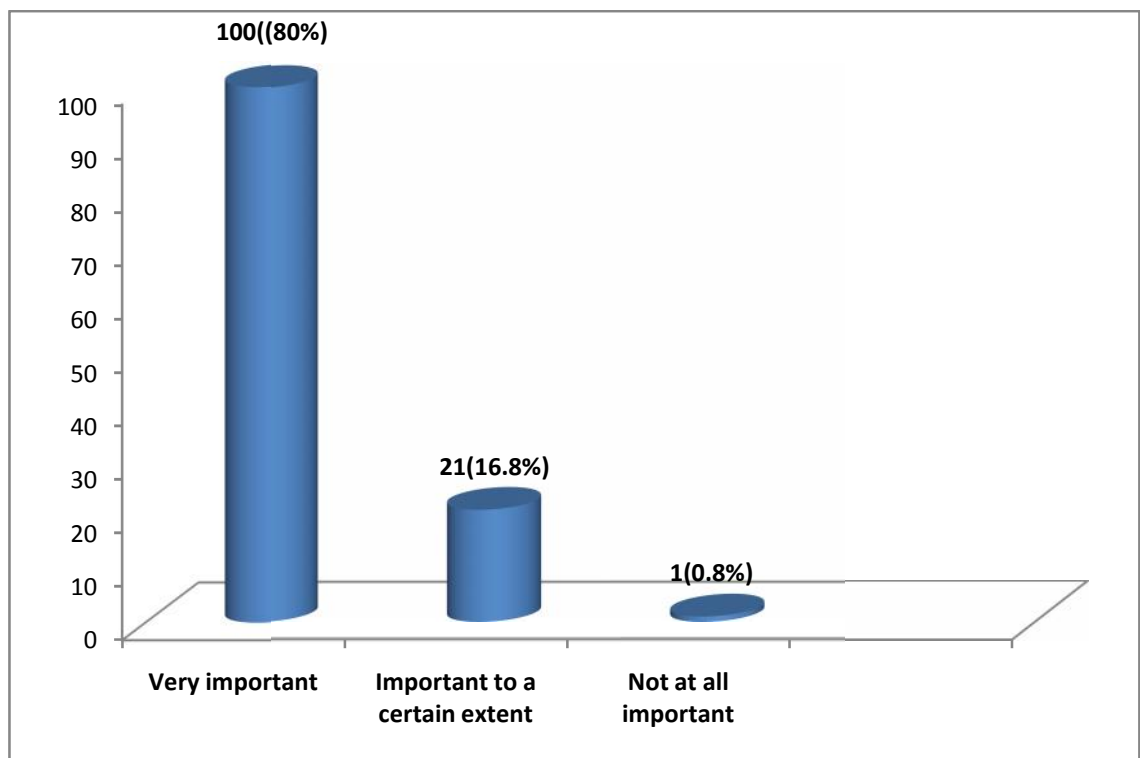
*Source: Field Work*

The community plays a vital role in improving the environment. As shown in Table 4.3, the need to involve the community in environmental protection was considered by 100(80%) students as very important while there were 21(16.8%) of them who believed it as being important to a certain extent with one (0.8%) deeming it not important at all.

**Table 4.3**

**Students' perceptions/responses on the importance of the involvement of the community in environmental protection**

<b>Very important</b>	-	<b>100 (80%)</b>
<b>Important to a certain extent</b>	-	<b>21(16.8%)</b>
<b>Not at all important</b>	-	<b>1 (0.8%)</b>



*Source: Field Work*

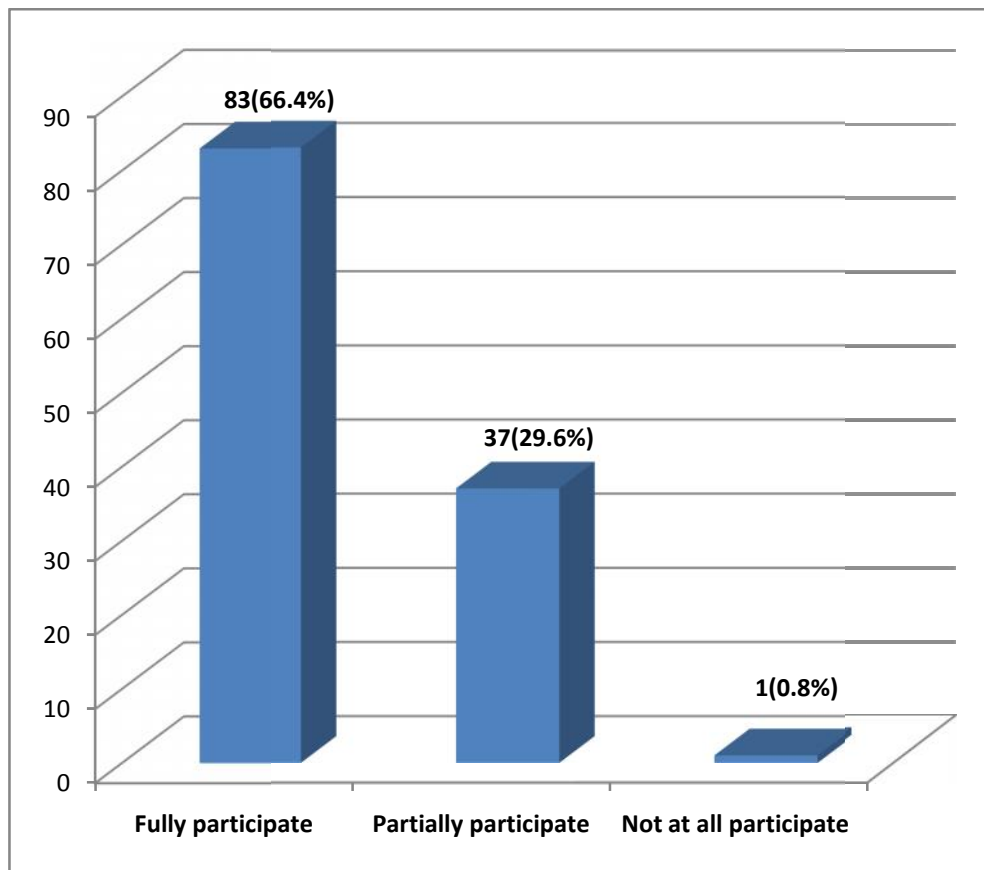


On the level of participation of the community in environmental protection, as we can see in Table 4.4, the students felt it significant with 83 (66.4%) of them supporting its full participation, and 37(29.6%) of them for its partial participation with only 1 considering it unnecessary.

**Table 4.4**

**Responses of the students with regard to the level of participation of the community in protecting the environment**

<b>Fully participate</b>	-	<b>83 (66.4%)</b>
<b>Partially participate</b>	-	<b>37 (29.6%)</b>
<b>Not at all participate</b>	-	<b>1 (0.8%)</b>



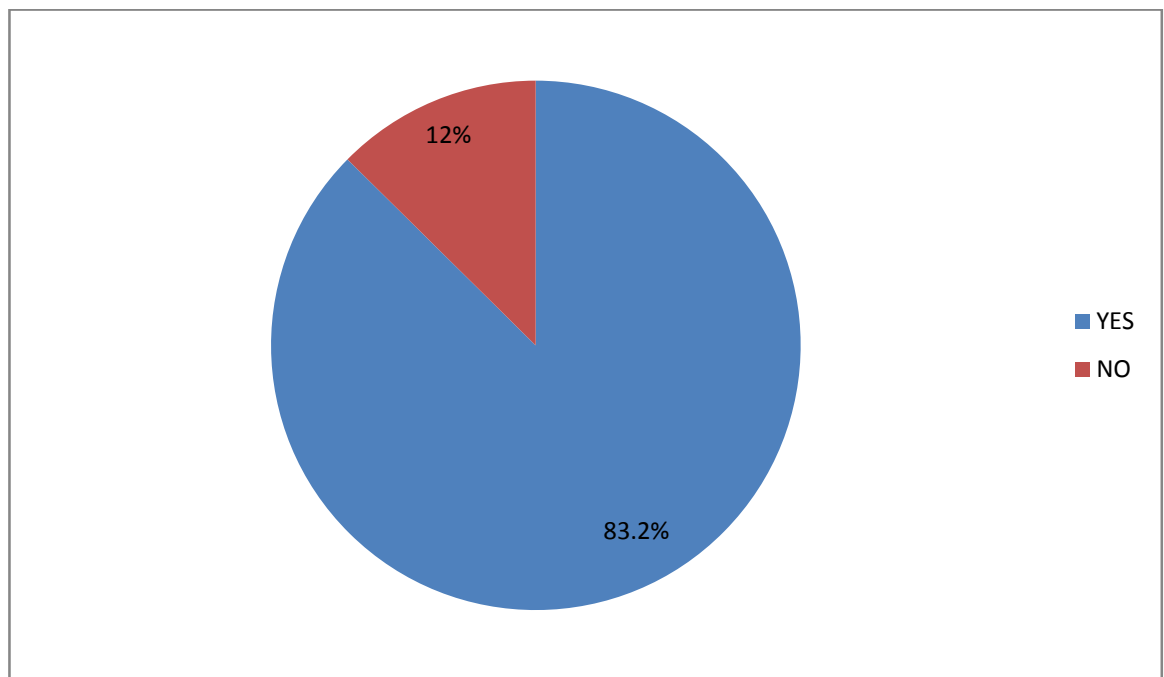
*Source: Field Work*

One of the most important means of creating awareness and addressing environmental issues is the media as indicated clearly by Table 4.5 below. Concerning the importance of the media, 104 (83.2%) students felt the media helpful in propagating environmental protection with only 15 (12%) considering it not helpful.

**Table 4.5**

**Responses of the students on whether the media is helpful in propagating environmental protection**

<b>Yes</b>	-	<b>104 (83.2%)</b>
<b>No</b>	-	<b>15 (12%)</b>



*Source: Field Work*

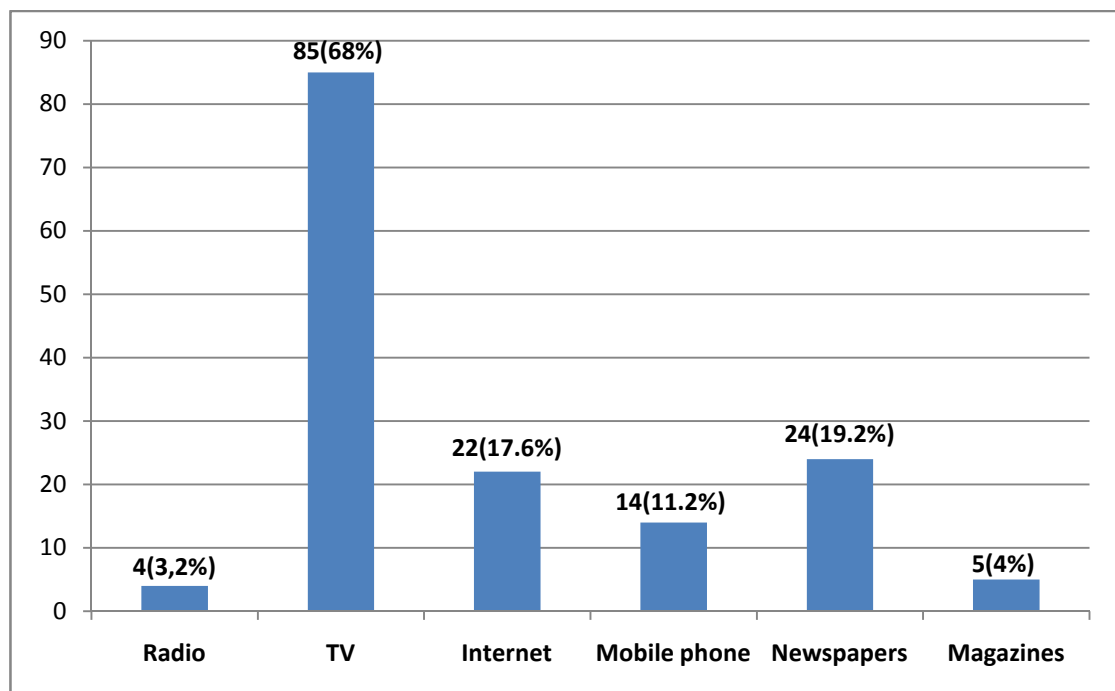
Different types of media have been employed in propagating environmental protection awareness. They have been instrumental in sensitising and mobilizing the

people towards environmental protection. The question here lies on the most helpful media in solving environmental problems in Aizawl. From the responses collected, 85 (68%) students considered the television as the most helpful in solving environmental problems (Table 4.6).

**Table 4.6**

**Responses of the students on the most helpful media in solving environmental problems**

<b>Radio</b>	-	<b>4 (3.2%)</b>
<b>Television</b>	-	<b>85 (68%)</b>
<b>Internet</b>	-	<b>22 (17.6%)</b>
<b>Mobile phone</b>	-	<b>14(11.2%)</b>
<b>Newspaper</b>	-	<b>24(19.2%)</b>
<b>Magazines</b>	-	<b>5(4%)</b>



*Source: Field Work*

The awareness amongst the students with regard to the environment needs to be enhanced. Although they feel that the environment of Aizawl is deteriorating, the environmental programmes and efforts undertaken by the State Government and Environment Non-Governmental Organisations is hardly recognised by them. The observation of the World Environment Day in schools is more or less absent which clearly indicates the need for more environmental awareness amongst the students as they are important for future environmental protection endeavours. Thus, more focus has to be paid on the theoretical and practical study of the protection of the environment in schools.

While many of the students have considered the individual as most important in solving environmental hazards, they also regard the involvement of the community imperative in the protection of the environment

Creating awareness and disseminating information relating to the environment is necessary for mobilising the people within the community. Regarding the importance of the media in propagating environmental awareness, most of the students recognised it as highly important. In relation to the means of information dissemination, the television has been considered as the most important tool of creating awareness for environmental protection.

## **CHAPTER - V**

### **IMPLEMENTING AGENCIES FOR THE PROTECTION OF ENVIRONMENT IN AIZAWL DISTRICT**

The importance of Environmental Education, awareness and information regarding the environment has been discussed in the previous chapter. Knowledge and responses of the students concerning the protection of the environment has also been reflected in the preceding chapter.

The Government of Mizoram, keeping in view of the gradual deterioration of the environment and the need to arrest further degradation, has set up the Department of Environment and Forests, Mizoram, the Mizoram State Pollution Control Board and the New Land Use Policy Board. Besides the efforts taken by the government, a number of environmental non-governmental organisations and other non-governmental organisations which do not directly deal with the environment but are also involved in its protection have been formed in Mizoram.

#### **Environment and Forests Department**

The State Forest Department designated as Department of Environment and Forests is responsible for administration and management of forests in the state and enforcement of National Forest Policy and central and State Legislations in forests, wildlife and wildlife and environmental matters. However, only 5376.54 sq. km. (26% of the total geographical area) of notified forests are directly under the control of the Department for management purpose. Substantial forest areas remain outside the

purview of this Department and are under the administrative control of the Revenue Department of Mizoram. However, felling of trees from these areas is regulated by the Department of Environment and Forests, Mizoram.

### **Vision and Mission of the Department**

#### *Vision*

To achieve well-stocked high quality with rich bio-diversity for maintaining ecological balance and ensuring environmental stability while meeting the forest-based needs of the local people.

#### *Mission*

To increase the area under forest cover and enhance the quality of existing forests thereby creating healthy environment for the people through the

- i) Application of the principles of sustainable management,
- ii) Adoption of effective silvicultural practices, and
- iii) Involvement of the local people actively in our efforts of planning, implementation and monitoring of schemes for conservation the forests and the wildlife.

#### *Duties and Responsibilities*

1. Protection and enhancement of the existing forest cover as well as restoration of the degraded eco-systems.
2. Preparation of Working Plans as per the National Working Plan Code for facilitating scientific management of the forests in Mizoram.

3. Preservation of existing Wildlife by creating and supporting healthy habitats for their sustenance through the implementation of approved Management/Master Plans.
4. Implementation of various schemes (under State Plan as well as centrally sponsored) for afforestation and protection of forests- such as “*Green Mizoram Program*”, “*National Afforestation Program*”, “*Intensification of Forest Management*”, “*13<sup>th</sup> Finance Commission Grants*”, “*Green India Mission*”.<sup>1</sup>

### **Mizoram State Pollution Control Board**

The State Government of Mizoram adopted the Central Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 with effect from 31.03.1989 for the control of pollution of air and water within the state of Mizoram.

In exercise of the powers conferred under sub-section (1) of section 4 of the Water (Prevention & Control of Pollution) Act, 1974 read with sub-section(1) of section 5 of the Air (Prevention & Control of Pollution) Act, 1981, Mizoram Pollution Control Board was constituted by the State Govt. vide Notification No. B.11012/59/88-FST, Dt. 22.09.1989.

Under the above said Acts, the Mizoram Water (Prevention & Control of Pollution) Rules, 2002 & the Mizoram Air (Prevention & Control of Pollution) Rules, 2002 were passed by the Government of Mizoram vide its Notification No. C.18012/12/2002-FST Dt. 09.04.2003 and the whole of Mizoram have also been

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<sup>1</sup> Citizen’s Charter (2012-13), Environment & Forests Department, Government of Mizoram.

declared as Pollution Control Area Vide order No.C.18012/12/2000-FST Dt. 02.07.2002.

### **Structure and Personnel of Mizoram Pollution Control Board**

The office of Mizoram Pollution Control Board had been functioning with bare minimal staff initially headed by Assistant Environmental Engineer. Presently, the office is functioning in a rented building at M.G-Road, Upper Khatla. As per the provisions of the said Acts, central laboratory was also set up which is now being run at the office building. Since its inception in the year 1989, the Board had been facing tight financial constraints depending entirely on the limited grant in aid received from the state government. It could not perform various functions assigned to it due to lack of infrastructure and lack of manpower.

Fortunately, the Ministry of Environment & Forests, Government of India sanctioned 8 technical posts to the Mizoram Pollution Control Board under the scheme, 'Abatement of Pollution-Strengthening of NE State Pollution Control Boards by providing staff salary during 10<sup>th</sup> Five Year Plan'. The scheme requires that the support of these eight (8) staff is to be continued by the state government beyond the 10<sup>th</sup> Five Year Plan.

Under Ministry of Environment & Forests, Government of India's sponsored scheme, 'Setting up of Environmental Information System (ENVIS) Centre', Pollution Control Board is identified by the state government as the Centre. Under this scheme, four members of staff are currently engaged namely, Senior Programme Officer, Information Officer, Web Assistant and Data Entry Operator.



Under the project, 'National Ambient Air Monitoring' sponsored by Central Pollution Control Board, the one Junior Laboratory Assistant and three Field Assistants have been engaged.

### **Major Activities of the Board**

The functions of the Board is to exercise the powers conferred on them and perform these functions assigned to it under the said Acts, viz. Water (Prevention & Control of Pollution) Act,1974 and the Air (Prevention & Control of Pollution) Act,1981.

#### *i) Air Quality Monitoring*

Under National Ambient Air Monitoring Programme (NAMP), the Board established air monitoring stations at three locations within Aizawl city and the work of air quality monitoring has been undertaken regularly twice a week since June 2005. Monthly data is furnished regularly to CPCB. Online data submission is also done regularly through Environmental Data Bank.

#### *ii) Water Quality Monitoring*

Under National Water Monitoring Programme (NWMP), the Board has been undertaking regular water quality monitoring from the following six water monitoring stations, River Tlawng upstream, Aizawl, River Tlawng Downstream, Aizawl, River Tuirial Upper Catchment, River Tuirial Lower Catchment, Ramhlun North Tuikhur (Ground Water), Mission Vengthlang Tuikhur (Ground Water).

Regular data submission in hard copies as well as through EDB is maintained by the Board.

*iii) Bio- Monitoring of important Perennial Rivers of Mizoram*

The Board had also undertaken bio-monitoring of important perennial rivers which are River Tuirial, River Tuivawl, River Tiau, River Chhimbauipui and River Khawthlangtuipui. The work of the bio-monitoring is completed and the Report is now under preparation.

*iv) Mass Awareness Campaign*

Awareness campaign is one of the major activities of the Board which has been performed through various forms such as, AIR, local channels, seminars/talks/pamphlets involving govt. functionaries, NGOs, school children and public.

*v) National Green Corps' Programme (ECO- CLUBS)*

Ministry of Environment & Forests, Government of India has launched an innovative scheme of National Green Corps to enlist involvement of students for spreading the message of environmental protection by setting up of Eco-Clubs in schools.

In Mizoram, Mizoram Pollution Control Board has been entrusted the job of implementation of the scheme and was nominated as Nodal Agency with the Member Secretary as the Nodal Officer under the scheme.

Within the initial year, 2002 -2003, 800 schools each with teacher in charge were identified from all the eight districts of Mizoram and Eco-Clubs were set up in each school.

As the Ministry sanctioned additional number of eco-clubs @ 150 eco-clubs per district, the total existing number of eco-clubs in Mizoram is 1200. The programme is highly successful and the Eco-Clubs have been actively performing various activities such as, Awareness Programmes, Plantation, Cleanliness drives, Outdoor activities, Essay & Painting competitions & other Environment related activities.

vi) *Environmental Information System (ENVIS)*

Mizoram State Pollution Control Board was entrusted by the State Government to carry out the establishment of Environmental Information System (ENVIS) Node in Mizoram which was assigned the task of collection, collation, storage, retrieval & dissemination of information on status of environment and its related issues.

The ENVIS Node had created two websites, one on Environment & Forests Mizoram and the other on Mizoram Pollution Control Board having URL: <http://www.mizervis.nic.in>

The ENVIS Node was upgraded by the Ministry to ENVIS Centre presently engaging four staff.

The ENVIS Centre had published newsletter named ' MIZENVIS'. Three issues have been published till date.

*Activities performed under various Rules passed under Environmental Protection Act, 1986*

- i) Manufacture, Storage & Import of Hazardous Waste (Management & Handling) Rules, 1989; Amend, 2000*

The MPCB carried out Inventory of hazardous wastes units in Mizoram wherein it has been found that hardly any industry worth thinking in terms of Hazardous Wastes exists. Units associated with the use or generations of the hazardous chemicals are taken care of under Air Act and Water Act and are granted consent with specific conditions for wastes disposal.

- ii) Municipal Solid Wastes (Management & handling) Rules, 2000*

In Mizoram, solid waste management is being handled by Local Administration Department and Trade & Commerce Department. The Local Administration Department takes up the collection of Municipal Solid Waste in Aizawl City while Trade & Commerce Department separately collect waste from meat and vegetable market places.

Wastes collected are simply dumped at the municipal dumping 20 Km away from the city and are occasionally burnt openly which is against the provision of the Municipal Solid Waste Rule, 2000. For effective implementation of the Municipal Solid Waste (Management & Handling)

Rules, 2000, the Board has been making efforts to improve the present system of waste disposal by advising and interacting with the concerned above departments. Local Administration Department and Trade & Commerce Department were advised to obtain Authorisation from Mizoram Pollution Control Board as per the provisions of the Rules vide Mizoram Pollution Control Board letter No.H.88088/Poltn/18/97-MPCB Dt.23.9.2003 and even No.Dt.19.1.2004. Both departments in response to this have submitted their application for Consent/authorisation and were granted N.O.C by MPCB.

Moreover, following Central Pollution Control Board's letter No.B-19028/2/PCP/2004/18459 Dt.25.10.2004 the Board had prepared draft time bound Action Plan which was sent to the Local Administration Department and Public Health Engineering Department for more inputs and finalization. Public Health Engineering Department had prepared final Action Plan which was sent to CPCB for further action vide Mizoram Pollution Control Board letter No.H.88088/Poltn/32/04-MPCB/302 Dt.31.01.2005.

In compliance of Hon'ble Supreme Court's Order, Dated October 4, 2004 and July 26 2004 in the matter of Writ Petition (Civil) No.888 of 1996 the Mizoram Pollution Control Board has filed an affidavit on 9.2.2005. Following the above Court's Order Dated 04.10.2004 the Central Pollution Control Board has initiated a scheme on setting up of demonstration Project for Solid Waste Management. Under this scheme, Public Health Engineering Department submitted Detailed Project Report (DPR) for Aizawl City for funding from competent authority.

*iii) The Batteries (Management & Handling) Rules, 2001*

In Mizoram, the implementation of the Batteries (Management & Handling) Rules, 2001 could not be done effectively as foreign made batteries are locally available in the market at lower prices, thereby increasing number of unauthorized sellers.

However, Mizoram Pollution Control Board has been taking great efforts for effective implementation of the Rules as far as practicable by carrying out inventory of Lead Acid Battery dealers /sellers all over the city of Aizawl. From this, it was observed that there are about 33 dealers / sellers; amongst whom, there are only three authorized dealers while the rest are unauthorized and sell mostly foreign made batteries which could be purchased at lower prices.

As part of the awareness campaign, copies of the Batteries (Management & Handling) Rules, 2001 Rules were given to all dealers/ sellers. While delivering the Rules, adverse consequences of lead acid batteries and duties/provisions of the Rules to be complied by them were made known to them. The Board has even requested them to fill up relevant forms as per the provisions of the Rules and submit the annual compliance status report to Mizoram Pollution Control Board.

The Board also tried to create awareness at the government level and requested all heads of department to examine and comply with the rules sent to them. Moreover, as there is no manufacturer or recycler of batteries, the Board

decided to enforce the buy-back policy from the authorized dealers. In this regard, the Board has written to Amco Battery Limited, Chennai, Calcutta Industries Limited, Exide House, Kolkata, Motor Industry Co. Limited, Bangalore to provide a list of authorized dealer in Mizoram and their compliance status with rule 7(iv).

iv) *The Recycled Plastics (Manufacturing & Usage) Rules, 1999*

Regarding use, collection, segregation, transportation and disposal of plastics, the prescribed authority i.e., Deputy Commissioners of Districts of Mizoram have been intimated by the Mizoram Pollution Control Board to enforce Recycled Plastics (Manufacturing & Usage) Rules, 1999. Besides, the Board had also written to all Deputy Commissioners regarding their responsibility on pollution control especially in management of plastics and solid waste.

In response to this, the Deputy Commissioner of Kolasib District has notified an order imposing ban on the use of recycled plastic and coloured polythene within Kolasib District vide order No. J.32019/1/2004-DC(K)/67 Dated 16<sup>th</sup> May 2005.

Meanwhile, the Board has been attempting to create awareness amongst general public by publishing pamphlets highlighting the ill-effects of use of polythene bags. The Board also organized television and radio talks and discussions, and even published articles related to plastics in newspapers. At the same time, NGO's are also coordinated in spreading awareness for

discarding used polythene bags. Meetings on the subject were held and pamphlet regarding the ill-effects of use of polythene and littering of plastic wastes was also jointly issued by the Mizoram Pollution Control Board and Central YMA, largest NGO in Mizoram.

The Board has also issued notification prior to Mizoram State Assembly Election 2003, to all political parties requesting them to dispose properly all the election campaigning materials made of plastics.

v) *Bio - Medical Waste Management (Management & Handling Rules)*

Judging by the Bio-Medical Wastes (Management & Handling) Rules 1998, the overall management of Bio-Medical Wastes in Mizoram has not attained satisfactory achievement. However, the Mizoram Pollution Control Board is taking up necessary steps for the implementation of the said Rules and it has been informing the concerned institutions time and again to comply with the Rules.

Inventory of healthcare facilities treating outdoor patients was carried out by the Board in Aizawl and they were informed to apply for Authorisation. So far, five healthcare units have applied for authorisation which is under process. All these health care units were found to be treating less than 1,000 patients per month.

Five (5) applications for authorisation have been received by the Board from Hospitals and Nursing Homes treating indoor patients; out of which four (4) have been granted.



At present, there is no scientific management and disposal of Bio-medical Wastes as prescribed by the Rules. However, installation of Incinerator at Aizawl by Health Department has completed, which is expected to be in operation soon. Installation of incinerator at Lunglei is also under process. Meanwhile, the Board as decided in its meeting has been requesting government hospitals in order to improve the management system to adopt deep burial system in all primary health centres.

Authorisation fee structure under Bio-Medical Waste (Management & Handling) Rules, 1998 has been approved by the Govt. of Mizoram vide notification No.B.11013/12/2000-FST Dt.13.11.2003

#### *Other Activities of the Board*

##### *i) Consent Management*

Under Air (Prevention & Control of Pollution) Act, 1981 and Water (Prevention & Control of Pollution) Act, 1974, Consent Management for industries was started by the Mizoram Pollution Control Board since September, 2003. After approval of the 'Categorization of Industries for Consent Management' by Mizoram Pollution Control Board in its 31<sup>st</sup> meeting on 12.9.2003, the matter was pursued in full swing. The process of granting consent involves checking and evaluation of application received in a prescribed form, spot verification, and issue of certificates to consented industries and maintenance of a separate register for record of the status. There are about 276 units consented till date. Number of industries consented under

Red category are 20 and that of Orange category are 146 while that of Green 'A' category are 69. Under Green 'B' and Non-polluting category there are about 39 units. Consented industries are periodically verified at the spot for compliance of guidelines as well as for evaluation of performance on installation of pollution control devices. Bairabi Thermal Power Plant, an undertaking of Power & Electricity is an example of such kind for which joint monitoring was carried out with Ministry of Environment & Forests, Govt. of India and Central Pollution Control Board. Meanwhile, cases of public complaints are increasing in numbers with more creation of awareness for which site inspection are always carried out before any action is taken. There are approximately 30 such cases since 2003.

*ii) Public Hearing*

The Environmental Impact Notification 1994 and as amended to date listed out some developmental projects which prior environmental Clearance from Ministry of Environment & Forests, G.O.I. Granting of E.C calls for holding of public hearing by the concerned State pollution Control Boards on which grant of the E.C depends. The Board therefore had held public hearing for the following Project:

- a) Tuivai Hydel Project (NEEPCO) at Ngopa on 30.4.1997
- b) Bairabi Hydel Project (P & E) at Sairang on 5.3.2001, Hortoki on 7.3.2001 and Bairabi on 8.3.2001
- c) LPG Bottling Plant, Mualkhang (IOC) on 30.4.2001
- d) Tipaimukh Hydro Electric Project (NEEPCO) at Darlawn on 2.12.2004.

*iii) Laboratory Works*

Apart from the Water Quality Monitoring under National Water Monitoring Programme (NWMP) sanctioned by MoEF, the MPCB is also taking an analysis of water quality parameters. Samples from various sources are collected and analysed at the laboratory which is located at the basement of the rented office building. The Board has also one mobile Van. The Scientific staff such as Scientist 'B', one Junior Scientific Assistant and two Field Assistants are looking after the Laboratory works. The infrastructure of the lab is very poor at present. Only few parameters could be monitored at present due to lack of facilities.

In acceptance of the proposal of the Board, the Ministry had sanctioned financial assistance amounting to Rs.38.7 lakhs for the upgradation of the laboratory to 'C' grade under the scheme, 'Abatement of Pollution'. The sanctioned instruments are now under procurement and the laboratory is being upgraded. It is expected that more extensive laboratory works shall be taken up shortly.

*iv) Vehicular Emission*

Earlier, the authorized testing agency in the state was the Transport Department. But, the department due to lack of expertise and other reasons could not implement the job. As the Board is now manpowered with the technical qualified staff, it is considered well capable and as such, vide letter No.D.21017/98/TRP (MVW)/Pt Dt. 10.12.04, the govt. handed over the job to the board which is now the only authorized testing agency in the state. The

Board since then is gearing itself up to start the testing of vehicular emissions, however, due to lack of fund for procuring instruments, the work could not be started sooner. Proposal for procurement of necessary equipments like Auto Exhaust-Co-HC Analyzer for Petrol Engine emission and Smoke Meter for Diesel Emission is submitted to the CPCB & the MoEF vide letter No. E.55055/Accts/ 7/2003-MPCB-II/190 Dated 24.2.2005. The Board therefore awaits the sanction of the project after which testing of vehicular starting from government vehicles would be taken up in full swing.

#### *Financial Aspects of the Board*

Financially, it depends on the annual grants-in-aid received from the state government which is barely enough for the staff salary and other administrative expenses.<sup>2</sup>

#### **New Land Use Policy Board**

The New Land Use Policy (NLUP) was introduced on 14th January, 2011. The implementation of the New Land Use Policy (NLUP) is directly under the control of the NLUP Implementing Board (NIB). The NIB is a Government society endowed with wide ranging financial autonomy and instituted solely for the purpose of the NLUP project which is in direct contact with the participating Government Departments. The NIB, however, has to get approval for any decision it makes from the NLUP Apex Board headed by the Chief Minister. As a result, there are two State-level bodies that control the project – apart from the State Government which controls the fund flow between the Government of India and the NIB – The New Land Use

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<sup>2</sup> *Activities of the Mizoram Pollution Control Board*, Mizoram State Pollution Control Board, Aizawl, 2011.

Policy Apex Board and The New Land Use Policy Implementing Board. Under these State boards, District Implementing Committees under the Deputy Commissioners/District Collectors are formed in the eight districts of Mizoram. Each village under these districts again has a NLUP Village Implementing Committee headed by the Village Council President. These NLUP Village Committees are primarily responsible for selecting beneficiaries and facilitating Government officials in distributing funds to the beneficiaries.

*Main Duties and Functions of the NLUP Apex Board*

- i) To approve the annual Budget, Project and schemes prepared/drafted by the NLUP Implementing Board.
- ii) To allocate funds for NLUP to the concerned Departments.
- iii) To co-ordinate, advise and supervise the concerned Departments as and when necessary.
- iv) To select villages and areas/constituencies to be covered by the NLUP.

*Main Duties and Functions of the NLUP Implementing Board*

The Board shall, under the guidance and leadership of the Chairman and having a separate Office, function as under:

- i) It will prepare the NLUP Annual budget, guidelines relating to financial matters, projects and scheme and submit to the NLUP Apex Board for approval.

- ii) To ensure and supervise that the line Departments follows the rules, regulations and guidelines laid down by the NLUP Board in the implementation of NLUP.
- iii) To do whatever follow-up action has to be done for the success of NLUP
- iv) It may utilize up to 10% of the total fund of NLUP as 'Management Components', if necessary.

*Duties and functions of the District NLUP Implementing Committee*

- i) Within the District area the District Level NLUP Committee is the key executing agency.
- ii) It will supervise and guide the Village Level NLUP Committee.
- iii) It will take the necessary actions for the formation of the Village Level NLUP Committee and will obtain the approval of the Chairman, NLUP Implementing Board.
- iv) Members of the NLUP Implementing Board may attend District Level NLUP Committee meetings as far as possible.

*Important functions and responsibilities of VLNC are as follows:-*

- i) Selection of Beneficiaries.
- ii) Selection of trades/activities for the beneficiaries.
- iii) All activities relating to implementation of NLUP including problems of infrastructure, input supply and any problem faced by beneficiaries at the village level.
- iv) Monitoring of NLUP implementation.

v) Any other issue which may be entrusted or necessary for successful.<sup>3</sup>

### **Environment Non-Governmental Organisations in Mizoram**

In Mizoram, the following environment non-governmental organisations play an active role in the protection of the environment.

#### **Save Environment Association (SENVA)**

The Save Environment Association (SENVA) was established on 24<sup>th</sup> March, 1997 and registered under the Societies Registration Act No. XXI of 1860 as SR/MZ-13 of 2003-2004. The organisation was proposed and named by Mr. C. Lalduhawma, Member Secretary, MPCB & Mr. K. Biak Thiang Hlima, Upper Khatla. The Save Environment Association consists of 6 (six) Office Bearers and 70 members approximately. It collects a membership fee of Rs. 10/-.<sup>4</sup>

#### *Aims and Objectives*

The aims and objectives of the Save Environment Association are:

- i. To safeguard Global Environment for mankind.
- ii. To mould the Youths to be bonafide Citizens and to prepare them to serve the nation.

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<sup>3</sup> <https://nlup.mizoram.gov.in>. Accessed on 20<sup>th</sup> March, 2016

<sup>4</sup> Mr. K. Biak Thiang Hlima, President, SENVA. Interviewed on 18<sup>th</sup> May, 2016.

### *Membership*

SENVA is also a member of the State Level Green Mizoram Committee, the State Level Sub Committee on Green Mizoram Committee, the State Level Fire Prevention Committee and the State Level Sub Committee on Fire Prevention

### *Activities*

The activities undertaken by SENVA are as follows:

- i) Monitoring & Evaluation of Plantation under Forest Development Agency, Mizoram
- ii) Observance of International and State important Environmental Days, i.e.
  - a) 21<sup>st</sup> March - World Forestry Day
  - b) 22<sup>nd</sup> April - Earth Day
  - c) 22<sup>nd</sup> May - International Bio-Diversity Day
  - d) 5<sup>th</sup> June - World Environment Day
  - e) 1<sup>st</sup> -7<sup>th</sup> October - World Wild Life Week
  - f) 11<sup>th</sup> June - Green Mizoram Day
  - g) Fire Prevention Week
- iii) Awareness Campaign Under the theme of
  - a. Fire Prevention
  - b. Plantation
  - c. Preservation of Environment
  - d. Conservation of Wild life
  - e. Against Pollution of Air & Water



iv) Awareness Campaign through Media

- a. Talk & Discussion - AIR, Aizawl
- b. Talk & Discussion - DDK, Mizoram
- c. Talk & Discussion - Local TV Channel
- d. Local News Papers
- e. Pamphlets, Booklets, Posters & Banners.

*Activities in 2015*

The activities undertaken by SENVA in the year 2015 are as follows:<sup>5</sup>

- i) Fire Awareness Campaign
  - a. 29 Villages under Kolasib District.
  - b. 10 Buffer Villages within Dampa Tiger Reserve.
  - c. 8 Villages under Aizawl District.
  - d. 2 Institutions within Aizawl City.
  - e. Chhimtlang HSS, Lunglei Tlabung HSS, Thenzawl Vantawng HSS.
2. Fire Awareness Campaign through the media
  - a. 06.02.2015, AIR, Aizawl
  - b. 10.02.2015, DDK, Aizawl
  - c. 09.05.2015, AIR - Environment Preservation
3. The members of SENVA attended the World Forestry Day at Pachhunga University College Campus on 21<sup>st</sup> March, 2015.
4. The members of SENVA attended Fire Prevention Week 19<sup>th</sup> -24<sup>th</sup> January, 2015 at I & PR Hall, Aizawl, Mizoram.

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<sup>5</sup> [www.mizervis.nic.in/](http://www.mizervis.nic.in/). Accessed on 30<sup>th</sup> March, 2016.

The Save Environment Association conducts its programmes quarterly and annually depending on the programmes. They are conducted in the rural as well as urban areas of Mizoram. The target groups of SENVA are students and jhumia families. Participation of the community is considered exceedingly important in the realisation of their programmes. With regard to the impact of their programmes, they believe of them as being positive due to their approach in dealing with the people which is through appeals. Public meetings, meetings with target groups, awareness programmes, appeal letters and advertisements are considered to be useful in achieving their programmes.

In reference to the implementation of programmes, time constraints are the problems faced by the organisation. This is due to the examinations of the students coinciding with the time i.e. during the month of January & February, when campaigns for environmental protection, particularly those for the prevention of jhuming, are imperative.<sup>6</sup>

### **Centre for Environment Protection (CEP)**

The Centre for Environment Protection (CEP) is a voluntary, research and consultancy agency founded in 1998 capable of undertaking environmental impact assessment, environmental auditing, environmental monitoring, rural development and biodiversity assessment for any major undertakings with a principle that a strong economy and a healthy environment can co-exist. The Centre for Environment Protection is the only environment non-governmental organisation functioning full-

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<sup>6</sup> Mr. K. Biak Thiang Hlima, President, SENVA. Interviewed on 18<sup>th</sup> May, 2016.

time in Mizoram. At present, it has 8 (eight) Office Bearers and 30 Farmers' Club each consisting of 20 members.<sup>7</sup>

The organization has been working closely with resident communities towards sustainable forest stewardship and livelihood improvement since its inception and documented huge amount of valuable traditional knowledge relating to biodiversity and agro-biodiversity management from key stakeholders from different parts of the State. The organisation emphasises on conservation-based livelihood improvement blending traditional knowledge with modern techniques. It aims at providing in-depth knowledge of the environmental schemes of the government to the people through empowerment and capacity-building. The CEP provides consultancy services with regard to the environment.<sup>8</sup>

The CEP was set up to reinforce the massive and critical task of ecological restoration in the state, through the concerted and collective efforts of rural communities, by restoring the biomass productive capacity of the rural landscapes. To achieve this purpose in an environment as diverse and complex as that prevailing in the state, CEP endeavours to be an organization that is imaginative, versatile, innovative, and one that accelerates the process of people's participation in ecological restoration in the state.

The CEP looks beyond the human dimension and encompasses the much broader ecological concerns required to ensure the security of the natural processes that the human, plants and animal communities, including myriad micro organisms, depend upon.

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<sup>7</sup> A.C. Zonunmawia, Chairman, Centre for Environment Protection. Interviewed on 19<sup>th</sup> May, 2016.

<sup>8</sup> [mizervis.nic.in/](http://mizervis.nic.in/). Accessed on 30<sup>th</sup> March, 2016.

The programmes of the CEP are conducted in the urban and rural areas of Mizoram. The participation of the community is vital in the conduct of their programmes. The consequent impact of their programmes on the people has been positive accrediting their approach, i.e. providing in-depth knowledge of the environment and enhancing their capacity, in dealing with the community. Moreover, awareness programmes, appeal letters, discussions, interactions and press release have been considered as useful in the achievement of their objectives for environmental protection.

The funding sources for carrying out their programmes is received from the Central Government, State Government, internal sources such as donations from members and other sources such as banks, depending on the programmes.

The CEP collects a membership fee of Rs. 50/- from its members.

The CEP makes use of the social media such as Facebook, in propagating environmental awareness. It has a Centre for Environment Protection Group on Facebook which is regularly updated with more than 12, 000 members.

Time constraints are the main problems faced in the implementation of their programmes. Moral reformation on the part of the people is necessary in protecting the environment of Mizoram.<sup>9</sup>

### **Biodiversity and Nature Conservation Network (BIOCONE)**

The Biodiversity and Nature Conservation Network (BIOCONE) was formed and registered under MSR 340 of 30.7.2010.

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<sup>9</sup> A.C. Zonunmawia, Chairman, Centre for Environment Protection. Interviewed on 19<sup>th</sup> May, 2016

## *Activities*

The activities of BIOCONe are as follows:

*i) Nest Box Project*

The organisation receives funds for Nest Box Project from the Mizoram Science and Technology Department. More than 300 Nest Boxes have been made and distributed to various parts of Mizoram.

The organisation met with the leaders of Bualpui 'V' and reached a consensus signing an agreement to protect the environment within the area.

BIOCONe conducted a "Nature Expedition" for its junior members on 24.10.2012 at Hmuifang.

The members of BIOCONe conducted a Field Demonstration with college students at Mr. Lianthanga's farm in Sihphir, Mizoram as per the request and invitation of the Environment and Forests Department on World Forestry Day, 2013.

For the celebration of the 59<sup>th</sup> National Wildlife Week organised by the Environment and Forests Department, members of the BIOCONe visited and attended the programmes at Aizawl Zoological Park on 1.10.2013.

Under the Environment & Forests Department a "Project on Inventory of Invasive Alien Species (*Lantana Camara* L. in Mizoram, India)" is being undertaken by the organisation.

As part of the observation of World Earth Day 2014, the Environment and Forests Department resolved to clean the lake of Tamdil and its premises. Seven members of BIOCONe volunteered in this programme.

The organisation received a project for “Science Popularization Programme – A Field Study of Flora and Fauna” from the Mizoram Council of Science, Technology and Environment.

*ii) Environmental Awareness Campaigns were conducted at*

- a) Bawngkawn Presbyterian Kohhran Tleirawl Chawhnu Inkhawm.  
(Bawngkawn Presbyterian Youth Fellowship)
- b) St. Paul’s Higher Secondary School, Aizawl, Mizoram.
- c) Chanmari West Presbyterian Kohhran Youth for Christ inkhawm.  
(Chanmari West Presbyterian Youth Fellowship)
- d) Government Lungdai Middle School with theme of “SAVE THE FROGS DAY”
- e) Bungkawn Presbyterian Kohhran naupang inkhawm.  
(Bungkawn Presbyterian Youth Fellowship)
- f) Bungkawn Branch YMA Chhang.  
(Bungkawn Branch Young Mizo Association Youth below the age of 14)

*iii) Seminars/Workshops*

- a. One Day Workshop on “Bear Conservation Action Plan” organized by Environment & Forests Department.
- b. Sensitization workshop for development of location specific R & D and demonstration project for SC/ST.

- c. Fire Prevention Week Inaugural Function 2013 organized by Environment & Forests Department.
- d. Seminar on “Oil and natural Gas in Mizoram: Present Scenario and Prospect” organized by MIPOGRASS.<sup>10</sup>

### **Association for Environmental Preservation (ASEP)**

The Association for Environmental Preservation (*ASEP*) is a Voluntary Organisation (*VO*) registered under the Societies Registration Act, 1860 with the registration number of SR/MZ – 54 of 2005-'06. It was established on 5<sup>th</sup> June 2005. It is an association of voluntary members from all over different parts of Mizoram coming together and zealously working for the improvement, betterment and protection of the environment of Mizoram with its office situated at Kulikawn, Aizawl. Being an association for the preservation of environment, this voluntary organization has the motto “Save Our Environment and Wildlife”. At present, ASEP has around 300 members and has received unanimous approval and acceptance of its works by both the general public and the State Government at large. ASEP receives a funding of Rs.2-3 lakhs every year from the State Compensatory Afforestation Fund Management and Planning Authority (*CAMPA*) which is used for conducting environmental awareness campaigns in the urban and the rural areas of Mizoram. ASEP also receives donations from generous contributing members.<sup>11</sup>

#### *Aims and Objectives*

- i. Preservation and protection of our environment and wildlife

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<sup>10</sup> [www.mizervis.nic.in/](http://www.mizervis.nic.in/). Accessed on 30<sup>th</sup> March, 2016.

<sup>11</sup> K. Lalmuansanga, President, ASEP interviewed on 19<sup>th</sup> May, 2016.

- ii. To work industriously for the freedom and liberation of our environment and wildlife.
- iii. To develop and sow the seeds of deep affection and love for our environment and wildlife to the people.
- iv. To channelize effective efforts for the well-being and betterment of the poor and needy, and
- v. Propagation of the needs and importance of our environment and wildlife to the students at all levels of schooling.

### *Activities*

Being a voluntary organization for the protection and preservation of our environment and wildlife, ASEP had taken extensive steps for the reasons which it stands for. It organizes awareness campaigns through media, newspapers, public meetings, nature trip, seminars, environmental rally, posters campaigns, etc. It also sends out appeal letters and uses other various methods requesting hunters to abstain from further hunting and subsequently protecting wildlife in this way.

ASEP is also very much obliged to be a monitoring agency under National Afforestation Programme (*NAP*) and National Bamboo Mission (*NBM*).

To achieve its aim and objectives to the fullest, ASEP publishes environmental leaflets and books including meaningful and heartfelt environmental cartoons.

Artificial nest boxes are also erected at various points in the city and proved to be the quite handy for nesting birds.



Besides the mentioned activities, this voluntary organization has taken many steps for the achievement and fulfillment of its aims and objectives and the motto for which it stands for.

ASEP is now the member of the State Level Committee in the following:-<sup>12</sup>

- i. Sub-Committee on Green Mizoram.
- ii. Sub-Committee on Fire Prevention.
- iii. State Compensatory Afforestation Fund Management and Planning Authority (*CAMPA*) Executive Board.
- iv. State Board for Wildlife.
- v. Animal Welfare Board.

The Association for Environment Protection carries out its environmental programmes in both the rural and urban areas of Mizoram. Consultation programmes are conducted quarterly, awareness programmes are organised monthly and seminars are annually held.

The funds for carrying out their various programmes are received from the State Government, the membership fees and benevolent donors.

The main target group of ASEP for achieving their programmes is the youth and the jhumia families. They believe that sensitising the youth would prevent further degradation of the environment as they are the future stakeholders for environmental protection. As for the jhumia families, awareness of the ill-effects of jhuming on the environment and their subsequent causes on human health is necessary in checking environmental hazards.

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<sup>12</sup> [mizervis.nic.in/](http://mizervis.nic.in/). Accessed on 20<sup>th</sup> December, 2015.

Of late, ASEP has been carrying out awareness campaigns in schools to inculcate the importance of environmental protection and nature sustainability in the students. In the rural areas, a pledge was undertaken by students to refrain from hunting. Slingshots known as *sairawkherh* in Mizo were surrendered by a number of students indicating the success of their campaigns.<sup>13</sup>

Surveys on *sapel hrat* (hunters) are often carried out by the organisation. The names of those involved in hunting are listed and appeals are sent requesting them to discontinue such acts. Impacts/effects of their acts are also made known to them through counselling which seem to be most helpful.

Consultations are held with key functionaries such as leaders and members of MUP, MHIP, Mizo Zirlai Pawl, YMA, VCs as public meetings have not been considered helpful from past experiences.

People's willingness to participate in the programmes has been due to their approach in dealing with them, i.e. providing counselling instead of ordering them to discontinue acts harmful for the environment. Moreover, certain incentives are given by the organisation through the leaders of the villages, to people refraining from hunting animals, burning and cutting of trees in the villages. These incentives are received by the organisation in the form of sponsorship from the Department of Environment, Forests and Climate Change.

The main problem faced in the implementation of their programmes is that of time constraint. This is due to the fact that the organisation functions on a part-time basis as the office bearers and members are from professions and hence, can only function according to the availability of their spare time.

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<sup>13</sup> K. Lalmuansanga, President, ASEP interviewed on 19<sup>th</sup> May, 2016.

Like the CEP, ASEP makes use of social media having a Facebook page with 9337 members which is used for spreading the pressing need of environmental protection in Mizoram.

At present, ASEP has 6 Office functionaries and 350 members approximately and collects a membership fee of Rs. 50/- from its members.<sup>14</sup>

### **Green Mizoram Network (GMN)**

The Green Mizoram Network (*GMN*) was formed on 4<sup>th</sup> June, 2009 and registered on 21.6.2010 under Mizoram Societies Registration Act, 2005. It is a non-government organisation (*NGO*). At present, it has six Office Bearers and 130 members approximately. It collects a membership fee of Rs. 10/- from its members.<sup>15</sup>

#### *Aims and Objectives*

- i. To foster among the citizens awareness about the value of bio-diversity, delightful landscape and curious natures gift.
- ii. To conserve rare and endemic species in their natural habitats.
- iii. To regenerate and propagate the rare, endangered and endemic species.
- iv. To re-vegetate degraded forest.
- v. Protection and conservation of natural resources through active involvement of Local Artiste(s).
- vi. Weaning away the tribal community from the destructive habit of shifting cultivation.<sup>16</sup>

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<sup>14</sup> Mr. Rothuama Sailo, General Secretary, Green Mizoram Network. Interviewed on 20<sup>th</sup> May, 2016.

<sup>15</sup> Mr. Rothuama Sailo, General Secretary, Green Mizoram Network. Interviewed on 20<sup>th</sup> May, 2016.

<sup>16</sup> mizervis.nic.in/. Accessed on 30<sup>th</sup> March, 2016.

The Green Mizoram Network carries out its environmental programmes annually in both the rural and urban areas of Mizoram. They mainly focus on conducting awareness programmes which have been proved very successful in achieving the objectives of organisation i.e. improving and creating a healthy environment.

The Green Mizoram Programme targets the community as a whole and makes use of Local Artiste(s) in propagating environmental protection in Mizoram as they are able to attract the attention of the people, particularly in the rural areas. The success of their programmes has been accredited to the involvement of the local artistes and the cooperative effort on the part of the people.

Financial constraint is the major drawback for the effective implementation of their programmes. The organisation being voluntary with funding resources only from the membership fees and voluntary contributions of its members, the programmes of the organisation cannot be realised to its full potential.<sup>17</sup>

### **Other Non-Governmental Organisations**

There are a number of non-governmental organisations concerned with certain issues of the society in Mizoram. The prominent ones amongst which are as follows:

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<sup>17</sup> Mr. Rothuama Sailo, General Secretary, Green Mizoram Network. Interviewed on 20<sup>th</sup> May, 2016.

## **Mizo Hmeichhe Insuihkawm Pawl (Mizoram Women's Federation)**

The Mizo Hmeichhe Insuihkawm Pawl (MHIP) was established on the 6<sup>th</sup> of July 1974 and was registered under Registration No. 5 of 1977, Societies Act 1860 (Act XXI of 1960) Its Headquarters is located at Aizawl, the capital of Mizoram.

The MHIP is one of the biggest voluntary organisations in Mizoram. Any organization that is solely engaged in Social Welfare works may be affiliated to the MHIP. The area of work covers the entire corner of the State. The organization is sub divided into seven (7) sub-Headquarters. These sub-headquarter are further divided into 16 blocks.

The organisation is devoted solely for the welfare and upliftment of the weaker section of the society, particularly Women and Child section.

### *Branches*

The sub-headquarters or the branches of the MHIP are named after every District headquarters of Mizoram which are Lunglei Sub-Headquarter, Saiha Sub-Headquarter, Lawngtlai Sub-Headquarter, Serchhip Sub-Headquarter, Champhai Sub-Headquarter, Kolasib Sub-Headquarter and Mamit Sub-Headquarter.

### *Membership*

Any women of 14 years and above can become a member of the MHIP on payment of Rs 2/- to its branch in a village.

### *Aims, Objectives and Activities*

The basic principle of the MHIP is based on philanthropic social work with no benefit in return. It aims at creating a state of welfare in which every individual is cared for irrespective of Caste or Creed. However, since it being a women organization, most of its activities emphasise on upliftment of women and Children.

### *Mandatory Activities*

The MHIP Mizoram, inspite of its uncertain financial resources, never loses heart in attempting to help the poor and the destitute. Every year, at Christmas it is mandatory to visit the following institutions with appropriate Gift Packages for all the inmates.

- i. Civil Hospital, Aizawl.
- ii. T.B. Hospital, Zemabawk
- iii. Synod Hospital, Durtlang.
- iv. Hermon Children Home, Durtlang.
- v. Central Jail, Tanhril.
- vi. TNT Drugs Addict Camp, Zuangtui.
- vii. De-addiction Centre, Arm Veng.
- viii. SOG De-addiction Camp, Selesih.
- ix. Blessing Home, Sakawrtuichhun.
- x. Muanna In - Destitute Home, Zuangtui.
- xi. Social Guidance Agency, Tuikual.
- xii. Motherless Baby Home, Durtlang

The MHIP, since its inception in 1974 aims at primary working for the upliftment of Women in the Society. Today however, due to the actual need in the community is has broadened its activities to several other social problems; nevertheless emphasis is laid on the problems related to women. The MHIP General Headquarters, Mizoram is a strong foundation of justice and social welfare in the state of Mizoram. In its purview of work and operation there is no discrimination on ground of caste, creed or religion. Although the primary concern is in the upliftment of the weaker section of the community, yet with the demand of the contemporary society, the activities and the problems undertaken by the organisation are varied. Government, Semi Government, or any NGO schemes involving the destitute and the weaker sections of the society are also undertaken by them.<sup>18</sup>

### **Young Mizo Association (YMA)**

Young Mizo Association (YMA) as it is popularly known today was formerly called Young Lushai Association (YLA) when it was formed in June 15, 1935 by the Christian missionaries and the pioneer Mizo Christians. In spite of countless terrors and resistance against Christianity which found its roots in Mizoram in 1894, the entire region was swept by Christianity within a decade. Even the chiefs and their subordinates started to recognize and embrace it. Various churches and institutions came into existence resulting in the decline of the Zawlbuk (Bachelor's dormitory) which was one of the most esteemed establishment among the Mizos. While the number of participants in schools and churches increased, the attendance in Zawlbuk

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<sup>18</sup> <http://www.mizoram.nic.in/>. Accessed on 20<sup>th</sup> December, 2015.

met a drastic fall. The attempt of the Governor to bring about revival in the Zawlbuk institution had no significant outcome, thus the most valued institution came to a sad end.

The Christian Missionaries and the church leaders found it necessary to establish an institution that could take the place of Zawlbuk now that it was gone. Consequently, a meeting was summoned at the residence of a Christian missionary Miss Katie Hughes (Pi Zaii) on June 3, 1935. 'Young Mizo Kristian Association' was one of the names suggested but it was rejected due to its exclusive nature. One of the Christian missionaries Rev. David Edward (Zorema Pa) suggested that "Young Lushai Association" would be most fitting and it was agreed that it would officially start functioning from 15th June, 1935.

Indian Independence in 1947 brought about political revival even in Mizoram resulting in the change of "Young Lushai Association' to "Young Mizo Association" on 7th October, 1947, as the latter has a more panoramic coverage.

Y.M.A is an all India Organisation with branches at Mizoram, Assam, Manipur, Meghalaya, Nagaland and Tripura. It is registered under the Societies Registration Act (Act XXI of 1860) Registration No. SR 4 of 1977. At present, it has seventeen (17) committees with one of its committees being the Science and Environment Committee which plays an active role in the protection of the environment. It also assists the Department of Environment, Forests and Climate Change in assessing the level of damage caused by jhumming every year.



### *Motto of YMA*

Y.M.A has three mottos:

- a. Good use/ Proper utilization of leisure time.
- b. Reverence for a good Christian life.
- c. Striving towards a holistic development of the Mizo society.<sup>19</sup>

Though not mandatory, the Young Mizo Association started having annual themes since 1983. With regard to the environment, themes such as ‘Cleanliness’ (1983&1991), ‘Preservation of Wildlife’ (1992), ‘Safeguarding Nation and Land’ (1998-2001) have been launched by the YMA for the protection of the environment. These themes have been successfully implemented by the organisation through the participation of the community.

### **Mizoram Upa Pawl (The Mizoram Senior Citizens’ Association)**

The Mizoram Upa Pawl was previously known as the *Zoram Upa Pawl*. It was formed by the Service Pensioners at Mission Veng in 1957. In the beginning the Association was called the Pensioners Association with the exclusion of Non-Service aged persons of the society. It was then felt that the organization became limited in its scope. So the idea of forming a wider organization was conceived and changed the name as *Upa Lengkhawm*, meaning, Aged Persons Social Gathering, the membership of which included any aged person either service pensioner or non-service aged persons irrespective of sex and caste.

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<sup>19</sup> <http://www.mizoram.nic.in/>. Accessed on 20<sup>th</sup> December, 2015.

Within three years of information, the Association changed its name from Zoram Pensioner Association to Upa Lengkhawm and then, to Zoram Upa Pawl (Zoram Aged Persons Association). It was on 4<sup>th</sup> January, 1961 that the meeting of Zoram Aged Persons at Aizawl finally adopted the name of the association as Zoram Upa Pawl (ZUP), (Zoram Aged Person Association) and since then the name of the association remained unchanged till 1992. In 1992, the organisation was renamed and registered as the Mizoram Upa Pawl (MUP) under the Societies Registration Act, Government of Mizoram.<sup>20</sup>

The headquarters of the Mizoram Upa Pawl (MUP) is located in Aizawl. The organisation has six (6) sub-headquarters, 570 units and over 60, 000 members. It covers the whole state of Mizoram and includes a part of Tripura, Meghalaya and Manipur.

The office is staffed by the General Secretary, the Office Superintendent, three Office Assistants, a Computer Operator and a fourth (IV) Grade.

One of the recent developments of the organisation is the establishment of an Environment Sub-Committee in May 2016.

### *Membership*

Any person, male or female, 50 years and above, who is a true resident of Mizoram could become a member of the association by paying an admission fee of

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<sup>20</sup> Lalkima. C. *Social Welfare Administration in A Tribal State: A Case Study of Mizoram*, Spectrum Publication, Guwahati, 1997, p.53

Rs. 10/- only and an annual fee of Rs. 10/- only to the local Mizoram Upa Pawl Unit to which his/her place of dwelling belongs.

The MUP is purely a voluntary organisation and shall not involve in party politics. There shall not be any discrimination on communal or religious grounds within the organisation.<sup>21</sup>

### *Aims and Objectives*

- i) To help the senior citizens to identify, assess and evaluate their problems and to look for solution so that they could continue to enjoy a healthy and happy life.
- ii) To help, advise and assist public leaders.
- iii) To maintain as far as practicable and uphold Mizo Customary Laws, culture and traditional practices from time immemorial and if necessary to help amend or improve those which, on careful examination are found no longer suitable for the existing practices of the Mizo Society.
- iv) To offer opinions and advice to the concerned authorities in matters concerning economic development of the state.
- v) To be very watchful of the political, social and economic life of the Mizos and to help guide the people if found following wrongful and undesirable ways to better and more correct ways.

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<sup>21</sup> Mizoram Upa Pawl (Mizoram Senior Citizens' Association), Milan Press, Aizawl, 2015, p.2.

- vi) To offer advice whenever the association feels it necessary to the State Government for efficient management of any of its machineries.
- vii) To be ready, when the situation demands to work together with other non-governmental organisations for a common and good cause.
- viii) To preserve the Mizo language and arrange imparting of its correct usage to the younger generations.<sup>22</sup>

Although there are environmental non-governmental organisations in Mizoram concerned solely with environmental issues, the prominent non-governmental organisations such as the Mizo Hmeichhe Insuihkhawm Pawl, The Mizoram Upa Pawl and the Young Mizo Association play a significant role in protecting the environment of Mizoram. The service and assistance of these organisations are often rendered by the State Government in realising the environmental protection programmes.

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<sup>22</sup> Mizoram Upa Pawl (Mizoram Senior Citizens' Association), Milan Press, Aizawl, 2015, p.3-4.

## **CHAPTER- VI**

### **PROBLEMS OF IMPLEMENTATION OF ENVIRONMENTAL PROTECTION IN THE COMMUNITY IN AIZAWL DISTRICT**

In the last chapter, i.e. Chapter-V, the implementing agencies for environmental protection in Mizoram were discussed reflecting their invaluable role in protecting and improving the environment. In Chapter VI, the problems of implementation of environmental protection in the community in Aizawl District are dealt with.

The protection of the environment has become the concern of many countries of the world. Institutions are set up and legislations are made to mitigate the environmental problems. However, a number of problems are faced in the implementation of the environmental protection programmes and policies.

One of the major problems faced in the implementation of environmental protection in many countries is the priority given to the economic growth rather than environmental growth. The pressing need to develop one's economy has made it difficult to adopt a more advanced and environmental-friendly technology in the industries on a national scale. The use of advanced technologies for economic development is considered as the major impediment of environmental protection.

The lack of legislation of the use of natural resources is one of the setbacks of environmental protection. In countries like Russia, this has led to the degradation of entire natural parks and sanctuaries. Environmental problems in the urban areas are

also getting worse. Growing deforestation is caused by forest fires and industrial pollution.<sup>1</sup> Weak and uneven enforcement of environmental laws discourage the industries from reducing pollution while increasing efficiency which are the twin goals of any industrial policy.

Another important factor owing to environmental problems is the lack of awareness among the people. Many societies at large have little awareness of the threats of environmental pollution to human health and future resource availability, thereby restraining individual initiative and behaviour towards the protection of environment.

For the successful implementation of any programme of the government adequate financial resources is necessary. Similarly, environmental policies and programmes can only be realised with sufficient finances. Downsizing or paucity of funds due to emphasis on programmes other than those of environmental protection by the government is a common obstacle faced by many countries.

The indifference or neglect of the disposal and treatment of hazardous wastes by the industries is widespread in many developed and developing countries. The industrial growth of a country being considered as an important vehicle or indicator of economic development has led to countries neglecting their environmental policies, thus sacrificing human health for economic prosperity of the country.

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<sup>1</sup> Yablokov Alexey, *ENVIRONMENTAL PROBLEMS AND PROJECTIONS IN RUSSIA*, Address to the All-Russian Special Conference for the Protection of Human Rights, Moscow, January 21, 2001.

A serious concern regarding the problem of implementing environmental laws of a country is the lack of awareness of the people. Without proper knowledge, the willingness of the people cannot be asserted. Some effective possible ways of involving people in environment protection and development activities may be highlighted as: convincing the people about the importance of policies and programmes; need for better planning with people; need to consult the local organisations before launching the programmes; inviting the villagers/local people for discussion before introducing the programmes; and taking into consideration the felt needs of the people. The consequent impact of various environmental hazards has to be imparted to mobilise the people towards environmental protection.

### **Problems of Implementation in India**

Though there is a plethora of acts and legislations concerning environment, the implementation of environmental laws leaves much to be desired. In India we are not short of environmental plans or programmes. But the problem is always at the implementation level. There is a need for integrating environmental concerns with the activities of all departments and agencies.<sup>2</sup>

The level of environment literacy is low, especially amongst the decision-makers leading to a gross under-valuation of the economic and material values of the environment.<sup>3</sup> A pre-requisite for this is bringing environmental awareness among the

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<sup>2</sup> Vyas, V. S. & Reddy Ratna, V., *Assessment of Environmental Policies and Policy Implementation in India*, Economic and Political Weekly, Vol. 33, No. 1/2 (Jan. 10-16, 1998), p.52.

<sup>3</sup> Kothari Ashish & Anuprita Patel, *Environment and Human Rights*, National Human Rights Commission, New Delhi, 2006, p. 23.

policy-makers. For this purpose one needs to build up information systems on environment and wide dissemination of relevant information.<sup>4</sup>

Economic growth has necessitated a corresponding expansion in energy availability for industrial, agriculture and domestic purposes. Stringent regulations regarding the environmental impacts and disposal of hazardous wastes have to be implemented by the government.

The policies and programmes of the Central and State Governments have not incorporated environmental principles, with the result that many development projects have been conceived for short-term gains without considering their long-term ecological and social impacts.<sup>5</sup>

The limited inclusion of environmental issues in the school and college curricula hinders the effective implementation of environmental protection. Without imparting proper knowledge of the impact of pollution and economic development on the environment, the state is bound to have serious environmental hazards.

Another factor deterring the implementation of environmental protection is the uncontrolled consumerism of the upper classes, which seem completely oblivious to the limits of resource use, has put serious pressure on natural resources.<sup>6</sup>

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<sup>4</sup> Vyas, V. S. & Reddy Ratna, V., *op.cit.*, p.52.

<sup>5</sup> Kothari Ashish & Anuprita Patel, *Environment and Human Rights*, National Human Rights Commission, New Delhi, 2006, p. 23.

<sup>6</sup> *Ibid.*



## **Problems of Implementation in Aizawl District**

There a number of problems faced in the implementation of environmental protection in Aizawl District. Such problems are:

i) *Lack of knowledge regarding the environment*

One of the serious problems faced in the protection of the environment is the lack of knowledge regarding the environment. Despite the global effort for environmental protection since the Stockholm Conference, 1972 and the creation of the Ministry of Environment in India in 1980, the Department of Environment and Forests was established in Mizoram in 1987 only by renaming the erstwhile State Forest Department. The newly renamed Department of Environment and Forests has organised afforestation through its programme known as Green Mizoram year after year since 1998. Meanwhile, the Mizoram Pollution Control Board (MPCB) was constituted in 1989 for the primary objective of pollution of air and water within the state of Mizoram. Since its inception the MCPB has initiated various programmes viz. Air Quality Monitoring, Water Quality Monitoring, Mass Awareness Campaign, National Green Corps' Programme (ECO- CLUBS) etc.

Despite the various awareness programmes of the Department of Environment and Forests and the Mizoram Pollution Control Board, there is yet ample scope for disseminating the ill-effects of environmental pollution and the pressing need of environmental protection. While most of the urban population are fairly acquainted with the need of environmental protection, most of the rural

population in the surrounding villages of Aizawl District are yet to be adequately sensitised. Owing to this lack of proper knowledge of the environment, much more meaningful awareness campaigns would be required regardless of the high percentage of literacy in Mizoram.

*ii) Inadequate Financial Resources*

In Mizoram, a number of non-governmental organisations have been set up for the protection of the environment. These organisations more or less, fall within the category of voluntary organisations. The source of income of most of the organisations is from the meagre annual membership fees which are ranging from Rs. 10/- to Rs. 100/-. Moreover, the total number of members ranges from 70 (seventy) to 300 (three hundred) approximately. Apart from these contributions, they manage to discharge their activities and programmes through occasional benevolent donors and contributions from the individual members. Without any proper source of regular income, the NGOs can hardly fulfill their aspiration of achieving their goal of environmental protection. Regardless of their best efforts, they are ill-equipped in as far as providing for proper training and conducting awareness campaigns in the urban areas and even more so in the rural areas around Aizawl District.

*iii) Delay in the release of fund*

Owing to the irregular and delay in release of fund from the Government, the programmes of the environmental protection are adversely affected and the very purpose for which the sanction was released used to be

defeated. It maybe added that most of these programmes are designed on the seasonal changes of weather. If the required fund were released in time, the programmes would be successfully conducted so as to benefit the entire community.

*iv) Lack of Proper Understanding of Government Programmes and Schemes*

For the success of any governmental programmes, a proper understanding and knowledge of such programmes is essential. A number of the programmes and schemes for environmental protection initiated by the Government are carried out without sufficient relevant information. So much so, the very purpose of conducting such programmes and schemes is defeated even as the beneficiaries remain ignorant of such programmes and schemes. It is imperative that the local people ought to be inspired and sensitised for the tangible benefits of environmental protection. If properly organised/conducted, the local people would be very enthusiastic with such programmes even as they would be the sole beneficiaries as well.

*v) Lack of effort on the part of the individual/community*

Apparently owing to the ignorance of the gravity of environmental problems, the general population have not made any tangible efforts towards environmental protection. Although there are certain programmes requiring the involvement of experts, most of the programmes and schemes for environmental protection in Mizoram demand active participation of the community for their effective implementation. While programmes involving the community at large

such as tree plantation and community service are spontaneously followed, compliance to programmes is not strictly followed in such cases as involving individual participation such as testing of Vehicular Emission and burning of Jhum within the specified period of the government. The tremendous increase in vehicular population in the urban areas of Aizawl District has resulted to polluted atmosphere from emission of the vehicles. In spite of the strict order of the Government for testing of the vehicular emission, many motorists are paying scant respect to such order. Hence there arises a deteriorating atmosphere over the urban areas.

The traditional method of cultivation of slash and burn known as jhuming is another cause of concern for environmental protection. Jhuming covers vast areas of hilly slopes of virgin forests and bamboo jungles being slashed and burned causing thick clouds of smoke. Though the Government has invariably fixed the limit for burning of jhum, some farmers have not complied with the order thereby causing environmental problems, rather than environmental protection.

vi) *Lack of Civic Sense amongst a section of the community*

While some people are fairly aware of the importance of environmental protection for the benefit of the present generation and posterity, there still remains a certain lack of civic sense amongst some urban population, for e.g. maintenance of drainage system, pig-rearing within the premises of residential areas, littering of streets and roads with waste materials. Hence, the efforts for

environmental protection are hampered by the less literate lacking in basic civic sense.

vii) *Lack of proper coordination amongst stakeholders for environmental protection*

The environmental protection programmes of the government have often been carried out with the help of the non-governmental organisations over the last few years. However, regardless of their common goal of environmental protection, certain environment non-governmental organisations have decided to go on their own rather than work in close co-ordination so as to attain positive results. A synergy of efforts between the stakeholders is imperative in combating the various environmental hazards in Mizoram and Aizawl in particular.

viii) *Lack of proper institutions*

The Aizawl District has rural areas as well urban areas within its jurisdiction. To administer the urban affair, there is urban institution, namely the Mizoram Municipalities but in operation only within the Aizawl city, that too with limited powers. Nevertheless, the provisions under the Twelfth Schedule to the Constitution of India are implemented to some extent which is meant for environmental protection and empowering the local people to participate in it. But other urban areas are not covered by this. Moreover, the rural areas within the Aizawl District do not have a proper platform through which the grass root people can take part as Mizoram is a non-panchayat state. In a nutshell, the 73<sup>rd</sup> and the 74<sup>th</sup> Constitutional Amendment Acts (meant for rural local governance and urban

local governance) provide for the conservation environment are not implemented. This twin Amendment Acts could have brought positive changes towards effective community participation for many fold purposes including environment protection in the state and particularly in the Aizawl District if both are introduced.

Participation, as explained in the introductory chapter, referred as “commitment on the part of the individual towards all forms of actions by which the individual ‘can take part’ or ‘play a role’ in the operation without being conscious of any socio-economic barriers to achieve certain common goals in a group situation”. Such commitment or involvement would be possible only if a person is effectively appraised about the situation so as to enable him/her to form an attitude based on his/her own perceptions. This implies that for effective participation, leading to sustainability of development projects, people of all class and section should be involved in all stages of plan process. Then only the dream of participation would become a reality only when the ‘top down’ approach, which was prevalent now, is replaced by ‘bottom-up’ approach policy formulation.

Environmental degradation is affecting both developed and developing countries. The environmental problems undermine the goals of development. The poor people living in developing countries suffer more from such problems, as they are unable to protect themselves. In a country like India, it is very important to keep in mind that whenever competent authority is formulating a national policy for environmental and an appropriate institutional and legal framework in

support of that policy. All aspects of environment – water, forests, air, sanitation, wild life, energy, pollution are some few- have a bearing on development. Protection and preservation of the environment is extremely necessary for sustainable development.

The numerous problems of implementation in environmental protection cannot be addressed by the government alone. Public-Private-Partnership mode has been in adoption for many development programmes implementation at the national as well as regional or state levels. The Government of Mizoram has adopted this PPP mode for solid waste management within Aizawl city since the recent past. The government, the individual, the community and the non-governmental organisations play a pivotal role in resolving the various environmental issues.

## CHAPTER-VII

### CONCLUSION: FINDINGS AND SUGGESTIONS

The final Chapter is the Conclusion: Findings and Suggestions of the Research being undertaken on Community Participation in Environmental Protection in Mizoram: A Case Study of Aizawl District. This chapter is divided into two parts. The first part provides a summary of all the chapters and the second section deals with the major findings of the research and offers suggestions for protecting and improving the environment.

#### PART-I

The thesis is divided into seven chapters. The first chapter is the *Introduction*. This chapter cites the reasons for undertaking the research. It comprises of the profile of Aizawl District, the statement of the problem, efforts for environmental protection in Mizoram, review of literature, the objectives for the proposed study, the scope of study, the hypotheses made with regard to the study, the methodology that would be carried out in the findings of the study and the sequence of chapters for the proposed study.

The second chapter deals with the *Nature of Environmental Problems in Aizawl*. This chapter provides information regarding the profile of Mizoram, climate and rainfall, demography, administration, brief typography, drainage system, vegetation, forest, agriculture and the profile of Aizawl District. For a better



understanding of environmental issues, this chapter highlights the various global environmental problems being confronted such as global warming, depletion of ozone, pollution, land degradation, overpopulation, hazardous waste, acid rain, deforestation; it also mentions the environmental problems faced in India such as population growth, air pollution, water pollution, soil pollution, solid waste in Mizoram State and particularly in the Aizawl District of Mizoram. Environmental problems such as jhuming, increase in the number of motor vehicles, lack of proper town planning, rapid population growth, lack of proper sewerage system are taken care. It also highlights major programmes and schemes for environmental protection in Mizoram namely- National Ambient Air Monitoring Programme, National Water Monitoring Programme, National Green Corps' Programme, Environmental Information System, National Afforestation Programme, Intensification of Forest Management Scheme, Green Mizoram Programme, National Bamboo Mission.

The third chapter is the Need and Importance of Community Involvement in Aizawl District. In this chapter, the meaning and definitions of 'Community' and 'Community Participation' are provided to have a better appreciation of these two concepts. It traces the historical development of the Mizo community including their culture such as their festivals and dances are also highlighted to have a better understanding of the community. The Mizo community is a close knit society where they give community services for the larger benefits in many aspects including maintenance of eco-balance within their surroundings. Community participation is not a strange thing to the people of Mizoram and conservation of forest has been in

practice since they settled down this territory. It emphasises the pivotal role of community in solving environmental problems. It particularly focuses on the importance of Community Participation of the people of Aizawl District and their indispensable role in mitigating and solving their own environmental problems. Some important data have been provided in this chapter mainly based on primary source of information and field works.

The fourth chapter is entitled '*Environmental Education, Awareness and Information*'. While spelling out the genesis of Environmental Education at the Tbilisi Conference in 1977, it underlines the role, objectives and characteristics of Environmental Education. It traces the various stages of development in Environmental Education in India and the subsequent initiatives being taken in the state of Mizoram. The National Council of Education Training and Research (NCERT), Centre for Environment Education (CEE). Programmes, Policies and Schemes for Environmental Education, Awareness and Training to School Education, etc are some of the important programme instrumentalised for environmental education, awareness and information. With the help of questionnaire and interview, some important data have been collected. These data are well placed in various tables i.e., Table 3.5 to Table 4.6. Observations and comments are also provided. It emphasises the need for awareness of environmental protection from the grassroots level through Environmental Education and the dissemination of information relevant for protecting and improving the environment for the benefit of posterity.

The fifth chapter is concerned with the ***Implementing Agencies for the Protection of Environment in Aizawl District***. It highlights the various efforts being undertaken by the governmental agencies and non-governmental agencies in Mizoram which are instrumental in curbing further degradation of the environment. The activities and programmes undertaken by the agencies are dealt with in detail. While there are Environmental Non-Governmental Organisations focussing totally on the protection of the environment, some other non-governmental agencies are also concerned with environmental protection although it is not their main priority.

The sixth chapter deals with the ***Problems of Implementation of Environmental Protection in the Community in Aizawl District***. Despite the growing need for environmental protection, some obstacles come in the way for solving this pressing issue of environmental problems. As such, this chapter spells out the various problems faced by the community, the government, the environmental non-governmental organisations and other non-governmental organisations. It transpires the reasons for the setbacks faced in the implementation of certain activities and programmes of both the governmental agencies and non-governmental agencies. It highlights the non-introduction of the Constitutional back up local self-government institutions to facilitate the community participation in various issues including environmental protection in the state and particularly in Aizawl District too.

The last and final chapter is the ***Conclusion: Findings and Suggestions*** of environmental protection in Aizawl District. It summarises all the previous chapters, highlighting the various relevant issues concerning the environment. This chapter

brings to light the major findings of the research, particularly those concerning community participation in Aizawl District. Moreover, it offers suggestions for solving the prevailing problems faced in the protection of the environment.

## **PART-II**

### **Major Findings**

The findings of the research are based on structured interviews, questionnaires and random sampling of responses collected from the residents of Aizawl District.

- i) The first hypothesis of the research is that environmental degradation has increased due to lack of community participation. This factor is partially acceptable. Although there are situations where the community is actively involved for example, cleaning of one's local premises, plantation of trees and disposal of garbage, there are cases where the community does not comply with the programmes of the government. The period set for jhumming, 15<sup>th</sup> March, is often violated, illegal felling of trees and hunting is also found in the rural areas. Vehicular emission testing has been introduced by the MPCB since 2012. Such testing has been done by only a few individuals of the community.
  
- ii) The second hypothesis of the research is that a holistic approach towards environmental protection may be effective in the protection of environment.

This proves to be true as the initiatives, programmes and schemes of the Government not only depend on the participation of the community but also the government, the non-governmental organisations and technical experts. The community is not the sole stakeholder of environmental protection and improvement and hence, the realisation of the governmental programmes for environmental protection requires a holistic endeavour.

- iii) One of the hypotheses of the research is that environmental problems have arisen mainly due to increased population in Aizawl which, however, has been contradicted by the responses of the urban population of Aizawl City. The main cause of environmental problem according to the residents of Aizawl is the increase in the number of motor vehicles. As for the rural population, the main cause of environmental problem is Jhuming.
- iv) The first objective of the study is to examine the various measures taken by the Government. Most of the environmental programmes of the Government require the participation of the community. There are certain programmes which do not directly involve the participation of the community such as Water Quality Monitoring; as such programmes require the involvement of experts.
- v) An assessment of the role of community towards environmental protection in Aizawl District is the second objective of the study. From the responses

of the respondents and the programmes of the government, the role of the community is imperative in protecting the environment.

- vi) The third objective is to study the initiatives for environmental protection among the people of Mizoram. In Aizawl, the different localities organise 'Hnatlang', voluntary community work, in which the young and old generation make an effort to clean the local premises.
  
- vii) Analysing the role of voluntary organisations in Aizawl District is the fourth objective. Although there environmental non-governmental organisations, other voluntary organisations such as the YMA, MHIP and MUP are also concerned with the protection of the environment. One of the significant roles played by these organisations is that they are appointed by the government to assess the intensity of damage caused by Jhumming every year. Moreover, the programmes of the government are also realised through these organisations as they take the initiative in imparting and propagating the ill-effects of various environmental hazards.
  
- viii) Regarding the knowledge of the environmental programmes of the government, the students are dismally ignorant. Out of the programmes listed, a majority of them were familiar with only one programme. i.e. the Green Mizoram Programme.

- ix) Eco-clubs are formed in few colleges in Mizoram. Establishment of such clubs are helpful in propagating the initiatives of the government. Moreover, technical assistance with regard to the protection of the environment is ensured as its members often include students and teachers from the science stream.
  
- x) World Environment Day is not observed in many schools. The observation of the day would offer an opportunity to spread the need of environmental protection, practices that can be followed by individuals and make the students aware of the various environmental programmes.
  
- xi) An upcoming trend is that the churches in Aizawl, particularly the Presbyterian Church, have considered it imperative to conduct environmental awareness programmes amongst the youth. This information was collected from an interview conducted with the President of the ASEP, which targets the youth as the main mobilising force for environmental protection. Furthermore, invitations have also been received by the organisation from other church denominations which are also keen on conducting these environmental awareness programmes for the youth.
  
- xii) One of the findings of the research is that there were cases where the environmental non-governmental organisations found the youth in the rural

areas hunting with slingshots. Instead of ordering them to put an end to such primitive acts, they informed the youth of the subsequent ill-effects of their actions on the environment and the legal penalties they could face in the performance of such acts. It is noteworthy that the consultations provided by the environment NGOs were found extremely helpful resulting in the surrender of many of the slingshots of the youth and a pledge to discontinue such acts/hunting. Another commendable achievement of the awareness campaigns of ASEP and the Environment and Forests Department is that of the surrender of guns by voracious hunters on their realisation of the adverse effects of hunting of wildlife.

- xiii) A significant finding from an interview conducted with an environmental non- governmental organisation is that they had offered suggestions to the State Government in which the existing environmental programmes could be made more effective. These suggestions were put forth by the organisation from time to time. However, they were never considered which led to the disappointment of the organisation. Although actively involved in the programmes of the government earlier, it now hardly participates considering such initiatives as mere formalities and superficial.<sup>1</sup>

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<sup>1</sup> Zonunmawia, A.C., Chairman, Centre for Environment Protection. Interviewed on 19<sup>th</sup> May, 2016.



## **Suggestions**

The residents of Aizawl City are best suited to identify their needs and problems. Hence, they are the key functionaries to aid the government and policy makers in making informed decisions regarding environmental protection for the district.

To arrest the continuing ill-effects of Jhuming, a more comprehensive devise replacing this type of cultivation needs to be introduced.

With regard to the increased air pollution, enforcement of the latest emission norms by the government is necessary to create healthy and livable environment for the people. Moreover, a knowledgeable society with regard to the purchase of vehicles as well their environmental implications in their possession must be created through community gatherings and other public forums.

Training programmes on environment awareness should be conducted as often as possible to enable the stakeholders i.e. the people of Aizawl in sensitizing the importance of their role in the protection of their environment.

World Environment Day is hardly observed by the community in Aizawl. The observation of the day would provide an opportunity for creating environmental awareness in the community while motivating and mobilising them towards the protection of environment in Aizawl.

The media's role in propagating environmental awareness has been considered as exceedingly vital in protecting the environment. Although there is an extensive use

of mobile phones in Aizawl, the people still consider the television as the most important media for disseminating awareness of environmental protection.

The government should involve the community to assess and evaluate the various programmes in order to meet its environmental goals and simultaneously improve its environmental performance.

The various measures of the Government are planned and defined with the expectation of active community participation in environmental protection. As such the governmental programmes for environmental protection would be doomed to failure in the absence of community participation. The effective community participation is very important in all the development policies formulation as well as in the implementation of such policies. The visionary programmes for environmental protection are meant not only for the present, but also for the future so as to benefit posterity with better quality of life and pollution-free atmosphere to live in.

## **Appendix – I**

### **QUESTIONNAIRE**

#### **Research**

**on**

#### **Community Participation in Environmental Protection in Mizoram: A Case Study of Aizawl District**

**For the award of Doctor of Philosophy under the Department of  
Public Administration, Mizoram University**

#### **Instruction to Respondent**

I am currently carrying on research work for the Doctor of Philosophy in the Department of Public Administration under the supervision of Prof. Lalneihzovi, Head of Department, Public Administration, Mizoram University. In this regard, I need your kind cooperation in furnishing information. Your responses will be treated as confidential and used for research purpose only. I appreciate your kind cooperation in offering your valuable responses and time.

(LALROPARI RENTHLEI)

Research Scholar

Department of Public Administration  
Mizoram University

**Name of the Organisation:**

**Year of Establishment:**

**No. of Office Bearers:**

**No. of Members:**

**Membership Fee:**

**Registration No.:**

1. What are the major programmes for environmental protection undertaken by your organisation?
  - i) Programmes for Fire Prevention
  - ii) Programmes for Preservation of Wildlife
  - iii) Awareness Programmes for Environment Protection
  - iv) Consultation Programmes for Environment Protection
  - v) Monitoring and Evaluation of Environment
  - vi) Others \_\_\_\_\_
  
2. What are the programmes that involve the participation of the community?
  - i) Programmes requiring Consultancy
  - ii) Programmes involving monitoring and evaluation
  - iii) Programmes involving awareness
  - iv) Programmes involving Fire Prevention
  - v) Programmes involving Wildlife Preservation
  - vi) Others \_\_\_\_\_
  
3. How often are these programmes conducted?
  - i) Quarterly
  - ii) Half-yearly
  - iii) Annually
  
4. Where are your programmes conducted?
  - i) Urban areas
  - ii) Rural areas
  - iii) Both Urban and Rural areas

5. Do you consider the participation of the community imperative in achieving your programmes?
  - i) Very important
  - ii) Moderately important
  - iii) Unimportant
  
6. Have your programmes made a positive impact on the mindset of the people?
  - i) Yes
  - ii) No
  
7. Which of the following is your main target group in achieving your objectives?
  - i) Students
  - ii) Jhumia families
  - iii) Community as a whole
  - iv) Adults (18 & above)
  - v) Senior citizens
  - vi) Others \_\_\_\_\_
  
8. What do you think influences people's willingness to participate in your programmes?
  - i) Our approach in dealing with them
  - ii) Incentives involved in our programmes
  - iii) Cooperative effort on the part of the people
  
9. Which of the following do you consider as most useful in achieving your objectives?
  - i) Public Meetings
  - ii) Meetings with key functionaries (Leaders of YMA, MHIP, VCs etc.)
  - iii) Face to face meetings with target groups
  - iv) Workshops/Seminars
  - v) Awareness Programmes
  - vi) Appeal letters
  - vii) Advertisements
  - viii) Press Release
  - ix) Other methods \_\_\_\_\_

10. How successful are your programmes in achieving its objectives?

- i) Very successful
- ii) Not successful
- iii) Successful to a certain extent

11. What was the response received from the people/community in the conduct of your programme/programmes?

- i) Positive
- ii) Negative
- iii) Moderately Positive
- iv) Moderately Negative

12. What are the problems faced in the implementation of these programmes?

- i) Lack of financial assistance
- ii) Lack of effort on the part of the people
- iii) Time constraints
- iv) Other reasons, if any \_\_\_\_\_

13. Funding sources of these programmes:

- i) Internal sources
- ii) Central Government
- iii) State Government
- iv) Other sources

## Appendix-II

### Questionnaire for the Community

**Name:**

**Age:** Below 18 ( )      18-25 ( )      26-35 ( )      36-45 ( )  
46-55 ( )      56-65 ( )      66 and above ( )

**Gender:** Male ( )      Female ( )

**Locality (Veng/Khua):**

**Status in the Locality:**

President/Vice President/Secretary/Assistant Secretary/Treasurer/

Finance Secretary/Member of Local Council/Village Council/YMA/MHIP/MUP

Member, Sub-Committee \_\_\_\_\_

**Occupation:**      Student ( ) Government servant ( ) Self-employed ( )  
Unemployed ( )

**Qualification:**      Primary School ( )      Middle School ( )      High School ( )  
10+2/PU ( )      Graduate ( )      Post Graduate ( )

1. Do you feel that the condition of the environment is deteriorating in Aizawl?
  - i) Yes
  - ii) No
  
2. What according to you is the main cause of environmental problems in Aizawl?
  - i) Jhuming
  - ii) Increase in the number of motor vehicles
  - iii) Lack of proper town planning
  - iv) Rapid population growth
  - v) Lack of proper effluent disposal

3. Do you think that the human health problems are due to the environmental problems in Aizawl?
  - i) Yes
  - ii) No
  
4. Do you think that the community is aware of environmental issues?
  - i) Yes
  - ii) No
  
5. Do you feel that it is important for the community to participate in solving environmental issues?
  - i) Yes
  - ii) No
  
6. How important do you think is the participation/involvement of the community in protecting the environment?
  - i) Very important
  - ii) Important to a certain extent
  - iii) Not at all important
  
7. Do you think the efforts undertaken by the leaders of your community for environmental protection are adequate?
  - i) Adequate
  - ii) Not adequate
  - iii) To a certain extent
  
8. Does your locality organise any environmental protection awareness programmes?
  - i) Yes
  - ii) No
  
9. What are the practices/activities followed by your locality for environmental protection?
  - i) Tree Plantation
  - ii) Cleanliness Week
  - iii) Hnatlang (Community work)
  - iv) Others, if any \_\_\_\_\_



10. Does your locality have sweeper/sweepers to clean the streets everyday?
- i) Yes
  - ii) No
11. Does your locality have sweeper/sweepers to clean the streets everyday?
- i) Yes
  - ii) No
12. Does your locality have a proper drainage system?
- i) Yes
  - ii) No
13. Does your community have any Environmental Committees?
- i) Yes
  - ii) No
14. Does your locality observe World Environment Day?
- i) Yes
  - ii) No
15. Which of the following programmes of the Government for environmental protection are you familiar with?
- i) Intensification of Forest Management (IFM)
  - ii) National Afforestation Programme (NAP)
  - iii) National Bamboo Mission (NBM)
  - iv) Green Mizoram Programme
  - v) Vehicular Pollution Monitoring
  - vi) Water Quality Monitoring
  - vii) Air Quality Monitoring
16. Are the above mentioned programmes carried out in your community?
- i) Yes
  - ii) No
  - iii) To a certain extent
17. Do you think that the programmes of the government are effective in the protection of the environment?
- i) Yes
  - ii) No
  - iii) To a certain extent

18. Has the advertisements for environmental programmes of the government ever made an impact on you to take an initiative?
- i) Yes
  - ii) No
19. Are you familiar with the following Non-Governmental agencies for environmental protection?
- i) Mizoram Forest Produce Marketing Agency
  - ii) Save Environment Association (SEAVA)
  - iii) Centre for Environment Protection (CEP)
  - iv) Biodiversity and Nature Conservation Network (BIOCONE)
  - v) Association for Environment Preservation (ASEP)
  - vi) Green Mizoram Network (GMN)
20. Do you think the measures taken by the non-governmental agencies for environment protection are effective?
- i) Yes
  - ii) No
  - iii) To a certain extent
21. Do you think that the media is helpful in promoting/propagating environmental protection?
- i) Yes
  - ii) No
22. Which of the following media do you consider as most helpful in solving environmental problems/ environmental protection awareness?
- i) Radio
  - ii) Television
  - iii) Internet
  - iv) Mobile phone
  - v) Newspapers
  - vi) Magazines
23. Have you made an effort to clean the premises of your locality?
- i) Yes
  - ii) No

24. Do you participate in the community work (hnatlang) organized by the leaders of your locality?
- i) Yes
  - ii) No
25. If yes, what is/are your reasons for participation?
- i) Concern for environmental cleanliness
  - ii) Due to pressure from the family
26. If no, what is/are your reasons for not participating?
- i) Time constraints
  - ii) Due to work/studies
27. Do you consider the Community Work as effective in environmental protection?
- i) Yes
  - ii) No
28. Do you consider yourself responsible for the Environmental cleanliness of your locality?
- i) Yes
  - ii) No

**Appendix-III**  
**Questionnaire for Students**

**Name:**

**Age:**

**Class/Semester:**

**Name of School/College/University:**

1. Do you think our environment needs to be protected?
  - i) Yes
  - ii) No
  
2. What according to you is the main cause of environmental problems in Mizoram?
  - i) Jhuming
  - ii) Increase in the number of motor vehicles
  - iii) Lack of proper town planning
  - iv) Rapid population growth
  - v) Ignorance of the people
  - vi) Lack of proper effluent disposal
  
3. Do you have any subject concerning environmental protection in your school/college?
  - i) Yes
  - ii) No
  
4. Does your school/college observe World Environment Day?
  - i) Yes
  - ii) No
  
5. Does your school/college conduct workshops/seminars on environmental protection?
  - i) Yes
  - ii) No

6. Does your school/college have a sweeper to clean the classrooms/school premises?
  - i) Yes
  - ii) No
  
7. Do you think environmental protection awareness is successfully imparted in schools?
  - i) Yes
  - ii) No
  - iii) To a certain extent
  
8. Are you familiar with the following programmes of the Government of Mizoram?
  - i) National Afforestation Programme
  - ii) Intensification of Forest Management Scheme
  - iii) Green Mizoram Programme
  - iv) National Bamboo Mission
  - v) New Land Use Policy
  - vi) Vehicular Pollution Monitoring
  - vii) Water Quality Monitoring
  - viii) Air Quality Monitoring
  
9. Are you familiar with the following Non-Governmental agencies for environmental protection?
  - i) Mizoram Forest Produce Marketing Agency
  - ii) Save Environment Association (SEAVA)
  - iii) Centre for Environment Protection (CEP)
  - iv) Biodiversity and Nature Conservation Network (BIOCONE)
  - v) Association for Environment Preservation (ASEP)
  - vi) Green Mizoram Network (GMN)
  - vii) The Young Mizo Association (YMA)
  - viii) Mizoram Hmeichhe Insuihkawm Pawl (MHIP)
  - ix) Mizoram Upa Pawl (MUP)

10. Which of the following do you think is most important in protecting the environment?
- i) The Government
  - ii) Individual
  - iii) Community
  - iv) Non-Governmental Organisations
11. How important do you think is the participation of the community in protecting the environment?
- i) Very important
  - ii) Important to a certain extent
  - iii) Not at all important
12. How far should the community participate in protecting the environment?
- i) Fully participate
  - ii) Partially participate
  - iii) Not participate at all
13. Do you think that the media is helpful in promoting/propagating environmental protection?
- iii) Yes
  - iv) No
14. Which of the following media do you consider as most helpful in solving environmental problems/ environmental protection awareness?
- vii) Radio
  - viii) Television
  - ix) Internet
  - x) Mobile phone
  - xi) Newspapers
  - xii) Magazines

## Appendix-IV

### All Mizoram vehicle record upto January 2015

Sl. No.	Vehicle	No. of Vehicles upto 31.3.2011	2011-2012	2012-2013	2013-2014	2014-2015	Total
1	Ambulance(Hgv)	36	1				37
2	Ambulance(Lgv)	27	5	7	9	4	52
3	Ambulance(Mgv)	1					1
4	Ambulance vehicle	1					1
5	Articulated Vehicle	1					1
6	Backhoe Loader	2	2	1	1	2	8
7	Compactor Roller	2	1		2		5
8	Deluxe Bus	1					1
9	Excavator	525	107	79	121	91	923
10	Fire Fighter	14		6			20
11	Heavy Bus	319	2		1		322
12	Heavy Goods Vehicle	2489	257	163	218	152	3279
13	Heavy Tractor	27					27
14	Heavy Tractor(Agri.)	34	3				37
15	Heers Car(H.M.V)	2					2
16	Invalid Carriage	8					8
17	Jeep Taxi	8					8
18	J.C.B	37	29	19	28	6	119
19	Light Goods Vehicle	4504	754	792	1089	663	7802
20	Light Tractor	99	10	8	6	1	124
21	Light Tractor(Agr.)	7	5	2	1	2	17
22	L.M.V.(Car)	14530	1749	1746	1521	1220	20766
23	L.M.V.(Gypsy)	3911	46	67	20	18	4062
24	L.M.V.(Jeep)	4534	276	294	445	376	5925

25	L.M.V.(Imp)	5	1	1	1		8
26	L.M.V.(Van)	770	52	40	73	31	966
27	Maxi Cab	1593	293	324	383	121	2714
28	Medium Bus	411	25	27	9	9	481
29	Medium Goods Vehicle	806	186	182	146	61	1381
30	Medium Tractor	65	1	1	2	1	70
31	Medium Tractor(Agr.)	9	3	1	2		15
32	Mini Bus	264	25	21	11	12	333
33	Mobiole Crane	15	9	2		2	28
34	Moped	190	72	27	113	152	554
35	Motor Cab/Car Taxi	4070	628	702	794	135	6329
36	Motor Cycle	32513	5762	5743	5185	3632	52835
37	Motor cycle(imp)	3	2				5
38	Motor Grader	3					3
39	Multi Axle Goods Vehicle	3					3
40	Power Tiller(Agr.)	1					1
41	Postal Van	2					2
42	Road Roller	6					6
43	Recovery Van	14	2		1	1	18
44	Scooter/Moped	19125	3626	4403	5009	4037	36200
45	Scooter With Side Car	2		1		1	4
46	Self Loading Concrete Mixer	3					3
47	Three Wheeler(Goods)	60	3		5		68
48	Three Wheeler (Passenger)	2493	475	638	748	242	4596
49	Three Wheeler Private	3					3
50	Tourist motor cab/Taxi	13					13



<b>51</b>	<b>Tourist Maxi Cab</b>	<b>2</b>					<b>2</b>
<b>52</b>	<b>Trailer(Commercial)</b>	<b>68</b>					<b>68</b>
<b>53</b>	<b>Trailer(Agr.)</b>	<b>25</b>			<b>1</b>		<b>26</b>
<b>54</b>	<b>Trailer With Private Veh.</b>	<b>11</b>			<b>1</b>		<b>12</b>
<b>55</b>	<b>Wheel Loader</b>	<b>22</b>			<b>4</b>	<b>3</b>	<b>29</b>
<b>56</b>	<b>110-Description Not Found</b>	<b>164</b>	<b>10</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>187</b>
<b>57</b>	<b>73-Description Not Found</b>	<b>1</b>					<b>1</b>
<b>58</b>	<b>108-Description Not Found</b>	<b>10</b>					<b>10</b>
<b>59</b>	<b>219-Description Not Found</b>	<b>1</b>					<b>1</b>
<b>60</b>	<b>220-Description Not Found</b>	<b>1</b>					<b>1</b>
<b>61</b>	<b>87-Description Not Found</b>	<b>2</b>	<b>1</b>	<b>1</b>		<b>2</b>	<b>6</b>
	<b>Total Number of vehicle</b>	<b>93868</b>	<b>14423</b>	<b>15301</b>	<b>15953</b>	<b>10984</b>	<b>150529</b>

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