

**ENVIRONMENTAL SECURITY AND SUSTAINABILITY  
IN KASHMIR**

*Dissertation Submitted to Sikkim University for the Partial Fulfillment of the  
Requirement for the Award of the Degree of*

**MASTER OF PHILOSOPHY**

**JAMSHEED JAMEEL MIR**



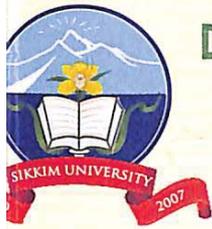
**Department of Peace and Conflict Studies and Management**

**School of Social Sciences**

**Sikkim University**

**Gangtok-737102**

**2014**



DEPARTMENT OF PEACE & CONFLICT STUDIES & MANAGEMENT

SCHOOL OF SOCIAL SCIENCES

SIKKIM UNIVERSITY

[A Central University established by an Act of Parliament of India, 2007]

Date: 10<sup>th</sup> July, 2014

**DECLARATION**

I declare that the dissertation entitled “**Environmental Security and Sustainability in Kashmir**” submitted to Sikkim University for the award of the degree of **Master of Philosophy**, is my original work. This dissertation has not been submitted for any other degree of this University or any other University.

Name – *Jamsheed*  
Name – Jamsheed Jameel Mir

Roll No. - 12PDPC02

**We recommend that this thesis be placed before the examiners for evaluation.**

**Dr. Salvin Paul**

**Supervisor**

Department of Peace &

Conflict Studies & Management

Sikkim University

6<sup>th</sup> Mile Samdur, Tadong

Gangtok, Sikkim 737102

**Dr. Nawal K. Paswan**

**Head of the Department**

**Head**  
Dept. of Peace & Conflict Studies & Management  
School of Social Sciences  
SIKKIM UNIVERSITY  
6th Mile, Tadong 737102, Gangtok- Sikkim



DEPARTMENT OF PEACE & CONFLICT STUDIES & MANAGEMENT

SCHOOL OF SOCIAL SCIENCES

SIKKIM UNIVERSITY

[A Central University established by an Act of Parliament of India, 2007]

**CERTIFICATE**

This is to certify that the dissertation entitled “**Environmental Security and Sustainability in Kashmir**” submitted to the SIKKIM UNIVERSITY in partial fulfillment of the requirements for the degree of **Master of Philosophy in Peace and Conflict Studies and Management**, embodies the result of *bona fide* research work carried out by **Mr. Jamsheed Jameel Mir** under my guidance and supervision. No part of the thesis has been submitted for any other Degree, Diploma, Associate-ship and Fellowship.

All the assistance and help received during the course of the investigation have been duly acknowledged by him.

**Dr. Salvin Paul**

**Supervisor**

Department of Peace &

Conflict Studies & Management

Sikkim University

6<sup>th</sup> Mile Samdur, Tadong

Gangtok, Sikkim 737102

**Place** :Gangtok

**Date** :10<sup>th</sup> July, 2014

*Dedicated to My Family*  
*& Grandfather Late Sonauallah Mir...*

## CONTENTS

<b>Acknowledgement</b>	<b>i-ii</b>
<b>List of Tables</b>	<b>iii</b>
<b>List of Figures</b>	<b>iii</b>
<b>Abbreviations</b>	<b>iv-vi</b>
<b>Maps</b>	<b>vii-viii</b>
<b>Chapter I</b>	
<b>Introduction</b>	<b>1-10</b>
I.I Environmental Security and Sustainability	4
I.II Rationale and Scope	7
I.III Objectives	8
I.IV Research Questions	8
I.V Hypotheses	9
I.VI Research Methodology	9
I.VII. Chapterisation	9-10
<b>Chapter II</b>	
<b>Environmental Security: A Global Perspective</b>	<b>11-34</b>
II Introduction	11
II.I.I. Meaning of Environmental Security	12
II.I.II. Significance of Environmental Security	13
II.II. Theoretical Perspectives	14
II.II.I Environmental Scarcity or Resource Scarcity Theory	14
II.II.II Trans-boundary Theory	15
II.II.III Securitization Theory	15

II.II.IV Buzan's Constructive Securitization Theory	16
II.III. Identification of Environmental Security Issues	18
II.III.I Environmental Change: Present and Future Implications	18
II.III.II Globalization and Environmental Change	21
II.IV Environmental Debate	23
II.IV.I North South Debate	26
II.V. Critiques of Securitization of Environment	27
II.VI. Environmental Sustainability	28
II.VI.I. Challenges to Environmental Security and Sustainability	29
II.VII. Conclusion	30-34

### **Chapter III**

<b>Environmental change as a Non -traditional Security Threat in India</b>	<b>35-59</b>
III. Introduction	35
III.I.I Climate Change	36
III.I.II Climate Change and Agriculture	37
III.I.III Trans-boundary Environmental Issues	39
III.I.IV Land Degradation	41
III.I.V Forest Degradation	43
III.I.VI Water Pollution	45
III.II Environmental Planning In India	48
III.III Environmental Legislations	49
III.III.I Environmental Protection Act 1986	49

III.III.II. Air (Prevention and Control of Pollution) Act, 1981	50
III.III.III Water (Prevention and Control of Pollution) Act, 1974	50
III.III.IV National Environmental Policy 2006	51
III.IV. Organizations	51
III.IV.I. Ministry of Environment and Forests (MoEF)	51
III.IV.II Central Pollution Control Board (CPCB)	52
III.V. India's International Agreements	52
III.V.I. Goals and Targets for Post 2015 Framework	54
III.VI Conclusion	56-59

#### **Chapter IV**

<b>Environmental Security and Sustainability in Kashmir</b>	<b>60-98</b>
IV. Introduction	60
IV.I.I. Armed Conflict and Environment	61
IV.I.II. Environment and Militarization	64
IV.I.III. Ammunition Depots, War Preparation, Environment and Livelihood	67
IV.I.IV. Fencing, Environment and Livelihood	69
IV.V. Military Establishments, Environment and Sustainable Planning.	70
IV.II. Climate Change and Implications in Kashmir	73
IV.II.I Climate Change and Agriculture	74
IV.II.II Tourism and Environment	76
IV.II.III Management of Tourism	77
IV.III. Environmental Sustainability, Planning and Management.	78
IV.IV Data Analysis and Interpretation	80

IV.V. Conclusion	96-98
<b>Chapter V Conclusion</b>	<b>99-102</b>
<b>Bibliography</b>	<b>103</b>
<b>Appendix</b>	<b>116</b>

## **Acknowledgement**

I am grateful for support and encouragement from Allah and a large number of people. I extend my sincere gratitude to Dr Salvin Paul for supporting me in doing the work from the preliminary stages. I thank him for his constructive suggestions, encouragements, and advice and for helping me to upgrade the quality of the work. I owe special thanks to Dr. Nawal K Paswan (HOD) for helping me and providing me important data and relevant study materials. I would like to thank Dr. Sangamitra Choudhary for her encouragement and effort. I also express my gratitude to the library staff of Teesta-Indus Central library especially Anisha Khatoun for being supportive and cooperative.

I thank all my friends in the Department of Peace and Conflict Studies and Management, especially Debashish Nath, Neeraj Adhikari, Reshma, Sabitri, Wasim and others for their valuable suggestions and support. Contributions of Debashis Nath are highly acknowledged as without his help the work would not have been completed within the stipulated time. I owe a deep sense of gratitude to Dr P Newton (Faculty member of Dept. International Relations) for his support and data.

I like to thank the participants in my fieldwork, who willingly shared their precious time during the process of interviewing and filling Schedule especially Ab. Qadeer, Syed Ali Shah Geelani (Chief of Hurriyat Conference), S. Kumar, Dr Mehraj-u-din Hajini, Mir M Muzamil, Irfan Ahmad Bhat, academicians at Kashmir University and others. My special thanks to all those persons at NGOs, Government Offices, etc. who willingly shared official records and statistical data with me.

Special thanks are due Fayaz ahmad, Muneer Ahmad, Aijaz ahmad for being supportive since the beginning. I would like to thank my young cousin Mr. Najeebullah Wani for being with me in rough terrain during fieldwork. Thanks for being more enthusiastic in the field work.

Last but not the least; I would like to thank the towering personalities of my life, my grandfather and my parents Muhammad Ismail Mir and Hafiza Bagam, Gh. Nabi Mir (Zahid), Suhail ahmad Mir, Sisters Rukiya Mir, Nadira Jameel and Saliya Sadia.

Blessings of Lala my grandfather and parents have always been with me. I thank my dad for his encouragement and collecting important data for me from various sources. My family members, Suhail Ahmad, Gh Nabi Zahid have been my moral strength and supportive throughout my studies.

I would like to thank all those persons who directly or indirectly helped me to carry on my dissertation.

I fully owe the responsibility for any factual or other mistakes having crawled up unintentionally in the dissertation. I will be thankful if such discrepancies are brought about to notice, any suggestion for improvement will also be gratefully acknowledged.

**JAMSHEED JAMEEL MIR**

## List of Tables

1. Food Grain Production in relation to Population Growth.	75
2. Increasing population and low production leads to food deficiency	76
3. Categorization of sample population on the basis of gender.	82
4. Categorization of population on the basis of age group.	82
5. Categorization of sample population on the basis of educational qualification.	83
6. Is climate changing from last 30 years?	84
7. What are the patterns of Climate Change in your opinion?	85
8. What are the effects of Climate Change in your opinion?	85
9. Does Climate Change has any consequences on your livelihood?	86
10. Is armed conflict and Militarization a threat to Environmental Security and Sustainability of Kashmir?	86
11. Is armed conflict and militarization affecting environment and Livelihood of the common people?	90
12. Is Tourism in Kashmir a threat to the environment?	91
13. What kind of tourism you think is most disturbing Kashmir Environment?	92
14. What are the consequences and impacts of tourism on environment?	92
15. What is the role of Government, Civil societies, Political parties etc to address the environmental issue?	93
16. How do you think the problem can be solved?	94
17. Is the web of Climate Change, armed conflict, militarization and tourism Threatening Environmental Security, Sustainability and livelihood in Kashmir?	94
18. In your opinion how can these issues/ problems should be solved or managed?	95

## List of figures

Fig. 3.1: Annual cost of Environmental damage In India in Billion Rs.	47
Fig. 4.1: Fallen trees in Wular Lake Trees.	87
Fig. 4.2: Tosa-maidan meadow that is used for artillery practices.	88

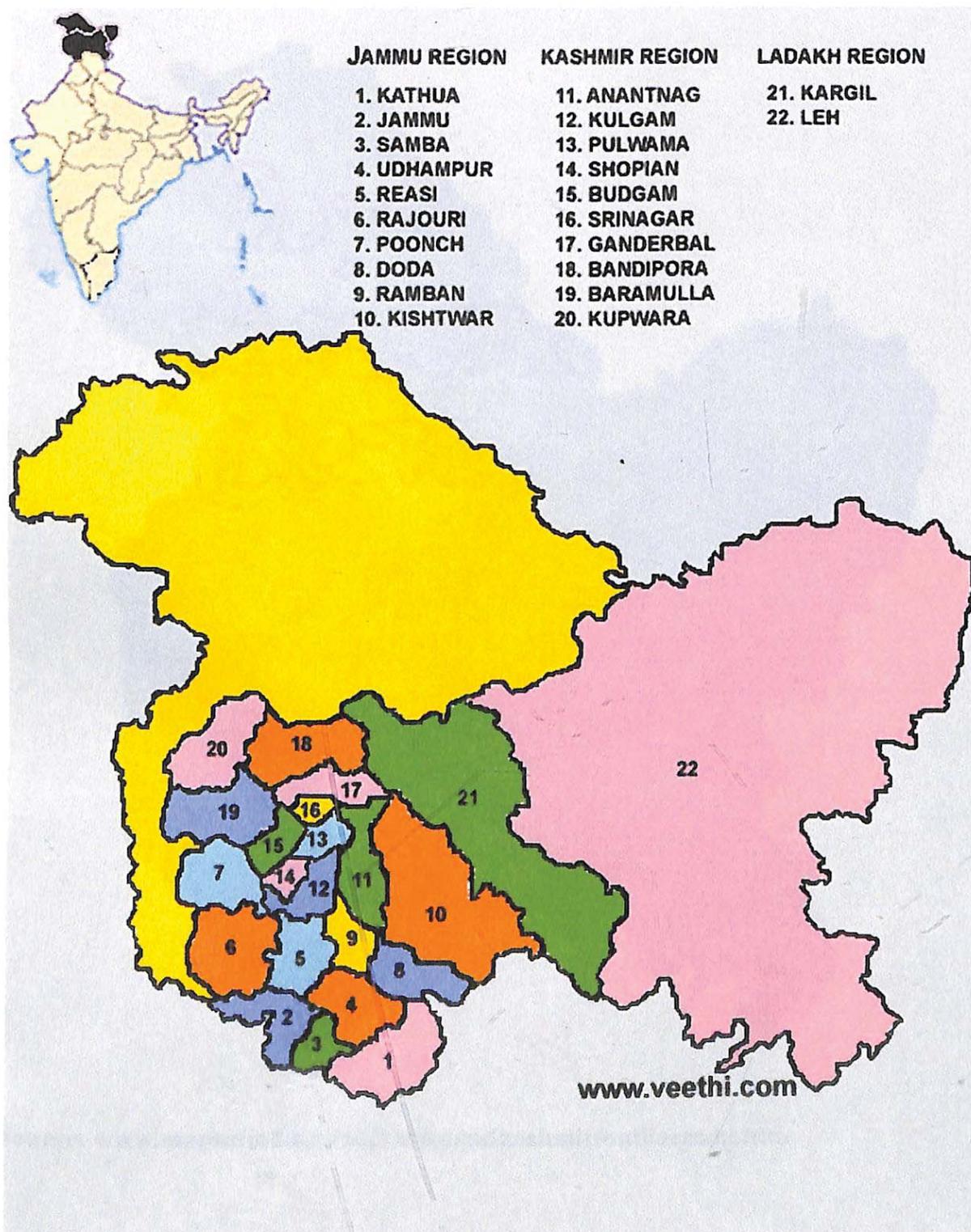
## **Abbreviations**

AAQM	Ambient Air Quality Monitoring
AFSPA	Armed Force Special Powers Act
APM	Anti- Personnel Mines
ATRC	Arms Trade Resource Centre
CO	Carbon Monoxide\
CPCB	Central Pollution Control Board
DERS	Directorate of Environment and Remote Sensing
ELI	Environmental Law Institute
ENMOD	Environmental Modification
E Flow	Environmental Flow
EPA	Environmental Protection Agency
EPA	Environmental Protection Act
ESA	Endangered Species Act
FoEI	Friends of Earth International
GDP	Gross Domestic Product
GOI	Government of India
Ha	Hectare
HCC	Hindustan Construction Company.
HEF	High Explosive Fragmentation
HRW	Human Rights Watch
ICBM	Inter-Continental Ballistic Missile
ICAR	Indian Council of Agricultural Research
ICPD	International Conference on Population and Development
IGO	International Governmental Organisation
INCCA	Indian National Network for Climate Change Assessment
IPA	International Peace Academy
IPCNE	Islamic Principles for the Conservation of Natural Environment
IPCC	Inter-Governmental Panel on Climate Change
ICIMOD	International Centre for Integrated Mountain Programme

IPPNW	International Physicians for the Prevention of Nuclear War.
IUCN	International Union for Conservation of Nature
J&K	Jammu and Kashmir
KEA	Kashmir Economic Alliance
LAWDA	Lakes and Waterways Development Authority
LOC	Line of control
MDG	Millennium Development Goals
MoEF	Ministry of Environment forests
MW	Mega Watt
NATO	North Atlantic Treaty Organization
NGO	Non Governmental Organization
NHPC	National Hydro Project Corporation
NPK	Nitrogen Phosphorous Potassium
NRDC	Natural Resource Defense Council
OPCW	Organization for the Prohibition of Chemical Weapon
PAK	Pakistani Administrated Kashmir
PRIO	Peace Research Institute Oslo
RCRA	Resource Conservation and Recover y Act
SACEP	South Asia Cooperative Environmental Programme
SASB	Shri Amarnath Shrine Board
SIPRI	Stockholm International Peace Research Institute
SPCB	State Pollution Control Board
SPEC	Society for Promoting Environmental Conservation
TNC	Transnational Organization
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNHCR	United Nations high Commissioner for Refugees
UNHS	United Nations Human Settlement Programme

UP	Uttar Pradesh
US	United States
WGI	World Game Institute
WHO	World Health Organization
WMD	Weapons of Mass Destruction
WMDA	Wular Manasbal Development Authority
WWF	World Wide Fund

## Map of Jammu and Kashmir



Source: [www.sethi.com/images/places/states/jammu-and-kashmir-state-map-withdistricts.png](http://www.sethi.com/images/places/states/jammu-and-kashmir-state-map-withdistricts.png)

**Outline (Edited) Map of Jammu & Kashmir showing field study areas**



**Source: [www.mapsofindia.com/jammuandkashmir/outlinemap.htm](http://www.mapsofindia.com/jammuandkashmir/outlinemap.htm)**

**Chapter I**

**Introduction**

# Chapter I

## Introduction

Environmental security has been defined differently by various scholars. It means, 'the maintenance of local and planetary biosphere as the essential support system on which all other human enterprises depend' (Buzan, 1991:9). Environmental security is the disarmament policy of future (UNDP, 1994:21). The basic logic of environmental security is that in a global perspective, humankind is living beyond the carrying capacity of the earth. Carrying capacity depends on numbers, technology and life style. Environmental security is the current and future availability of goods and services from a healthy environment for humankind and nature. The availability is reduced when there are environmental destructions which lead to scarcity and trigger conflict and violence.

Environmental security is vital to human security and well being (Hecker, 2005:09). The environment provides essential material assets and economic base for human endeavor. Non-sustainable use of natural resources including land, water, forests, glaciers, fisheries can threaten individual livelihoods as well as local, national and international economies. It can also increase human vulnerability, causing human migration and insecurity which can contribute to tensions and conflicts. The goals of Environment security are, repairing damage to the environment for human life support and for moral value of the environment itself and preventing damage to the environment from attacks and other forms of human abuse (Linkov, 2006:55). Environmental security addresses threats to humanity posed by human impact upon the "natural" environment (Sheehan, 2010:85). Environmentalists have used "Environmental Security" to "Securitize" environmental problems – to make them matters of "high" politics that warrant extraordinary responses equal in magnitude and urgency to their response to more orthodox security threats (Soroos,1994:30). In nutshell the Environment can be both an object to be secured and source of risk (Barnett, 2001:155). The concept of environmental security facilitates the exchange of knowledge among people from diverse arms of Government, civil society and academia. Environmental security field has been criticized by many who emphasized that environment should not be securitized because there can be conceptual and theoretical short comings.

Environmental problems have been dealt militarily in many cases. The militarization of the environmental issues is criticized by various scholars and International Organizations such as Greenpeace, Friends of Earth (FOE) etc by putting forward various good reasons. The military can lead to use and degradation of land, resources and generation of toxic wastes (Renner, 1991:75). As a military strategy environment can be deliberately manipulated to degrade opponent's environment (Westing, 1997:22). All environmental issues may not need military responses though military involvement has been put in certain areas for surveillance of wildlife poaching and Trans-boundary environmental traffic in case of Africa and Northern Australia respectively. Others contend that Military must be addressed as a cause and not cure of environmental problems (Finger, 1991:121).

In this way the expanding field of environmental security is posing challenges to Governments and Policy makers to frame the policies short of military involvement and coercive methods. Throughout the world, human activity has resulted in significant deterioration of biosphere. The global environment change will have significant effects on health and prosperity of human societies, which can increase human deprivation (Smith, 2002:71). Because of environmental degradation and scarcity of resources violence has increased and many ethnic conflicts have already been triggered in African and some Asian states. Many countries are already facing tough time to deal with environmental degradation. The combined costs of environmental degradation are about 15 percent of China's gross national product. Environmental destruction in North Korea has been a factor in flooding and poor harvests that led to death of millions from starvation in the latter half of the 1990's (In-tacksung, 2007:08). Due to climate change, deforestation, conversion of agriculture land into construction and mega cities, population increase, expansion in industrial areas and non-sustainable development have brought negative effects on environment and destruction to stability and biodiversity of Asia. Similarly what is now attracting the attention of security analysts, climate and environment experts is the receding of Himalayan glaciers at an alarming rate.

One of the shocking news for people of sub-continent was that most of the glaciers in Himalayas will be melt by 2035, because glaciers in Himalayas are receding faster than

in any where (IPCC, 2008:17). The Ganga basin is home to 407 million people contains 40 percent of India's cropland. If the speed of retreating continues it will pose a great danger to the regions environmental, food and water security. Efforts are been put to address the root cause of all these problems.

Globalization has brought both positive and negative results, while some (nations, societies) are gaining and some are losing. In the case of environmental security, globalization has proved helpful in awareness of ecological and environmental emerging issues, but globalization has also brought negative results as far as, supply, demand, consumption etc are concerned. Due to advancement in communication and transfer of ideas in the globalised era, globalization has brought consciousness among the people in Jammu and Kashmir about protecting and repairing the environment .On the other hand, there are its negative effects also due to unchecked flow of tourism, developmental activities, militarization etc.

Jammu and Kashmir situated in the northern part of India has attracted large number of visitors for its scenic beauty, glaciers, forests, lakes, rivers, flora and fauna etc since centuries. Despite being located in the ecologically sensitive Himalayan region, the Governments response to environmental issues in Kashmir has been negligible. The wars, armed conflict and continuous military activities have lead to environmental insecurity in Kashmir. Lot of vegetation, flora and fauna, and other natural resources have been lost in the unfortunate periods of Kashmir history. Because of the political turmoil in Kashmir and continuous enmity between India and Pakistan, no attention is given to the environmental degradation and resource loss of Kashmir which is nestled in one of the most ecologically fragile areas of Himalayas.

The armed conflict, huge militarization and military activities within valley and border areas of Kashmir, Tourism etc are still depleting and degrading its environment. The conflict has direct and indirect impact on environment of Kashmir. In addition to degradation of environment livelihoods of thousands of people has been hampered. Since the last many decades, the changing climate has further escalated the problem. People who depended on agrarian activities earlier despite large tracts of land under military in

Kashmir are now bearing the brunt of low outputs. In addition to vast lands under military and increasing population, Kashmir is facing now food deficiency and if the situation continues there might be a crisis in future. During the last few decades of conflict, encroachments, deforestation and pollution has increased manifold. The unchecked flows of tourists to some ecological areas have raised debates. In a nutshell, the conflict has direct and indirect implications on environment, livelihoods and sustainable planning in Kashmir.

## II. Environmental Security and Sustainability

Since the end of Cold war, the literature on environmental security has expanded rapidly. Owing to the importance of environment and its relationship to human security, the IUCN undertook a review of the literature on environmental security in mid-1990 and determined that there were good reasons to take heed of this research (Mathew, 2007:13). The idea that environmental change is serious enough to be considered a security issue was making sense to a growing community of analysts, activists and practitioners. A flood of reliable scientific information about global climate change and biodiversity loss was channeled into the 1992 Earth Summit at Rio. Flush with new resources and interest the sub-field of Environmental security expanded rapidly.

In 1983, Ullman published '*Refined security*' in which he cited that 'Conflict' over resources will grow more intense and there will be military confrontation between North and South. In 1989 Mathew's '*Redefining Security*' stressed the trans-boundary character of the environmental problems and its challenges. Mathew was seeking to 'Securitize' environmental problems that may be accorded with policy agenda. Most important work which emphasized environment as a security issue is Kaplan's '*The coming Anarchy*' published in 1994 which speaks Environment as a hostile power.

Homar Dixon, prominent for his views that "Environmental scarcity" can lead to conflict is widely debated. The theory proposes three types of environmental scarcity: Demand-induced scarcity, which results from population growth and consumption behavior. Supply-induced-when degradation and depletion of resources causes resources to decline

sharply. Structural scarcity occurs as a result of imbalanced power and resources within a society. Another influential study of environmental security was conducted by Environment and Conflict Project (ENCOP) at Swiss peace centre in 1999 aimed to study links between environmental degradation, mal-development and violent conflict. Then researchers at Peace research institute in Oslo see Environmental security from a different perspective, and contend that cooperation is more likely to result from environmental stress than conflict. Now some analysts describe Environmental security as 'Ultimate Security' (Buzan, 1998:37).

As far as theoretical approaches are concerned, Scholarly works have brought the environmental security research in academic fields and policy dynamics. Barnett's 'The meaning of Environmental security' (2001) offers a constructive alternative that moves the policy debate ahead while peace and justice is regarded central to environmental security. Sheehan's work 'International Security – an analytical survey' (2010) explains how environmental security links with environment and security in a fundamental challenge to the international political hierarchy. The edited work by Okereke 'The politics of the Environment' (2007) offers information and analysis with particular dimension to Globalization. 'Global Security' by Sean Kay (2012) provides important guide to power, peace, regional flashpoints and mostly the environmental security issues in the era of globalization. 'Security and Development' edited by Robert Picciotto (2008) aims to bridge the cultural divide between security and development and offers certain insights how Environmental security is possible at various levels and approaches.

The annual reports of UNEP (2007- 2013), World Commission on Environment and Development (WCED) throw light on environmental depletions, changes that world is facing and how far the states and Governance is responding them. The subject of Environmental security has been promoted in various journals such as, Journal of Environmental Peace, International Security, Foreign Affairs, Foreign policy, Millennium project's monthly environmental security scan etc. There are various research institutes looking at various dimensions of environmental security such as, Woodrow Wilson institute, Institute of Environmental security at Hague Brussels, Earth policy institute etc.

There is quite dissatisfaction among the scholars of South with the North as South believes that the policies, approaches of the north is exploitive exercise of power of the developed world. However, the research and literature on environmental security is expanding in the developing world and South is also in the race of framing policies to deal with environmental insecurity according to their regional approaches. The Third Annual South Asian NGO Summit: Environmental, Political and Economic Dimensions of Security was held in February 1995 which proposed that threats are posed on environment's security by state, donor, international institution actions and cannot be isolated from poverty, governance and regional Conflict Resolution and local communities are better able to manage natural resources in their own areas.

In India, the literature on environmental security is expanding rapidly and some scholars have cited that the Socio-Economic perspectives can be affected because of environmental changes mostly due to climate change pattern and its effects on Himalayan glaciers and water resources (IPCC,2008:23). The current abundant literature on environmental security in India focuses now on various dimensions especially on Trans-boundary, maritime and local environmental issues. Institute of Defense Studies and Analysis (IDSA) in New Delhi is one of the leading institutes focusing on India's security issues and publishes journals, periodicals, papers etc which focuses how these issues can be coped militarily and non-militarily.

The scholarly attention to Environmental security in state of Jammu and Kashmir has been meager. Although the number of works highlighted the impact of armed conflict on environment of the area, but the literature do not satisfy the demand and approaches of environmental security literature. So, there is a research gap between India's and Kashmir's environmental security literature in general and between environment and security dynamics in Kashmir in particular. There is no complete work done on environmental security in Kashmir either. There are various works which focus on impact of armed conflict on environment, society and economy. A work on 'Impact of turmoil on economy of Kashmir' puts forward the data regarding loss of economy, flora and fauna. The various research Departments in Kashmir's academic institutes have carried out research works on environmental issues and their impact on Fish resources ,

Agriculture, water quality etc. The scattered literature on the various dimensions of environment issues can be framed in the environment security dynamics. In short, the debate over environmental security is attracting the attention of scholars, policy makers etc, while their important function is to serve as warning lights particularly in a world of growing environmental consciousness (Glieditsch, 2005:75).

### **III. RATIONALE AND SCOPE**

Over the years Environmental security has emerged as an important study and significantly highlighted the environmental issues which otherwise were sidelined or ignored in past. Environmental security is vital for human well being because, environment provides essential material sources of sustenance. Environmental insecurity has potential to destroy economy, destabilize peace and create conflict within societies and nations even in future generations. Scholars in environmental security research have to unearth and identify those environmental issues capable of escalating further. Environmental security is vital for all particularly those societies and nations who directly depend on environmental assets for their sustenance and livelihoods or are affected by environmental changes. The escalating environmental degradation in ecologically sensitive Kashmir has adversely affected society, economy and has potential to create more problems. Government and policy makers in recent past have ignored the natural calamities and disasters, increasing population, food deficiency, unequal and unbalanced land distribution in Kashmir.

This study attempts an evaluation of the present stance of Government and its existing policies and approaches. This study is helpful in highlighting the emerging environmental issues and bringing them into policy dynamics. This study proposes changing the status quo, repairing environment and reducing the present and future pressure on environment. The work is essential to bridge the gap between policy makers and Government (Securitizing actors) so that issues can be addressed on priority basis and in this way this study is important to identify the problems that may escalate into a future crisis. This study points out that Climate change, armed conflict/ militarization and Unsustainable tourism form the web of problems which cannot be ignored and viewed in isolation. The

study demands new approaches, policies and responses from Government keeping in view ecological sensitivity, land lockedness, huge military buildup and increasing food deficiency in Kashmir. It encourages the government to frame policies which can enhance environmental security, sustainability and livelihood resilience.

This study is conducted with the help of primary and secondary data collected through field survey and existing literatures. The research areas like Gurez, Sonamerg, Budgam etc are some of the places facing the impacts of environmental changes. Field survey is conducted at these places to make the study more objective. Special care is taken to ensure that there is complete absence of ethnocentrism or biasness in any part of the research.

#### **IV. OBJECTIVES**

1. To examine global environmental security discourse.
2. To understand how environmental security consciousness has been shaped at local level.
3. To analyze how environmental depletion have affected the livelihoods of people
4. To study the major aftereffects of Environmental insecurity.
5. To analyze how these threats have affected the environment and livelihood of people in Kashmir.

#### **V. RESEARCH QUESTIONS**

1. What are the major global discourses on environmental security and sustainability?
2. How do the environmental changes have been treated as Non-Traditional threats in India?
3. How do environmental insecurity affects sustainability and livelihoods of people Kashmir?

## **VI. HYPOTHESES**

- Climate Change, Armed conflict/Militarization and Unsustainable Tourism have factored Environmental insecurity in Kashmir.
- Various threats to Environmental security have affected environment and livelihood of people.

## **VII. RESEACH METHODOLOGY**

The research has employed both qualitative and quantitative methodology. Data has been collected from both primary and secondary sources. Primary data is collected through field surveys, interviews and with the help of questionnaire method. Interviews are conducted taking responses of experts, scholars, farmers, Government officials etc. Response is also taken from natives of the region. Official record and reports that are available in various government departments are also accessed. Primary data include original documents, interviews, official records, research reports, etc.

Secondary data is collected from books, magazines, journals, articles, articles in newspapers, etc. The primary focus of the study is threats to environmental security and its impact on livelihood of the people.

## **I.VIII. CHAPTARIZATION**

Chapter I deals with the introduction and gives an overview to origin and role of environmental security. It also discusses why environmental security has become so important in the contemporary world where economic development is being fuelled by excessive use of environmental resources. This chapter also states the Rationale and Scope of the study, Objectives, Research questions, Hypotheses and Research Methodology on which the entire research is carried out.

Chapter II discusses the theoretical aspect of environmental security, significance of environmental security and its role in highlighting the environmental issues. It also brings out the contradictions in North-South debate and critiques of securitization of environment. It discusses the most debated issue of environmental sustainability and its

relevance in environmental security. It ends with various challenges to environmental security and sustainability.

Chapter III deals with environmental change as a non-traditional security threat in India. It delineates implications of Climate Change in India and briefly discusses about future potential of Climate change as well as report of IPCC 2014. It highlights trans-boundary environmental issues of India, land degradation and other kinds of pollutions, their causes and impact on livelihood of the people. It also narrates the environmental legislation in India, role of different Organizations and India's International environmental agreements.

Besides, it briefly introduces the Goals and targets for Post 2015 framework set by different nations including India at International Summits.

Chapter IV specially deals with environmental issues being confronted by Kashmir that has been evolved due to direct and indirect causes of armed conflict, militarization and climate change and tourism. This chapter elaborates the collective impact of these causes on environment, sustainable planning and livelihood of the people. The chapter ends with all these causes that lead to food deficiency and future crisis in Land locked Kashmir.

Data, analysis and interpretation are placed in this chapter. The field work was done at Gurez (Bandipora), Tosa-maidan (Budgam), Sonamerg in North, Central and South East parts of Kashmir valley respectively. The collected data are analyzed in this chapter by using various tables. The research was conducted on sixty respondents based on a structured questionnaire.

Chapter IV gives the conclusion of the study. It briefly presents the gist of every chapter and underlines the findings of the field work. It states that armed conflict, militarization, climate change and tourism effect environment, sustainable development and livelihood of the people. It points outs that because of all these problems, people have to depend on other sources, which are unsustainable, costly and inappropriate for the environmental condition of Kashmir. It also suggests alternative approaches to address these problems and underlines the areas of further research.

## **Chapter II**

### **Environmental Security: A Global Perspective**

## CHAPTER II

### Environmental Security: A Global Perspective

#### Introduction

The word 'Security' has come from Latin word 'Securitas' meaning lack of care. Security is the condition of being protected from or not exposed to danger and safety. Security is state of being free from danger or injury and freedom from anxiety or fear. Threat is something that is source of danger. Environmental degradation has been a central issue in the reinterpretation of security since 1970's. Environmental degradation affects livelihoods, hampers individual security and promotes transnational insecurity; hence environmental degradation is a significant threat to security for individuals and nation states.

The impact of environmental degradation on economic growth, livelihoods and the idea that environmental problems are indeed "security" problems for both humans and state remains valid. An important literature that linked Environmental issues with security was Richard Falk's *'This Endangered Planet'* (1971). The notion that environmental treats to global life systems are as dangerous as the armed conflict was gaining attention during 1970's. In 1983 Richard Ullman's article "*Redefining Security*" sought to broaden the concept of National Security to include Non-Military threats to quality of life of its citizens. After the end of cold war the concept of security broadened from traditional security of nation state to that of Economic, Societal, Political and Environmental security of individuals. Throughout 1980's and 1990's, the environment was one of the issues that provoked the debate among other non-military aspects of security. Following the debate that environmental changes and degradations affects individuals, societies the Environment was recognized as one of the sectors that needed to be analyzed in contemporary security dynamics. In some discussions environment was explicitly linked to matters of international security even the Soviet Union in 1980's suggested that environmental security was now very important. Since the end of cold war the field of environmental security has played a significant role in highlighting the environmental

problems. Scholars in this field are identifying the causes of environmental problems, their present and future implication so they can be addressed on priority basis before the problems can explode into a major crisis.

This chapter will discuss the core themes of environmental security research, causes and implications of environmental issues. It will also explain the challenges being faced by environmental security field and will discuss resemblance of environmental sustainability in the realm of environmental security research.

### **II.I.I. Meaning of Environmental Security**

‘Environment is the sum of all external conditions affecting the life, development and survival of an organism. It refers physical conditions that affect natural resources (climate change, geology, hazards) and the Ecosystem services that sustain them’. The physical environment like topography, drainage pattern, climate vegetation, water bodies etc are useful to man as they provide basic needs of human being. There is no common agreed definition of environmental security as scholars see it through parameters of their own interest and realm of study .People of various professions in different countries have defined and understood the concept of environmental security in different ways (Skarlato, 2008:170). However escalation in environmental security research has put forward many definitions. ‘Environmental security is the current and future availability of goods and services from a healthy environment for humankind and nature. The availability is reduced when there is environmental destructions which leads to scarcity and triggers conflict and violence.’(Hacker, 2005:57). It means, ‘the maintenance of local and planetary biosphere as the essential support system on which all other human enterprises depend’ (Buzan, 1991:44)). Environmental security is the disarmament policy of future (UNDP, 1994:21). Environmental security is defined as ‘the freedom from environmental destruction and resource scarcity’ (Gleditsch, 2001:32). Generally Environmental security means availability of clean air, non degraded land and uncontaminated water. Environmental security addresses threats to humanity posed by human impact upon the “natural” environment (Sheehan, 2010:87). The purpose of environmental security is ‘ Public safety from environmental dangers caused by natural and human processes; Natural resource depletion and scarcity and growing gap between supply and demand of

environmental resources; The correlation between violent conflicts and environmental degradation' (Skarlato, 2008:172). 'Environmental security is defined as 'the process of peacefully reducing human vulnerability to the effects (and risks) of human induced environmental degradation by addressing the root causes of environmental degradation and human insecurity' (Barnett and Dovers, 2001:158). In this human security approach one finds actual meaning of environmental security (Floyd, 2008:07). 'Defining environmental security as a process in this way overcomes the hitherto strong equation of security with defense of status quo' (Barnett and Dovers, 2001:158).

### **II.I.II. Significance of Environmental Security**

Environment has links with economy, politics, society, health and prosperity of individuals, nations and provides important base for human endeavor. Environmental assets provide fuel for international economy, peace and politics and have potential to shape the future course of humankind. World politics has serious and great impact on environmental issues as international security and peace are much dependent on these issues (Chatterjee, 2010:43). Understanding environmental security has two fold importance , 'one has to understand the transformations in the theoretical developments of the concept of security, second one has to envisage the link between environmental changes and livelihood strategies on human beings on local level and broader impact of environmental changes on a society' (Biswas, 2011:55). 'Environmental security is vital to human security and well being' (Jeanna, 2005:31).

The goals of environmental security are, repairing and preventing damage to environment from attacks and human abuse for moral value of environment itself (Linkov, 2006:78). From last many years the concept of environmental security has played a significant role in highlighting the emerging human induced environmental problems which are threatening humankind. Some marginalized and abandoned elements of security research were reinvigorated by environmental security and its research has contributed to analyzing and understanding the requirements of security in iniquitous and interdependent era (Mathew, 2002:13). 'Environmentalists have used 'Environmental Security' to 'securitize environmental problems –to make them matters of 'high' politics

that warrant extraordinary responses equal in magnitude and urgency to their response to more orthodox security threats' (Soroos, 1994:11). The increase in dialogue between security, development, policy makers and environmental researchers is because environmental security has become important concern of development studies (Barnett, 2012:223). It is now stressed that environmental security should be studied in interdisciplinary approach. To understand environmental security properly an interdisciplinary approach is essential. Identifying environmental threats as security concern becomes an interdisciplinary practice for academics and activists (Biswas, 2011:06). As Barnett argues 'Environmental security is moving away from International Relations and more into interdisciplinary social science domain, where sustainability policy is highly relevant. This being the case, we contend that it is less the case that environmental security demands new policies, but rather it demands a renewed commitment to existing policies' (Barnett, 2001:183).

## **II.II. Theoretical Perspectives**

Environmental security research has expanded significantly mostly since Earth summit at Rio in 1992. Review of the literature of environmental security in mid 1990's determined that there were good reasons to take heed of this research (Mathew, 2007:101). Many scholars came forward with their own ideas and theories which are important part in environmental security literature. Some of the theories are

### **II.II.I. Environmental Scarcity or Resource Scarcity Theory**

This theory was propounded by Homer Dixon belonging from Toronto school in 1999. According to this theory Environmental scarcity can contribute to civil violence including insurgencies and ethnic clashes. The scarcities of cropland, fresh water and forests worsen in many parts of developing world will lead to incidence in violence. However, role of scarcity in violence is often indirect and interacts with economic political and generate harsh social effects (Dixon, 1999:12). The Theory proposes three types of environmental scarcity:

Demand induced scarcity: which result from population growth and consumption behavior.

Supply induced scarcity: where degradation and depletion of resources cause decline in resources.

Structural scarcity: occurs as a result of imbalanced power within a society (distribution of resource) (Gleditsch, 2008:179).

**II.II.II. Trans-boundary Theory:-** This theory was propounded by Mathews who stressed that environmental issues can cross many political boundaries and threaten the people of other country. According to Mathew, environmental issues not only threaten existence of states but also survival of the people on the planet and thus environmental issues cover many countries and their affects are trans-border (Parkin et al.,1996:19).

### **II.II.III. Securitization Theory**

Security like many other concepts has not a single meaning. It has been explored understood and extended from time to time and cannot be understood in absolute terms. Security is the condition of being protected from or not exposed to danger and safety. Security is state of being free from danger or injury and freedom from anxiety or fear. In the traditional national security discourse 'security' was believed to be protection from external threats and dangers often coped militarily. Approaches to security were to emphasize arbitration, disarmament, democracy and collective security (Baldwin 1999:70). Maximization of Military Power with technological capability, national recourse self sufficiency was must to achieve the security of the state. During the end of Cold War and transition from the concept of Security of national territory, the security of the people and individuals was gaining ground. Scholars and activists promoted the wider conception of security to undermine the influence of traditional power political thinking on International Relations (Gleditch, 2008:177). The end of the Cold War in 1990 brought new dimension to International security and new conception of security 'Human security' considered the traditional 'state centric' security insufficient to explain emerging threats (Biswas, 2011:2).

Human security means safety from chronic threats as repression, disease and hunger; it means protection from sudden and hurtful disruptions in the daily patterns of life (UNDP, 1994:23). UNDP which uses and adopts a comprehensive approach to the concept of human security has identified seven sectors or domains; Food, Health, Economic, Personal, Community, Political and Environmental. In the domain of Human Security, Environmental Security means availability of clean water, non degraded land and uncontaminated water. However Nontraditional security shift is considered an significant move to new paradigm of security focusing on human security or security of individuals. Now Security is about 'the staging of existential threats in politics to lift them above politics. In security discourse, an issue is dramatized and presented as an issue of supreme priority; thus, by labeling it as security, an agent claims a need for and a right to treat it by extraordinary means' (Buzan et. al.,1998 : 26). There was rise of considerable questions, what kind of security, whose security, how the security is achieved. To answer questions, different scholars and schools framed policies and theories to 'securitize' the different sectors of security. The Copenhagen school has used five sectors of analysis; Political, Military, Economic, Social and Environmental.

#### **II.II.IV. Buzan's Constructive Securitization Theory**

Barry Buzan is part of a research body associated with Copenhagen School who has elaborated the theory of Securitization to conceptualize security issues. Securitizing injects urgency into an issue and leads to sustained mobilization of political support (Emmers, 2012:140). Securitization 'means the issue is presented as an existential threat, requiring emergency measures and justifying actions outside the normal bounds of political procedure' (Buzan et. al., 1998 23). 'Securitization is a process of labeling an issue as security issue and results in the transformation of dealing with it; through label 'security' problems are turned into existential threats that require exceptional, emergency measures' (Julia, 2005:02). 'Threats and vulnerabilities can arise in many different areas, Military and non military, but to count as security issue they have to meet strictly defined criteria that distinguishes them '(Buzan et. al., 1984:54). Any security problem can be transformed into an existential threat. Security is considered as speech act by Waever. Scholars of this thought argue that security is a speech act, because the securitization

process is methodological task facilitated by the Stakeholders (Securitizing actors) (Biswas, 2011:4).

The securitizing actors (Government, bureaucrats, political leaders etc) can suggest to securitize a particular referent. There is audience (citizens of state, section of society) which is important part of securitization. If the audience accepts there is an existential threat, the 'securitizing move' will be successful. The success of speech act is decided by both, the speaker and audience and in this way security does not involve individuals but collectivities. Thus, the theory introduces social constructivist perspective because in the 'securitization' process socially constructed nature of society is reflected. Government plays the role of promoter and speaker in the process of securitization. After the acknowledgement of audience that it is indeed a threat, the issue is labeled and transformed into security issue. Some political procedures, practices and measures can be taken after the particular threat is identified. 'Complete act of securitization consists of and demands both discursive (Speech act and shared understanding) and non-discursive (Policy implementation) dimensions' (Emmers, 2005:89).

In the environmental sector one feature in security 'is the existence of two different agendas: a scientific agenda and political agenda, the scientific refers to natural science and non-governmental activities and the 'scientific agenda is about authoritative assessment (Buzan et. al., 1998:72). 'The extent to which scientific argument structures environmental security debates strikes us as exceptional' (Buzan et. al., 1998:72). The different understanding and perspectives of security among the actors in environmental security are not yet organized in concrete types of organizations (Buzan et. al., 1998:71). The school admits that environmental sectors displays little securitization and that within 'environmental sector 'emergency measures' are still designed and developed in the realm of ordinary policy debates (Buzan et. al., 1998:83). 'The school predicts securitization act can either fail or succeed depending on whether a separate audience accepts the discourse' (Emmers, 2011:140). 'For Buzan et all 'Think Globally act locally' is the motto concerned with environmental sector (Buzan et. al., 1998:87). The school is less clear as what would form an extraordinary measure for non state actors like NGO's and Greenpeace etc (Emmers,2011:141). There is transformative intent that contrasts

with conservative one in the securitization move of environmental sector and the “conservative perspective considers securitization of environment as a way to preserve the ‘status quo’ (Julia, 2005:59).

### **II.III. Identification of Environmental Security Issues**

To argue that particular environmental issue should be considered a security issue, a criteria is used to carefully identify the security issue. Prioritizing the problems, a broad three-tiered frame work serves as a filter provided by Dovers (Dovers and Barnett, 2001:159), which identifies micro, meso and macro problems. Micro-problems are generally Sectoral or local and are not complex; they can be resolved by existing policy measures and do not need extra ordinary responses e.g management of a vegetation reserve or recovery of single species. Meso problems are often contained within a country but are major issues and can be addressed within a timeframe by that country. Meso problems may have Transnational features and may cross national borders e.g water catchment in Middle east and desertification in Sahel. The label of security on Meso-problems is inappropriate because they do not press for humanitarian assistance, do not affect consumption and productions however desertification can be labeled as security issue in certain places. Macro-problems are complex, multi-faceted, fraught with uncertainties, can disrupt human and natural systems e.g Climate Change and Bio-diversity loss, hence the Macro-problems are environmental security issues (Dovers and Barnett, 2001:160).

‘According to rough filter of Handmer from risk perspective , proposes that the problems ,that warrant most attention are those which are largely invisible, unbounded, generally feared and create anxiety; tend to contaminate rather than directly damage, are generally irreversible and not self-recovering ; and which are characterized by profound ignorance’ (Dovers and Barnett, 2001:161).

#### **II.III.I. Environmental Change: Present and Future Implications**

It has been observed that human activity has lead to considerable loss to environment and ecology that sustains life. Climate change, green house gas emissions, air pollution,

depletion of fish resources, Nuclear and industrial wastes into natural resources, Non – sustainable development and other human induced activities are threatening life on the planet. Environmental Degradation has links with Human health problems, cancers, vector borne diseases, disease, nutritional deficient's and respiratory illness. Individual livelihoods as well as local, national and international economies can be threatened because of non- sustainable use of natural resources including water, forests and land. The Global environment change will have significant effects on health and prosperity of human societies, which can increase human deprivation (Smith, 2002:73). Environmental degradation threatens individual and collective economic livelihoods as its effects natural capital and exposes humans to new health risks thus reduces the quality of life and creates inequalities (Barnett, 2001:13). The resource scarcity or the environmental scarcity will lead to conflicts in many places (Homer, 1999:19). Climate change, Bio-diversity loss, ozone layer depletion, Nuclear power etc are considered security under the environmental security framework as their impact is global in scope and long term. The impact of climate change is grave with implications for water supply, forests, biodiversity, agricultural production, international security and human health (IPCC, 2007:15). Apart from being global in scope, these problems are human induced caused due to large scale industrialization, green house gas emissions etc.

The environment has been manipulated and exploited by humans since ages. The Great civilizations and societies have prospered on the nature and its resources. The environment and natural resources have been responsible to rise and fall of empires, civilizations in history. The large scale transformation of environment was carried by colonialists in most parts of the world for their own economic benefits (Redclift, 1983:181). During industrial revolution and world wars large scale exploitation and destruction of bio diversity and natural resources were carried out which even continues today. In World Economic History period from 1870 to 1914 had been unique, termed as 'Golden age' of resource-based Development by many scholars. 'The transport revolution and the trade booms of the era were primarily responsible for unprecedented land conversion and natural resource exploitation across many resource –rich regions of the world and the result was a long period of Global economic growth in which many

countries and regions benefited from this pattern of resource–use and development’ (Barbior, 2011:77). The destruction of environment and its impacts on human beings have taken huge toll of nature, economy, livelihood and health of the societies.

The environmental pollution does not respect political boundaries and usually cross over to other countries creating tensions. Climate change, air pollution, marine pollution, river pollution have trans-boundary characters. Three quarters of the habitable surface of the earth has been disturbed by human activity (Hannah et. al., 1994:171). Between 5 per cent and 20 per cent of about fourteen million plant and animal species are threatened with extinction. Sixty percent eco system services are being degraded or used unsustainably including fresh water, fish capture and climate regulations (Najam e. al.,2013:16). About 13 million hectares of forests are cleared annually and 8.9 percent agricultural productivity has reduced because of land degradation. Environmental insecurity is about risk, a risk to biospheric integrity entails risk to human health as various diseases such as malaria and tuberculosis are prevalent because of environmental degradation (Barnett, 2001:31). About 2.5 million people die every year in Asia-pacific region due to environmental problems including poor sanitation, air pollution and unsafe water. Preventable diseases such as diarrhea, malaria and measles kill 17 million people each year. 4.1 million Lives were claimed by respiratory infections, 200 million suffered from schistosomoses, 4.3 million from cough in 1993 (Platt et al., 1996:44).

The most challenging environmental problem being faced by humanity is Climate change which threatens security from individual, national to Global and impacts are severe (Dovers and Barnett, 2001:163). Climate change has disturbed agricultural production, water supply, human health, bio diversity and international security. The effects of climate change are comparable to effects of World wars I & II and great depression combined (Stern, 2007:116). From 1990 to 2009 more than 650,000 people died and \$ 2.1 trillion losses occurred due to extreme weather events (Hamerling, 2011:115). It is estimated that 150 million refugees will be generated by climate change affects like agricultural disruption; rising sea level which could threaten security regionally. Impacts of climate change create loses of 5-10 percent of Global GDP and decrease welfare by 20 percent (Najam, 2013:13). Changing rainfall patterns had reduced agriculture production

by 62 percent in Gambia while as drought affected 366780 households in Angola and following a prolonged drought food security emergency was declared in Paraguay (UNEP, 2013:23).

The impacts can be worsened in future as long as population increase, demand and consumption are concerned. Environmental issues like sharing of forests, rivers and sea resources leads to controversies and wars among the states. During 1980's the reason between Iraq and Iran war was issue of controlling over Shatt-al-Arab water body shared by the duo and Caspian sea with abundant natural resources was the issue of controversy between Russia and Iran (Chatterjee, 2010:29). It is also been argued now that resource/environmental scarcity can lead to violent conflicts and can destabilize peace (Dixon 2000:07). Out of 250 major river systems shared by two or more countries many of them are subject to unresolved disputes in the world (Gleditsch, 2001:78). About 17 critical environmental flash points have been identified that could lead to regional instability including water scarcity conflicts and refugee existence (Halle, 2000:11). The current trend of environmental issues is largely linked with pace of globalization which plays a significant role not only in transforming but also accelerating pace of economic and social change.

### **II.III.II. Globalization and Environmental Change**

The degradation of environment is linked to economic and political structures and need to be considered within the global economic system (Redclift, 1987:174). Environmental resources provide the fuel for economic globalization as income, scale, consumption increase and increasing demands place pressure on global environment in this way process of globalization and environmental degradation pose new security threat to an already insecure world (Najam et. al., 2013:22). Highly iniquitous world order will be created because of the present wave of liberalization, privatization and globalization. The globalization will be accompanied by growing income inequalities and severe environmental pressures in developing countries. To improve human wellbeing industrialization, economic development, and international trade are seen as important conditions, but these activities result in drastic changes in environment with immediate

and long term consequences (Okereke, 2007:67). However, the results and impacts of most environmental problems are felt globally threatening, individual, national and international securities. Environmental degradation is the cause of pace of the development and Globalization and its being argued that this scale of degradation is threatening humanity. Along with Economic Globalization has come Globalization of environmental damage (Okereke, 2007:71). The transnational corporations has lead to eradication of plant and tree covers affecting 'farming system' due to short term unsustainable agronomic practices which has forced people to become 'ecological refugees' like Haiti, Sahel etc. More than quarter of Central America's rainforests was destructed to produce beef on it to be supplied to American Hamburger chains (Redclift, 2007:180).

Globalization has contributed in rise of fast food patterns which has increased demands of particular foods which are not grown at the same places of consumption. Globalization has lead to massive production and distribution systems compared to earlier pace and overall consumption levels thus damaging the ecosystems as current wave of globalization decreases diversity in native food systems. High levels of chemical inputs are needed to maintain the soil fertility, control pests and large amount of energy and resources are needed for transport, processing and packaging (Roberts, 2007:91). The high consumption and demand levels of energy, transport, development etc is threatening the natural resources. The current destructive pace of environmental degradation will affect income, living standards of future generations as well.

'Large exploitation of natural resources today, while increasing the economic growth for the current generations, would lead to gradual exhaustion and degradation of these resources, thereby reducing their availability to our future generations and adversely affecting their output, income and living standards. So environmental degradation not only affects us but also has repercussions for our future generations' (Chakarbourty, 2013:117).

Globally energy is the key requirement to keep economies growing and living standards improving (Hiscock, 2012:48). The global use of natural resource materials has increased

up to 40 percent from 1992. Global demands of cement and steel are 30000 million tones and 1400 million tons respectively. To supply plant nutrients and enrich soil fertility 15000 thousand tones of nitrogen fertilizers are used leading to eutrophication of inland waters and increasing green house gas emissions (UNEP, 2011:31). The global citizen has increased his meat consumption from 34 kg in 1992 to 43 kg in 2010. The number of large dams has increased from 500 in 1950 to over 45000 in 2012. 3,800 KM<sup>3</sup> of fresh water is extracted globally from aquatic ecosystems per year which is enough water to keep the Nile river flowing for 43 years (Harriet et. al., 2012:34). There has also been considerable increase in nuclear power plants which are argued to be biggest threat to environment. Globally there were 437 nuclear power plants in 2011 and 60 were under construction (UNEP, 2011:11). The exposure of pests, toxic chemicals, industrial wastes, e waste, and medicine waste into lands, water bodies like rivers, seas and oceans has become a serious concern. 'Global environmental change deals with changes in nature and society that have affected humankind as a whole and will increasingly affect human beings who are both a cause of this change and often also a victim' (Brauch,2007:35).

#### **II.IV. Environmental Debate**

Despite the large scale environmental degradation the consciousness about protecting the environment has increased over many decades .The environmental movement was most important of the social and political movements that emerged last third of twentieth century. Twentieth century saw the increase in conservation groups, new environmental organizations followed by green parties. In the end of 19th century some groups emerged in Western Europe and North America campaigning on environmental issues concerned with the conservation of bio diversity, wildlife. During 1970's new groups developed which were part of a new green movement and critical to government. These groups included Green peace, Friends of Earth (FOE) and many others which had transnational influence and larger support from previous ones. Green peace had affiliations with 38 countries including 2.7 million supporters while as FOE has affiliated groups in 71 countries with 1.5 million supporters (Doherty, 2007:77). Green peace has supposed to be most influential environmental NGO in the world which has played an active part in campaigning and influencing Government policies on marine protection, recycling

unscientific disposal of wastes, elimination of nuclear power and nuclear plants (Chukwumerije, 2007:193). In United States legislative environmentalism involved laws to protect environmental values, to preserve wild and restrict pollution (Barash,2009 :409).

Coinciding with environmentalism, the first green party was established in 1972 in New Zealand followed by other countries which came in electoral terms establishing presence in parliaments (Connely et. al., 2012:108). The green movement in Germany was followed by creation of Green party gained enough support to form the ruling coalition Government and contributed to environmental policy making (Skarlato, 2008:81). There is growing demand for global regulations to improve environmental performance and to enforce existing agreements and new initiatives. In developing countries environmental movements were also seen in which large number of people opposed the environmental and natural resource destructions. Chipko movement in India during 1970's protested against deforestation, Green belt movement in Kenya identified forest loses, soil erosion and carried reforestation (Redclift, 2007:159). Globally the concept of environmental justice was gaining importance and people affirmed to adopt the principles of environmental justice<sup>1</sup>. One of important principles of environmental justice calls for 'universal protection from nuclear testing, extraction, production, and disposal of toxic, hazardous wastes and poisons that threaten the fundamental right to clean air, land, water and food' (James et. al., 2012:120). Thousands of international, regional, national and local environmental organizations and NGO's emerged having collaborations with large global organizations and influence at grass root levels.

Positive role was also played by Faith based organizations in ecological and environmental issues .In United States, Christian organizations have organized lobbies supporting or opposing climate change policies (Wardekker et. al., 2009:57). World Wide Fund (WWF) and International Union for Conservation of Nature (IUCN) and the Alliance of Religions and conservation (ARC) have rallied support from various faith communities. The IUCN published the Islamic principles for the conservation of natural environment (IPCNE) in 1983 and re edited in 1994. These principles legitimate a duty

---

<sup>1</sup> Please see Appendix I

of care for the environment, human responsibility and accountability to god, work for the common good, preserve life, avoid wastefulness and harm (Schweneke, 2012:08). Mainstream faiths with millions of followers have great influence in which people view and interact with natural world; their influence shapes people's philosophy and ethics. To resolve environment problems national governments, IGO's, NGO's and others are seriously concerned and conventions, summits on environmental issues are significantly increasing (Chatterjee, 2010:24).

The environmental awareness, increase in NGO's, emergence of scholars and International agreements and end of cold war lead to the origin of environmental Security. Increase in treaties, agreements, conferences and organizations like United Nations Environmental Programme (UNEP), International Conference on Population and Development (ICPD), United Nations Centre for Human Settlements (UNCHS) and Montreal Protocol proposed decisive policies to enhance environmental security. The United Nations Framework Convention on Climate Change (UNFCCC) is most important treaty and these policies for action change on environmental security are highly workable. Emphasis of Neo liberal theorists that capacity to 'protection of quality of life' should be the emphasis of security was also causes that lead to origin of environmental security. The research on Environmental security evolved in three phrases (Dalby 2002:51). First phrase marked in 1970's and 1980's in cooperation between UNEP and Stockholm International Peace Research Institute (SIPRI) and Peace Research Institute Oslo (PRIO) on environmental impacts of war in which Galtung, Myers, Ullman, Mathew etc played a part. Second phrase evolved when Environmental conflict research projects were conducted by Toronto group in 1990's .Phrase third developed in reaction and modification of the previous two. Conceptual deepening, state failures, model evolution etc were studied and analyzed. The discussion on environmental security research can move to fourth stage of reconceptualization and synthesis (Dalby, 2002:14). Fourth stage should be focus on research on Human and Environmental Security and peace (HESP) (Brauch, 2007:31)

## II.IV.I North-South Debate

Environmental security discourse is being viewed, understood differently and overwhelmingly opposed by developing countries. While as developed countries claim that environmental problems are caused by developing countries because they have huge population and poor industrial, automotive technology. On the other hand developing countries accuse developed countries for their high living standards, higher consumption of resources and higher emission of green house gases as the main causes of global environmental problems. Developing countries believe that by environmental security North want to secure its present state of environmental degradation and impose new costly technological innovations on South. Many scholars argue that Environmental security is tactic used by developed countries to violate upon the sovereignty and to force their values on developing countries. 'For U.S the environmental security is about securing the lifestyle and institutions that degrade the environment against the risks associated with the same degradation' (Barnett, 2001:89).

There is 'Environmentally unequal exchange and an 'ecological debt' which is owned by north as a result of its unfairly profiting at the expense of south' (Joan et. al., 2002:101). In 2002 one American consumed as much as energy as 2.1 Germans, 12.1 Columbians, 28.9 Indians, 127 Haitians or 395 Ethiopians (Najam et. al., 2013:22). 'The contemporary trading patterns, whereby wealth is returned to the North and environmental externalities are borne by south, leaves the northern countries generally free from severe problems such as water contamination, toxification of food, land degradation and energy shortages' (Barnett, 2001:90). The structure of international economy is responsible for the worsening condition of environment in many parts of south (Redclift, 2007:187).

'Consumption of energy, food and other resources and generation of wastes is much higher in north and is cause of resource depletion; this over consumption and lack of redistribution produces a double insecurity' (Barnett, 2001:20). Over one billion people have not access to sufficient food and go to bed hungry despite world produces enough food for everyone. Large people are affected by malnutrition and hunger, 2 billion people are threatened by natural resource degradation and number of people going hungry in

Africa and West Asia has increased to 275 million since 1990 (UNEP, 2013:16). Despite the growing North South debate on environmental issues many countries have framed and implemented policies concerning environmental security. The official definition that includes planning and action by some countries are Australia, America, China, Russia, even Brazil incorporated notion of environmental security into its national strategy in 1988. Finland recognizes environmental problems as security issues and has elaborated its environmental security priorities (Johanah et. al.,2006:04).

Environmental security is 'Ultimate security' and should be highest priorities of all nations because it does not only threaten states but also survival of people (Myers, 1998:37).The focus should be to reduce the human induced destruction of environment. There is need to reformulate environmental security in terms of human security because a human centered environmental security concept places the welfare of the people first and priorities the welfare of the most disadvantaged above all and enhances peace and justice (Barnett, 2001:178).

## **II.V. Critiques of Securitization of Environment**

Environmental security discourse has been criticized by many scholars who have put forward many views to justify their stand. Many oppose securitization of environment because they believe it can create problems and enmity among states. 'The Copenhagen school characterizes security with the constitution of an enemy and the confrontational logic of war; there is no difference between uttering environmental security to justify a new role for the army or evoking it to introduce precautionary measures' (Julia, 2005:33). One of the main causes that 'securitization of environment' is opposed is that the 'move' secures the 'status quo' as environmental degradation is caused by status quo. It secures the present pace of environmental damage as seen by many scholars. 'Security is premised on maintaining the status quo and runs counter to changes needed to alleviate many environmental and economic problems because it is precisely status quo that has produced the problems' (Dalby, 1994:33).

Environmental security field has been criticized by many scholars who believe that environment should not be securitized because there can be theoretical and conceptual shortcomings. Securitization of environment may give excuses to many countries to attack another country under pretext of environmental issues because through securitization environmental degradation of a country may be seen as national security by other countries (Duedny, 1991:17). Some scholars claim that global environmental changes including climate change have entered the 'Anthropocene'. 'Anthropocene is a proposed new geological epoch marked by the moment at which humans became the dominant driver of change to earth system (Steffen, 2007:12). This notion that changes in the environment including climate is a natural process hinders the securitization move. Scholars believe that man has got ability to defend the powers and impacts of nature hence there is no need to worry about the changes of nature. However, others believe that a change in nature has been caused due to the human induced pressure on nature. The wicked environmental problems including climatic changes have been caused and escalated during last sixty to seventy years. 'Environmental change' as a natural process should not be used as an excuse to turn away from our responsibilities of protecting nature and defending our destructive life styles, consumption and demands.

## **II.VI. Environmental Sustainability**

There is no simple definition of sustainability. Usually sustainability is referred as, 'Living within the limits of what the environment can provide. The idea of sustainability surfaced after 'Our Common Future' was published and sustainable development was defined by the Brundtland Report (1987). 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland, 1987:20). Environment sustainability refers to the need to preserve the ecology and ecosystems for sustainable growth (Chakrabourty, 2013:11). Environmental security complements sustainability despite the differences in various reasons; environmental security focuses more strongly on intergenerational equity and on the vulnerability of communities than sustainability when conceived of in human terms.

Environmental security explores the juncture of security/foreign policy and the environment; and environmental security is concerned with environmental impacts of military activities. 'Environmental security does not necessarily demand new policies, but rather in the first instance requires a renewed effort at implementing existing sustainability policies. To this end, environmental security requires new forms of governance. Environmental security and sustainability both therefore require a range of measures to improve governance and institutional capability at all levels, both to reduce environmental degradation and to enhance the capacity of social systems to respond to change' (Barnett and Dovers, 2001:160). Serving as warning lights is the main function of environmental security scholars particularly in the world of growing environmental consciousness (Gleditsch, 2008:179).

## **II.VI.I. Challenges to Environmental Security and Sustainability**

There are various challenges and threats to environmental security and sustainability especially armed conflicts, military (military activities, actions and interests). There can be direct and indirect ways their activities impacts the environment and challenge environmental laws and environmental policies. Military activities according to Shahi and Sidel mean, '(1) active use of weapons in war, civil disturbances, civil war, and low intensity war [summarized as 'war']; (2) weapons development, production, testing, storage, transport and disassembly and disposal, and military training (military preparation); and (3) the prevalence of military oriented attitudes and practices within a nation or in the world ('militarism')' (Shahi and Sidel, 1997:283).

Military as an institution is regarded as the largest single threat and pollutants to environment, most devastating than other institutions. Military and military toxins destroy the nature and wildlife, contaminate air, water, land and disrupt native habitats. The repercussions are numerous, multi dimensional and long term for the generations to come. The recent advanced research argues that militarization, military pollution and toxins can damage not only Environment but also Reproductive health besides socio-economic destructions. Having significant environmental impacts in times of war, Military activities also degrade environment in period of not-war, because militaries are

preparing to fight next war and effects can be worse when militaries are not preparing on their own land. In many cases environmental norms and recognitions are ignored, sidelined even in times of peace and not –war (Barnett, 2001:156). Military interests are biggest challenges while moving towards a comprehensive framework of sustainability along with human security and equity. Usually Militaries are not interested or sympathetic towards issues of ecological sustainability and have strong interests in continuing the status quo, and it is important to have demilitarization angle as ecological and socio-economic security are much better ways to secure populations than military (Kothari, 2013:57). Militaries must be addressed as a cause not cure of environmental problems (Finger, 1991:22). In this way, environmental security suggests and proposes governments to frame the policies short of military involvement and coercive methods.

## **II.VII. Conclusion**

Environmental security has no agreed definition as scholars are defining and understanding environmental security in their own angle. Usually it means availability of clean air, non degraded land and uncontaminated water. It means freedom from environmental destruction and resource scarcity. The well known meaning of environmental security is given by Jon Barnett because that meaning addresses human induced environmental problems unlike other scholars who include Natural disasters in environmental security dimensions which is inappropriate or misleading because natural or environmental disasters are happening since thousands of years and man has no exclusive power to control them. Pertinently environmental insecurity is the problem created by humans themselves by degrading and exploiting environment, humans are cause as well as victim of this problem. Thus focus and function of environmental security analysts should be to identify a particular issue or risk that demand urgent responses and bring them to focus of securitizing actors (Government), so that the threat is avoided or mitigated and managed in a peaceful way before it explodes into a major crisis or a serve threat. In this way ‘environmental security analyst has to serve and function like a warning light, to signal something wrong is going or something wrong will happen’. The notion that ‘the goals of environmental security is to reduce human induced vulnerability to environment’ seems appropriate and useful. Appropriate and

useful in the sense that it can reduce the pace of environmental degradation and can help in facilitating secure environment for coming generations.

The literature of environmental security expanded broadly after the end of cold war and many scholars sought to broaden the concept the national security and include other security threats known as Non-traditional security threats. It was believed that non-traditional threats e.g environmental insecurity is as dangerous as conflicts that can affect individuals, human health, livelihood of societies and people. Environmental scarcity or resource scarcity can lead to violence or conflicts in many parts of world like Middle East or Africa, thus scholars believe that environmental security is vital for human being.

Since the colonization and industrial revolution, natural resources were exploited on large scale to meet the growing demands of consumption all over the world. Climate change is caused due to emission of green house gases which has long term and global impacts. Due to human activities, millions of forests hectares were cleared and degraded and millions die to exposure to pollutions including air pollution, water pollution, degraded land and other vector borne diseases. Environmental change is one of the most challenging environmental problems which affects and threatens security and livelihoods of individuals and nations. It impacts agricultural productions, agrarian economy, human health, biodiversity and its impacts are comparable to World War I and II. Its future implications are estimated to be worse in terms of increase in environmental refugees, agriculture disruptions etc which would disrupt regional and international security. The wave of economic globalization has been useful because it brought environmental issues to international platform and brought awareness about protecting the environment, but on the other hand globalization has brought negative results as far as demands, supply, consumption and changing destructive lifestyles are concerned. Due to the unsustainable farming systems, food demands and global consumption levels have damaged ecosystems and disturbed traditional and sustainable food systems. There is no doubt that in the race of economic globalization, some nations are losers while some are winners and only rich have potential to compete.

Apart from environmental degradation, the consciousness about protecting the environment has increased both in North and South and rise of NGO's and Social

movements increased like Greenpeace, Friends of Earth and Greenbelt and Chipko movements. Faith based organizations played an important role in environmental issues, supporting or opposing environmental policies. U S Christians and Islamic organizations supported international organizations conservations of environment. Increase in various other organizations like UNEP, ICIPD, UNFCC etc hold treaties, agreements and proposed decisive policies for environmental protections. Hence the literature and research in environmental security further evolved.

Environmental security has played a significant role in highlighting the emerging and wrenched human induced environmental problems. Environmental security is believed to be vital for human wellbeing as its main function is to repair and prevent the damage. Environmental security is now being studied in interdisciplinary approaches and social science domain and is moving away from International relations as concluded by Barnett. To securitize many sectors, Copenhagen school lead by Buzan elaborated the theory of 'securitization' to conceptualize the issues and make them urgent issues , matters of high politics that need emergency and exceptional measures to deal. In the securitization process the securitizing actor (Usually Government, political leader, organization) suggest which particular referent to be secured, after the audience (People) accept that particular referent should be secured, securitization can be successful. Some special and extraordinary measures and policies are then taken to address the threat after it is identified. Dover et al have propounded framework which serves as a filter to identify the particular issue that need to be securitized.

There have also been critiques to environmental security because some scholars believe that environmental securitization move or environmental security is premised to maintaining the status quo, because it is status quo that is producing problems. Others believe that Securitization move by one country can be seen as a national threat by other country which may give them an excuse to attack the country securitizing the environment. But that is not possible in every securitizing move and may happen when only Trans-boundary or Trans-national environmental issues are dealt in such ways.

Environmental security is a tactic used by developed countries to force their valves on developing countries is also believed. US's environmental security is to secure and

defend their destructive life styles and institutions. High living standards are enjoyed by developed countries whereas environmental problems are being faced by developing nations or South. Generally consumption of food resources and generation of waste is much higher in North and still increasing population and poverty of south is being held responsible for environmental degradation by the North, which is far from reality as energy, foods, resources consumption levels are very high in North while millions have no food and go hungry in South. This game of blame used by North is to hide their destructive way of life and economic structures.

Despite the growing North south debate, many countries have framed and implemented policies concerning environmental security. Now environmental security is believed to be ultimate security and hence focus should be to reduce the human induced destruction of environment and the need is to reformulate security in terms of human security.

When talking about sustainability, environmental security focuses more strongly on intergenerational equity and vulnerability of communities. Environmental security does not demand new policies, but requires a renewed effort or implementing existing policies. To identify the most vulnerable and render him more secure is the role of environmental security analyst. But in order to have environmental security, militaries are biggest challenges in the way. Militaries are supposed to be single largest pollutant other than other institutions on the earth. Military interests are also biggest challenges when moving towards environmental sustainability and militaries are not interested or sympathized towards environmental sustainability. Militaries should be addressed as a cause not as a cure to environmental problems because in one way or the other their activities, affects, technologies, war preparations are destructive.

Greening the military is been stressed by many analysts and environmentalists to protect environment from military activities. By greening the military it means to teach environmental ethics to soldiers, promoting environmental education and importance of nature to soldiers, providing clean and eco-friendly technology to military, restricting them from abusing environment and asking military to strictly follow environmental laws and rules designed to protect environment from human abuse. Many have proposed the

idea of greening the army, but this concept is not relevant in many parts of the world particularly when armies are operational in ecological sensitive zones and have their cantonments, camps etc inside or around natural resources which are basic source of survival for many communities. Large tracts of land including forest land, agriculture etc are been occupied and used by militaries affecting livelihood and security of millions particularly the vulnerable. In this way it is better to propose environmental security policies and programmes which have demilitarization, justice and equity angle and do not include military or coercive methods.

**Chapter III**

**Environmental Change as a Non -Traditional Security Threat in India**

## **Chapter III**

### **Environmental Change as a Non-Traditional Security Threat in India**

#### **Introduction**

India is the seventh largest country in the world with an area of 32,87,2631 sq km .The country is bounded with mountains and seas which give India a unique geographical entity. Since the ancient times India has been a place of cultural and religious ethos having holistic approach with nature and environment. Ancient Indian literature like Vedas, Upanishads, Dharmasastras and Kautaliya's Arthasastra and other texts have prescribed measures of preservation of ecology and environment which even have the modern relevance. However, changing life style, population growth, economic development and exploitation of natural resources since colonization have been responsible for environmental degradation. During colonization, natural resources and bio-diversity was destroyed largely to meet the needs of growing industrialization.

Now, India being an agricultural country carries 17% of world population majority of which depend on the natural resources to meet their needs and livelihood. India is among the first ten industrial countries in the world and one of the fastest growing economies. Thus, India's environmental problems and degradation is shaped and caused by rapid growth of industrialization, urbanization, population, poverty and transportation etc. In India environmental problems have become more serious, threatening health and livelihood of the people. The environmental problems are challenges and threats that affect the well being and survival of people often referred as Non-traditional security threat. India's Non-Traditional security concerns are Food security, Environmental challenges, climate change, Water, energy security, etc.

During the last many years the degradation of environment has been taken seriously under ambit of various policy frameworks. India's food production is enough to feed 40% of urban population and all finite and renewable resources land water and fuels are disappearing due to over exploitation, the growing population will have an adverse

environmental impact. The main environmental issues India is confronting are Climate change, Trans-boundary environmental issues, water pollution, land degradation, industrial pollution, deforestation, air pollution, coastal pollution, loss and degradation of bio-diversity etc. Many of these problems are growing rapidly, resulting in weakening of the resilience and affecting the health, livelihood and security of the common people.

This chapter therefore, tries to discuss the causes and implications of environmental change in India. It will also attempt to understand the present pace of environmental change, policies and future implications. It will also discuss India's environmental sustainability goals and the challenges.

### **III.I.I. Climate Change**

There are national and regional intensity of the impacts of long terms patterns of climate change. In many countries including India climate change has potential to undermine human development and livelihood of millions of people. Climate change and its impact are studied in various aspects and in different areas of India and the studies are showing long terms and severe repercussions of climate change. Sectoral and regional projections are been prepared by the Indian National Network for Climate Change Assessment (INCCA). In India climate change is impacting agriculture, horticulture, water availability, natural ecosystems, economy and livelihood of the people. During the recent years the longevity of heat has intensified and is expected to increase variability in summer monsoon precipitation, which will affect the agriculture sector (Bhadwal, 2003:11). Climate change will increase frequency of extreme events such as floods, droughts etc. will pose significant threat to various sectors of livelihood. The changes in climatic conditions is likely to alter hydrological cycle, affect the agricultural productivity, spread of malaria and other vector borne diseases, intensify the desertification process and a shift in the forest types, intensify of tropical cyclones in the Bay of Bengal, temperature increase etc (Sathaye et. al, 2006:21).

The climate change can lead to retreating of Himalayan Glaciers that will affect food, water, environmental security and livelihood of millions of people in India (IPCC,

2007:26). About 69 percent of India's population depends on climate sensitive livelihood options and there are chances that their livelihoods will be affected at an alarming speed if the climate change repercussions increase intensively.

### **III.I.II. Climate Change and Agriculture**

Indian agriculture has been divided in 15 agro-climatic zones and climatological parameters like wind, velocity, air temperature, and relative humidity is varied in different zones. The agricultural practices and productions vary from one part of country to another depending upon patterns of temperature, soil, water etc. Agriculture contributes 21% of India's GDP; about 72% of population which is poor and marginalized has agriculture as their main source of income. However, farmers are exposed to many risks including floods, droughts, crop and animal diseases and unpredictable market irregularities due to changing climate and erratic rainfall patterns. There are significant impact of climate change on Indian agriculture especially food grain yields in India on rice and millets (Gupta et. al, 2012:1). Climate change and its impact have lead to 10% loss of agriculture. Cost of climate change is 1 to 1.8 percent of GDP per year and it could depress consumption among India's poor by at least 18 percent and the consequences of long run climate change could be even more severe up to 25 percent of crop yields (Guiteras, 2009:5).

India which is leader of rain fed agricultural countries of world in terms of value of produce and extent is showing fall in food production in certain areas as rain fed agriculture will be most impacted further by climate change than any other sector thus farmers are highly vulnerable to climatic changes (Latha et.al, 2012:1). India is the second largest producer of fruits and vegetables and now it is being observed that Horticulture in India is under stress of climatic change. Three Lakh nuts of coconut been are reduced annually due to drought and cashews production has reduced up to 50-65% because of unseasonal rains. World famous Kashmir saffron has suffered 40 % drop in production and pertinently black pepper has lost productivity in many areas (Datta, 2013:06). There is considerable fall in Apple productivity from 10.8 to 5.8 t/ ha (Awasti et. al, 2001:09). It is expected that 5-15 percent vegetable yield can be reduced. Some of

the flower crops will be threatened, commercial production of flowers will be severely affected and physiological disorder will be more pronounced in horticulture crops due to high temperatures (Datta, 2013:07).

Due to sea level rise in areas of sunder bans thousands of people have displaced due to sinking of island and it is expected that 70,000 people will be exposed to risk of losing their homes and livelihoods. It is believed that these environmental refugees can reside in refugee colonies where they might be exposed to diseases and poor sanitations. Due to climate change about 75% of mangrove forests known for its biodiversity and threatened species and supposed to be largest of such forests will have diminished in next two decades. Fresh water availability is expected to decrease from 1,820 m<sup>3</sup> by 2025 due to combined impacts of population growth and climate change (IPCC, 2007:41). As estimated there will be 5-10% reduction in yields of some crops on every in one degree increase in temperature.

Climate change affects human health furthermore it will also have other severe repercussions on health of people in future as incidences of illness will increase. Developing countries including India are expected to face health effects like Vector borne diseases due to climate change; currently India's 973 million persons are exposed to these diseases, pertinently most population of India is at risk for contracting Malaria (Ramana et. al, 2013:2). About 200,000 people die before 77 years of age and 55,000 die in early childhood per year in India due to Malaria. (Dhingra et. al, 2010:28). There can be increasing in risk areas for infection diseases.

The potential physical and social impacts of climate change in india will likely be diverse and other important factors can be associated with it like Malnutrition, Child growth, river flow, rain patterns and fresh water availability etc (Kathleen et. al, 2011:133). The other health implications that can be linked with climate change are Bacterial infections, respiratory diseases, under nutrition and vector-borne diseases. The latest report released by IPCC has key messages on Impacts of climate change in India<sup>2</sup>.

---

<sup>2</sup> See annexure 3.1

The report carried a dire warning that due to repercussions of climate change in Asia there is increasing risk of armed conflict among India, Pakistan, Bangladesh and China. Thus climate change is a serious issue in India threatening security livelihood and health of the people and hampering sustainable social and economic development. The results could be more disastrous in future and will have devastating impacts on other socio-economic and health sectors in India.

### **III.I.III. Trans-Boundary Environmental Issues**

India being the seventh largest country in world in terms of geographical area is bounded by mighty Himalayan Mountains, Bay of Bengal, Arabian Sea that makes her location unique in Asia. Much of India's climatic, strategic, environmental and economic features are shaped by these geographical entities. Some of the geographical and environmental entities play a significant role in socio-economic sustenance of Asian countries. Trans-boundary movements of wastes are emerging as a critical issue in the region that has not been addressed fully (Malhotra, 2011:17). India shares its borders with Bangladesh, China, Pakistan, Nepal, Myanmar, Bhutan and has different environmental cross border linkages with these countries.

The Himalayan environmental traffic like rivers , glacial runoff cross more than one countries including India .India faces has both cross border degradation issues and water disputes with her neighboring nations including Bangladesh, China, Bhutan and Pakistan. Dumping of toxic wastes in Indian Ocean and trade of wastes is a serious issue despite the signing of Basel treaty by Asian counties to stop such activities. The militarization on the world's highest battle zone Siachin in Jammu and Kashmir is responsible for retreating of the glaciers there. Dumping and Consumption of fuels, military lorries, generation of human wastes, toxic wastes etc by both India and Pakistan is accelerating glacial melt and putting millions of people at risk in South Asia who survive on its waters (Bronwyn, 2008:31).

In such circumstances, natural resource management, regulation and generation of pollution by one country threaten other's environmental security. Soil erosion, land

degradation, landslides and pollution of ground water aquifers in the region especially in West Bengal is caused by unorganized and unscientific dolomite mining in Bhutan. India has water disputes with Bangladesh over Farraka barrage which is inside Indian Territory to divert and clear silt from Kolkata has resulted in agricultural shortages in Bangladesh. Despite signing an agreement in 1996 the implementation has been difficult. Bangladesh has now began to focus on building new barrage between Gorai river and Ganges-Brahmaputra confluence to feed ground water acquires and flush out salinity in coastal areas (Vasudeva, 2004:06).

Environmental degradation, resource scarcity and floods push people of Bangladesh into Northeastern states of India especially in Assam leading to violence and ethnic conflicts there. The plans of China to divert water of Brahmaputra inside Tibet for industrial use, farming and hydroelectric power will cause water scarcity problem in Tibet, India and Bangladesh despite leading to catastrophic environmental damage. Zangmu and other water diversions by china is concern for India because of Brahmaputra on which millions of Indians depend and that concern is heightened because India and China have yet to draw up a water sharing treaty (Hiscock, 2012:61). The kosi and Gandak projects in Nepal has lead to trust deficit and hindered bilateral relation between India and Nepal and later announcement of 'inter-linking of rivers' by Nepal government caused protests in neighboring countries (Lama, 2010:129). Pakistan has also accused India of violating Indus water treaty of 1960 on construction of Baglihar hydel project in Jammu and Kashmir that has derailed the peace process between India and Pakistan in 2007-08. This is an example how trans-boundary resource sharing have the potential to threaten national security (Lama, 2010:131).

There were also heightened tensions between India and Pakistan over Kishenganga Hydro power dam in Jammu and Kashmir. Pakistan accused that water regulation is declining ground water supplies in Sindh and Punjab were Pakistan most food is produced and also claim that reduction in water flow by India could lead to droughts will cause loss of \$321 millions. In 2010 Permanent court of Arbitration raised concerns and asked both the countries to respect Indus water treaty. It was also stressed that regulation on Environmental flow and its impact will cause more than \$544 million loss to Pakistan.

There is challenge for the two countries as how to harness the power of the Himalayan rivers in a way that is fair and sustainable (Hiscock, 2012:60). The region (South Asian including India) has history of devastating floods, tsunami's and other natural calamities which like other parts of world do not respect political boundaries and lead to destruction of life environment and economy. Tans-boundary or transnational environmental flow and its management is emerging as serious issue for India and there is urgent need to solve these issues keeping in view the life of millions that is on risk.

#### **III.IV. Land Degradation**

'Land degradation means reduction or loss of the biological or economic productivity and complexity of rain fed cropland, or range, pasture, forest and woodlands. Land degradation is often linked with food insecurity and poverty, in a cause-effect relationship (UNEP, 2011:18). By definition, human induced land degradation, which is how desertification is defined, is caused by the actions of people that have a negative impact on the 'functioning' of the environment, as it is being eco-culturally experienced and as regards its value as a natural resource. Land management practices and difficult livelihoods create high dependence and pressure on local natural resources. India has only 2% of world's geographical area which supports 18% of world population and 15% of world's livestock population. About 141 million hectares is net cultivated land out of 328.7 million of geographical area of India in which 40% is irrigated and 60% is rain fed. The area is subject to wind and water erosion which are considered the most contributors to soil erosion and degradation of Agricultural productivity. More than three-fourths of India's population depends for their livelihoods and economic well being on activities based on natural resources and relies on these resources directly for fuel, food, industrial output recreation ,but most of the natural resources are in state of degradation (Singh, 2009:2).

Throughout the year the land degradation is prevalent in many forms in different parts of India. Some of the major categories of land degradation in India include Water and wind soil erosion, irrigation related land degradation, including secondary salinity, water logging and irrigation related soil erosion. Pasture and range land degradation,

degradation of forests and bushes and related loss of biodiversity and other forms of land degradation as a result of natural disasters, soil contamination etc. 'Use of external inputs will result in higher land degradation vis-à-vis constant farming ,often characterized by low irrigation, limited farmyard manure (FYM), inadequate measures for soil moisture conservation and low adaptation of agronomic practices owing to a financial resource crunch' (Shah, 2012: 227).

There are different institutes and department which identify and estimate the extension and effects of land degradation in India like Ministry of Rural Development, Department of land resources etc and according to their estimates in 2000 that out of total geographical area of India the degraded wasteland accounted 20% (Singh,2009:42). About 146 million hectares are reported to be suffering from different kinds of land degradation according to Indian Council of Agricultural Research Nagpur and National Bureau of soil survey (2005) out of which 93.68 million hectares are degraded by wind erosion, 9.48 million hectares by wind erosion, 14.30 million hectares by water logging/flooding, 5.94 m hectares by salinity/alkalinity 16.04 million hectares by soil acidity and 7.38 by complex problems. However, according to National bureau of Soil survey and land use planning about 66 percent of India's total geographic area (192 million hectares) was at varying stages of degradation (Haque, 1997:33). Rain fed areas are mostly affected by land degradation and it is estimated that more than 200 million rural people poor live in the rain fed areas of India. Extensive and severe degradation of land have occurred in the Western Ghats, Himalayan belt, Thar Desert, and irrigated areas on the Indo-Gangetic plains (Lama, 2010:94).

Land and water degradation due to soil erosion, soil salinity, water logging, and excessive use of nutrients are the main concerns (Govt. of India 2013:190). The Punjab and Haryana region primarily known as India's food basket has consumption of (Nitrogen, Phosphorous, Potassium) NPK to over 210.06 and 166 kgs per hectare respectively as against 104.5kg of national average which has started affecting crop productivity and it is estimated that this region may become food insecure in coming 20 years (Lama, 2010 :95). Loss of 1 mm of cultivated soil to degradation or erosion could cost 10kg of nitrogen and 2kg of phosphorous (Saxena, 2004:07). The Land degradation

has significant impacts on Environment and crop productivity (Singh, 2009:19). Land degradation as a process has several socio-economic implications; the areas (Villages) affected by land degradation have consistently lower levels of socio-economic development than outside the affected area (Pani et. al, 2013:29).

The degradation of land leads to loss of agricultural land, affects the ability of soil to yield quantitative and qualitative crops and thus agriculture and other crop outputs are severely affected which have negative impacts on socio-economic life and livelihoods of millions of people in India. For rehabilitation of degraded land and water resources better management holds the key and measures must be taken in this regard (Govt. of India, 2013:190). "Public policy, notwithstanding the recognition of land degradation as a significant environmental problem has not been able to overcome the isolation and marginalization in the regions affected by degradation' (Pani et. al, 2013:28).

#### **III.I.V. Forest Degradation**

Forests provide essential material assets for survival and livelihood of millions of people in the world. Forests provide goods and services, regulate water cycle and floods and enhance quality of environment besides being renewable resource and maintaining ecological balance. However, since industrialization the pace of deforestation and degradation of forests has increased with the onset of urbanization, trade, rising demography and changing life styles. India has diverse forest vegetation which constitutes its major natural resource bases ranging from temperate and alpine forests of the Himalayas, evergreen moist forests in Northeast India to the forests of Andaman and Nicobar islands. India's forests are the major components of her biodiversity which support 8 percent of world species out of which 200,000 are identified and millions yet to be discovered.

India is considered as one of twelve bio-diversity centers in the world which currently has tenth position and fourth position in plant diversity in the world and Asia respectively. However, the biodiversity including grasslands, wetlands, mountains and other ecosystems especially forest wealth of India is depleting and eroding fast causing damage

to the life forms and species. The main causes of forest depletion and disappearance could be traced to high demand for forest based products, over exploitation, unsustainable practices and encroachments, mining and mega development projects, illegal wildlife trade and poaching affect the biodiversity adversely. Predictions show that almost 5.3 million hectares of forest have been destroyed and during last 20 years half of the number of Mangrove forests have been cleared (Sarkar et. al, 2012:179). The forests of India support 16 percent of world's population and 18 percent of world's livestock population which constitutes 20 percent (675,538 sq. kms) of the geographical area of India. An average of 42 animals graze in a hectare of land against the threshold level of five animals per hectare and approximately 100 million cows graze in forests against a sustainable level of 31 million per annum (Mukherjee, 2012:9).

The consumption demand of firewood was 235 million cubic meters against sustainable capacity of 48 million cubic meters. The annual demand of industrial wood was about 28 million cubic meters against production capacity of only 12 million cubic meters. There are increasing gaps between demand and availability of fodders, since the cattle population has increased to 400 million in 2003 from 271 million in 1992 leading to overgrazing in 78 percent of forest area. The other causes of disappearing of forests are industrialization, commercialization, growth of population habitat, and expansion of agriculture which has lead to fast disappearance of wide range of floras and fauna as their natural habitats are been destroyed. Out of 69 million hectares of forest area the annual deforestation is estimated to be 2.4 million with Northeastern states continue to experience deforestation due to shifting cultivation (World Bank, 2013:15).

Thousands acres of forests are destroyed, protected areas are declassified and nothing in the way of replacement due to abuse of power and poor management (Sarkar, 2012:179). Millions of hectares of forest land were diverted to non-forest use and millions of forest hectares are subjected to shifting cultivation and other purposes. Over exploitation, hunting, destruction, pollution of habitats etc have caused a decline and extinction of many species. The over exploitation and loss of forests is leading to extinction of flora and fauna. According to estimates about 1500 plant species, 80 mammals, 44 birds, 15 reptiles etc are listed as endangered. Livelihood patterns of millions of people including

tribals have been affected and lost altogether thus ecological balance is being affected by the depletion of forest resources (Lama, 2010: 93). The forest loss and degradation cost India about 0.6 to 1.7 percent of GDP (World Bank, 2013:23).

### **III.I.VI. Water Pollution**

Water pollution is one of the major environmental problems faced by India. Over last many years, water resources have been overexploited, depleted and degraded. More than half of the surface water resources and increasing percentage of ground water reserves are contaminated by inorganic, agricultural, industrial, organic, toxic, biological pollutants, domestic sewage, chemicals and heavy metals etc. The pressure on available water resources particularly fresh water is mounting significantly as water resources in India have to support world's 18 percent human population and 15 percent of world's live stock population. India is considered to be largest consumers of water (2000 AD) with consumption of 645.8 million cubic meters, followed by china 630.3, USA 479.3 m cu and Pakistan 169.4 million cubic meters. While domestic sector uses only 3.73 percent water, 93 percent is used by the agriculture sector in India (Sarkar, 2012:11). Out of 152 big cities in India only 8 have proper sewage system, 52 have partial system and more than 80 do not have any sewage disposal system. In urban areas approximately 50,000 million liters of wastewater both industrial and domestic is generated every year in urban areas and the figure can be higher if rural data is taken into account (Garg, 2012:560). India society and economy is facing daunting challenges due to water scarcity and the challenges can be worst as reports show that 1.2 billion people in India will exhaust their fresh water supplies by 2030 (Chakarborty, 2013:17)

Water resources and water based industries support livelihood of millions of people and the continuous pollution of water is threatening their livelihoods. Water pollution has reached a crisis point in India, the water is being polluted in some way or the other further causing many severe water borne diseases (Saxena, 2004:350). The water resources have been rendered unsafe for human consumption even for irrigation and industrial needs and the water quality can contribute to water scarcity. The contamination and degradation of river water, lakes, springs etc is increasing at an alarming rate. In

India almost every river system is now polluted to a great extent as nearly 70 percent of water is polluted. India's 14 major, 53 minor including hundreds of small rivers and other water bodies receive millions liters of untreated sewage both industrial and agricultural. About 90 percent of waste water is discharged into water bodies and only 10 percent is being treated (Srivastava, 2014:88).

Fertilizers, pulp and paper, leather, refineries, metal plating and other industries are major water polluting industries. Salinity, fluoride, arsenic have affected Groundwater contamination in 200 districts across 19 states. In Punjab ground water is being affected by sewage which contributes 70 percent to water pollution in urban areas (Garg, 2012:349). The holy river of India 'Ganga' is being polluted significantly by domestic, industrial, human waste and agriculture sewage. The river water is unfit for drinking, bathing, irrigation and other uses along several parts of its length despite its origin from pristine environment of Gangotri glacier in the Himalayas (Hiscock, 2012:70). Ganga which was ranked among the five most polluted rivers in world is probably one of the most populous river basins in world supporting 400 million people. 'The pollution, chemicals, toxics and bacteria in Ganga are almost 3000 times over the limit suggested by WHO as 'safe' (Pankoj, 2012:24). Estimates show 1400 million litres of sewage and 200 million liters of industrial effluents are discharged into Ganga every day. 260 mld of industrial waste water, runoff from 6 million fertilizers, 9000 tones of pesticides used within the basin every day (Rai, 2013:07).

Water pollution in Ganga is causing toll of human health, aquatic life and livelihoods of thousands of people. Rivers of South India are also heavily polluted by domestic, industrial sewage and other effluents. Waste water discharge is affecting the Ground water as 300 tanneries are spread along the river Palar in Tamil Nadu. River Chaliyar of Kerala is being polluted by factory and industrial effluents even large scale fish mortality was observed in the river (Saxena, 2004:353). The status of other water bodies including lakes, ponds, streams and springs is no different.

Ground water is being contaminated at an alarming rate which is the main source of sustenance for millions of rural and urban people in India. In West Bengal about 50

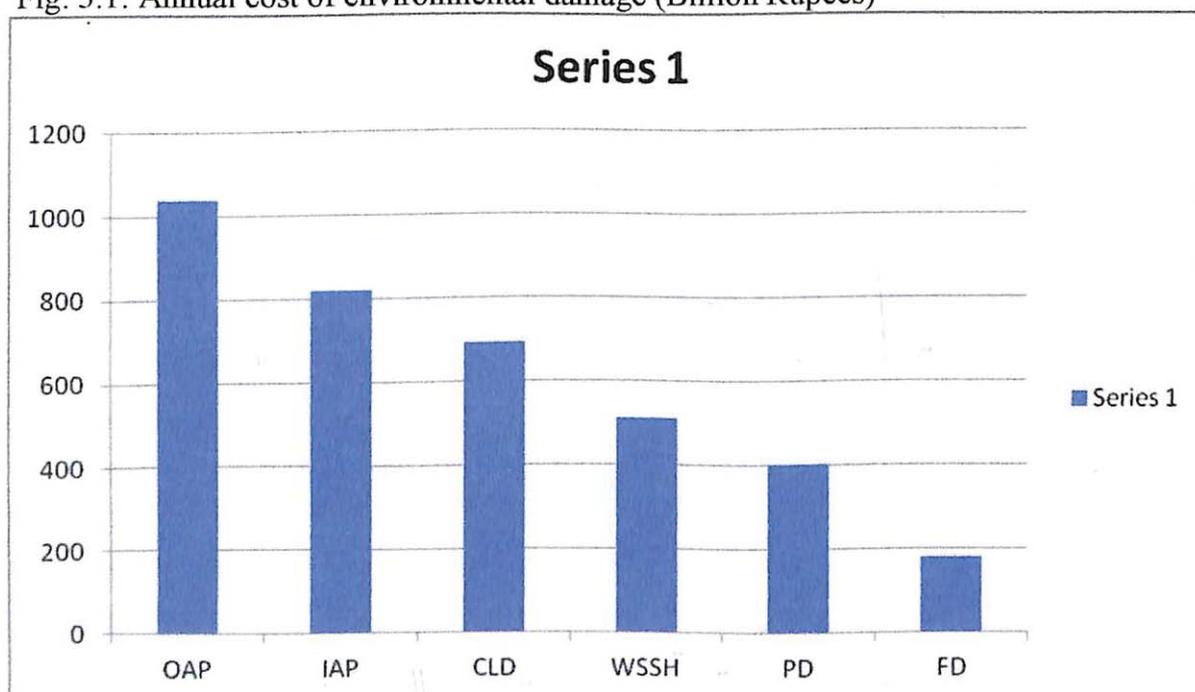
million people are vulnerable to high concentration of arsenic in ground water (Narain, 2012:11). Ground water deposits are overused and livelihoods hampered by water pollution generated by pesticides, aromatic hydrocarbons etc in Kolleru tank in Andhra Pradesh which lead to its death clinically (Lama, 2010:102).

Level of ground water is reducing and there is lack of clean drinking water and sanitation in India. Loss of 0.4 million lives is resulted by lack of water, sanitation and hygiene while as 0.52 million deaths occur due to air pollution in India annually, while as 1.5 million children die , 35-70 million people are in health risks and loss about Rs 366 billion yearly due to water related diseases (Government of India,2012:33). About 900,000 Indians die each year from drinking contaminated water , polluted air ,40 million people are affected by water borne diseases and 73 million work days or \$600 million are lost annually due to repercussions of water related diseases.(Bush et. al,2011).

Diarrhea, trachoma, intestinal worms, hepatitis etc are commonly caused due to contaminated water and about 21 percent of all the communicable water diseases are water borne diseases (Saxena, 2004:145). 30 percent urban and 90 rural depend on untreated surface water which cause enormous health impacts as such 60 million people in India are at risk of serious health effects and exposed to fluoride contamination (Narain, 2012:15). About 40000 persons have consumed the contaminated water in Bhopal after the disaster. Health defects like cancers, birth defects and diseases related to skin, lungs kidneys etc are several times more prevalent there than anywhere else in India and thus upcoming generations are also been affected (Garg, 2012:347). 9 percent to 12 percent of total disease burden in U.P is contributed by pollution levels in Ganga and total health damage on account of water pollution is 6.4 million daily (Rai, 2013:11). In Punjab incidence of cancer was reported in agriculture and is thought to have links with environmental causes (Singh, 2006:61). The annual environmental health loses per person of the exposed population in India ranges between Rs. 500 and Rs. 5000 (World Bank, 2013:27). Apart from affecting livelihoods and health of the people at large, environmental pollution and degradation cause loses to economy of India significantly. 'The cost to the people and the national exchequer has been enormous and is estimated to vary 2-6.5 percent of GDP'. The major environmental problems which cost losses worth

millions are, water pollution, deforestation, Land degradation, air pollution, tourism etc. According to World Bank report (2013) the estimated total cost of environmental degradation is Rs 3.7 trillion (US\$ 80 billion) annually, equivalent to 5.7 percent of GDP in 2009. Fig 3.1 shows the estimated cost of environmental damage in billion Rs.

Fig. 3.1: Annual cost of environmental damage (Billion Rupees)



Staff estimate, World Bank report No. 70004-IN

\*OAP- Outdoor air pollution, IAP-Indoor air pollution, CLD-Cropland degradation, WSSH- Water supply, sanitation and hygiene, PD-Pasture degradation, FD-Forest degradation.

Source: World Bank Report (2013).

### III.II. Environmental Planning in India

Despite increasing trend in environmental degradation, India has framed various laws for the protection of environment. The Government of India has made commitments, held summits at national and international levels and various other efforts have been done for the protection of environment. To stop pollution and protect environment various efforts have been taken by Government and NGO's and thus protection of environment has been of paramount importance in India. Soon after independence different laws have been

passed, legislative efforts been made for conservation and protection of environment. During last six decades many important environmental legislations.

### **III.III Environmental Legislations**

The Indian constitution passed historical amendment -42 Constitution Amendment Act, 1976 which incorporated two significant Articles –Article 48A and Article 51A(g) with certain changes to protect and improve the environment :

Article 4A: ‘The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country’

Article 51(g): ‘It shall be duty of every citizen of India to protect and improve the natural environment including forests, lakes, and wildlife and to have compassion for living creatures’.

India is one the few countries of the world that has provisions for the protection and improvement of the environment in its constitution (Lama, 2010:177). As a human right or fundamental right the environmental laws have been passed by Central and State legislatures to ensure and recognize clean environment for its citizens which is the basic need for the survival of humanity and cannot be ensured without ecological balance. Some of the important environmental acts passed by Indian government are:-

#### **III.III.I. Environment (Protection) Act, 1886**

To show commitment towards Stockholm Declaration of Environment 1972, this act was passed by parliament of India to fulfill the constitutional obligation towards the declaration. The environment Act was an objective for improvement and protection of environment and according to the Act the Government shall have the power to take all such measures for the purpose of protecting and improving the quality of the environment. According to this Act no person carrying on an industry, operation or process shall discharge or emit any environmental pollutant in excess of standards prescribed by the Government. Various rules including The Environment (Protection) rules have also been provided with it which include Hazardous Wastes Rules 1989,

Chemical accidents (Emergency planning, preparedness and response) rules 1996. Bio-medical water rules 1998, Municipal Solid Wastes rules etc. This Act is very comprehensive document on environment protection and other Acts have also interconnection with 1986 Act (Saxena, 2004:224)

### **III.III.II. Air (Prevention and Control of Pollution) Act, 1981**

Under Article 253 of the Constitution this Act was passed by the Indian parliament in the exercise of its powers. The goals of the Act are:-

- (1) To provide for the prevention, control and abatement of air pollution.
- (2) To confer on and assign to such board powers and functions relating to prevention, control and abatement of air pollution.
- (3) To lay down the standards to maintain the quality of the air.

The act is applicable to whole of India and envisages both central and state level boards.

### **III.III.III. Water (Prevention and Control of Pollution) Act, 1974**

This act aims to provide for the prevention and control of water pollution and maintaining or restoring of wholesomeness of water. According to this Act the State Government may alter any pollution prevention and control area whether by way of extension or reduction. Where under sub section (2) the court makes an order restraining any person from polluting the water and to desist from such action .Where it appears to the state board that any poisonous, noxious or polluting matter is present in the any stream land etc, it may carry out such operations as it may consider necessary by removing that matter from the water or land and remove or mitigate any such pollution in the water. According to this act section (17) and (18) the fundamental objective of the state is to provide clean water to its citizens. This Act covers all changes in physical, chemical or biological properties of water.

### **III.III.IV. National Environment Policy, 2006**

The national environmental policy (NEP) is the first comprehensive document formulated at national level for realizing the overarching goal of sustainable development in India. It is outcome of extensive consultations with experts, Governments, industry associations, academic and research institutions, civil society, NGO's and the public. The NEP outlines the significance of a number of new and continuing initiatives for enhancing environmental conservation which requires coordinated action of diverse actors and stakeholders at all levels. For the effective implementation of NEP the concerned Central ministries have been asked to formulate action plans in this regard (Shashi, 2011:12).

In the re-engineered Environment Impact Assessment (EIA), various projects were categorized in different categories depending on their threshold capacity and likely pollution potential and were appraised for prior environmental clearance at the central and state level respectively. Environmental Impact Assessment is an important management tool for ensuring the optimal use of natural resources for sustainable development (Kumar, 2010:54). It emphasizes conservation of resources and that best way to aid conservation is to ensure that people dependent on resources obtain better livelihoods from conservation. It points out that environmental degradation often leads to poverty and poor health outcomes among populations. The objectives of the policy lay emphasis on sustainable use of resources.

### **III.IV. Organizations**

#### **III.IV.I. Ministry of Environment and Forests (MoEF)**

It is the agency of the Central Government for the planning, promotion, co-ordination and overseeing the implementation of India's environmental and forestry policies and programmes. Its primary concerns are implementation of policies and programmes related to conservation of India's natural resources including rivers and lakes, biodiversity, wildlife and forests, ensuring the welfare of animals and prevention and abatement of pollution. It is guided by the principles of sustainable development and

human well-being enhancement (MoEF 2013)<sup>3</sup>. The ministry also serves as nodal agency for United Nations Environmental Programme (UNEP), South Asia Co-operative Environment Programme (SACEP), and International Centre for Integrated Mountain Programme (ICIMOD) and United Nations Conference on Environment and Development (UNCED).

### **III.IV.I. Central Pollution Control Board (CPCB)**

It is a statutory organization, constituted in 1974 under the water act. CPCB lays emphasis on strengthening of environmental monitoring networks, carrying out random checks of industries, review existing standards and development of new standards. The board is providing thrust to environmental surveillance work for pollution control in polluting industries in the country, restoration of environmental quality in critically polluted areas/polluted river stretches, strengthening of monitoring capabilities for water and ambient water quality monitoring, toxic pollutants, monitoring of aquatic resources,

Management of municipal solid waste, biomedical waste, hazardous waste and monitoring of specific pollutants.

CPCB is also co-coordinating important activities under the various acts and rules. CPCB is carrying out water quality monitoring at 2500 stations covering 445 rivers, 154 lakes, 12 tanks, 78 ponds, 41 creeks/seawater, 25 canals, 45 drains, 10 water treatment plants and 807 wells. It also carries out Ambient Air Quality Monitoring (AAQM) at 555 stations. CPCB has asked 89 industries to close down the activities and 106 industries have been directed to ensure the compliance under water and air acts through State Pollution Control Boards.

### **III.IV. India's International Agreements**

India is an active member of International Organizations concerning environment, her various programmes are been supervised under UNEP. India has been part of various agreements, summits and conferences aiming at protection and conservation of

---

3: Please see Appendix II

environment at National and International level including concerns in climate change, bio-diversity, air quality etc which are Global in nature .India has already been part of 94 multilateral environmental agreements and is participating in International negotiations under United Nations Framework Convention on Climate Change (Chakurbarty, 2013:14).

On the implementation of United Nations Framework Convention on Climate Change (UNFCCC) India is taking account responsibilities and respective capabilities, objectives and circumstances. India's total Global CO<sub>2</sub> emissions are only 4 percent (1331.6 million tons), still India is conscious about the Global challenge of climate change. In 2030 India's per-capita carbon emissions will be 4 tonnes which will be lower than the Global per capita emissions (Government of India, 2012:212). The government has set a goal of reducing emissions intensity of GDP by 20-25 percent by 2020 in comparison with 2005 level. India also took part in the International meeting in 2012 and partnered with its neighbors Bhutan, Nepal and Bangladesh seeking cooperation to address adverse effects of climate Change through adaptation actions in four thematic areas of Water, Food, Energy and Biodiversity. In Doha conference India argued to pursue the strategy of working together with Group of 77 and china to protect the interests of developing countries. India is the signatory of the Montreal Protocol and has already phased out production and consumption of Chlorofluoro Carbons ,one of the major ozone depleting substances in world and also committed to generate 22,000 MW of solar energy by 2020 and further making efforts towards energy and sustainability by framing different policies, assessments and regulations etc (Chakarburty, 2013:12). Some of the achievements in environmental protection , pollution mitigation and sustainability are been claimed such as: Forest cover has increased by 3 million hectares between 2005 and 2007, increased to 72,800 hectares and Green India Mission aims to increase 5 Million hectares, similarly protected areas cover has increased by about 70000 hectares. Consumption of ozone depleting substances has declined. Households without access to safe drinking water have reduced from 34 percent to about 9 percent in 2009 (Government of India, 2012:132).

In spite of the various achievements in various sectors there is also lack of implementation of Policies and programmes, there is neither systematic integration of the principles of sustainable development, nor evidence that biodiversity loss has reduced and ecosystem resilience has increased. 'There are no national-land water use plan, which could specify priorities on how various kinds of land and regions are to be used in a way that would ensure ecological (and related livelihood) security' and similarly forest land are been diverted for industrial, developmental and other projects (Kothari,2013:55).

### **III.V.I. Goals and Targets for the Post-2015 Framework**

'The goals below either emanate from splitting current Millennium Development Goals MDG7 or from linking MDG7 to other MDGH's and incorporating into these the objectives and actions set by nations in global agreements, and should be read into various global agreements that countries have signed on or accepted, including the declaration of Rio+20 Conference''

Goal 1: The integrity of natural ecosystems, wildlife populations, and biodiversity must be safeguarded by reducing and eventually eliminating resource and biodiversity loss and regenerating degraded ecosystems and populations

Goal 2: All people must have access to safe and adequate resources to fulfill their basic needs in a way that are ecologically sustainable and culturally appropriate.

Goal 3: All families and communities must have access to dignified livelihoods that are ecologically and culturally appropriate.

Goal 4: All production and consumption must be ecologically sustainable and socio-economically equitable, using a mix of incentives and disincentives.

Goal 5: All infrastructure development must be ecologically sustainable and socio-economically equitable

Goal 6: All service and welfare sectors must integrate principles and practices of ecological sustainability.

Goal 7: Macro frameworks of economy and polity must be geared to ecological sustainability, human security and socio-economic equity (Kothari, 2013:74).

As India is on the path of sustainable development and following goals of sustainability, green agendas, human security etc, she has to overcome the obstacles coming in the way of achieving the goals of environmental security and sustainability. There are various challenges that need to be overcome for moving towards a comprehensive framework of sustainability along with equity and human security. These include Knowledge, capacity and expertise gaps, Political apathy and hostility, corporate power, Military interests, Public apathy and attitudes etc (Kothari, 2013:67). There is need of reducing pressures on natural resources, increasing trend in mass awareness, mitigating pollution levels in water bodies and sustainable growth etc.

The emphasis on combined use of regulatory and economic instruments by Government for improving environmental quality can be more effective if enforced effectively. "While the seriousness of the government agencies in enhancing environmental quality is strongly felt, the system is far from being perfect and future concern areas do remain" (Chakarbourty, 2012:274). If the targets of environmental sustainability and environmental protection are achieved, India can not only save the GDP consumed by environmental degradation but it can also secure livelihoods, social- sustainability, economy affected by environmental degradation. Pollution check can save 2 billion life years if the places that exceed the national air quality standards were brought within standards and each person living in these areas may gain 3.3 years of life. There is need to increase the number of monitoring stations, increase sewage treatment capacity and regulatory instruments require disciplinary approaches (Murty, 2011:41). 'India must address market failures, Government failures and institutional failures which result in environmental pollution and natural resource degradation and integrate fully into decision making by all economic units' (Shankar, 2012:12). Different proposals and moves have been designed to reach towards post-2015 framework that integrates ecological sustainability, human security. Now for civil society organizations, people's movements, academic tink-tanks there is a crucial role (Kothari, 2013:78).

### III.IV. Conclusion

India in the ancient times had been a place where the philosophy of peaceful coexistence with nature was prevalent and objects of nature were synthesized with religion. Even presence of lesser population and non-existence of pollution and pressure on natural resources, people had ethical and careful relation with nature. But colonization and then economic development, rising population, changing life styles etc brought exploitation of nature and natural resources.

India is now a rising economy with 17 percent of world population, majority of which depend on natural resources for their survival and livelihood. Since independence of India, growth of industries, population, urbanization, transportation caused immense damage to environment in India. The environmental change or degradation doesn't only affect the economy and social sustainability but also health of millions of people in India, thousands of people die annually because of exposure to pollution. The poor are most vulnerable to these affects because of lack of proper health facilities, transportation etc. India faces both traditional and non-traditional security threats including environmental security threats. In spite of acknowledging the non-traditional security threats like food security recently, environmental security is discussed but not brought under serious government policies like food security. However the discourse of environmental security is gaining space and voices are emerging to bring environmental security in the policy dynamics and over the last many years policies, frameworks, programmes and goals of environmental sustainability have emerged leading to seriousness of addressing environmental issues. Many scholars believe that present pace of growth, development and resource use is unsustainable, hence there is an urgent need to look for environmental security and sustainability policies. There are various threats on environmental security and sustainability which India need to overcome, mitigate or deescalate.

Climate change impact the basis of Indian economy, social sustainability, undermines human development and livelihoods of millions of people by affecting agriculture, horticulture, water availability etc. If recent predictions and reports of 2014 by Inter-Governmental Panel for Climate Change (IPCC) about the future repercussions of

climate change like breaking of armed violence etc in India could prove true, it will effect peace and stability in the region which is already facing various other threats hence Climate change is one of biggest challenges for India. Millions are already hit by affects of climate change as droughts, rising sea level, low agrarian productivity and further escalation of impacts will damage the socio-economic resilience of millions of people. It is being observed that climate change has severe repercussions on health of the people also, vector borne diseases is believed to have links with climate change and poor people living in south like India are most exposed and vulnerable to these types of diseases.

India is expected to face challenges from the retreating of Himalayan glaciers whose water supports life of more than 400 million people in Ganga basin alone and India's 40 percent cropland. The speed of retreating Himalayan glaciers will pose threat to environmental, food and water security of the region.

India has some trans-boundary issues with her neighboring countries particularly water disputes and there is urgent need to have mutual agreements on water disputes. While taking any decisions on project or dam constructions on water bodies shared by other states particularly Bangladesh, India must take her into confidence. Earlier experiences have shown that floods, droughts in parts of Bangladesh caused due to construction of Farakha dam forced Bangladeshis into Northeastern states of India thus leading to Ethnic conflicts and violence in Assam etc. Militarization on Siachin glacier, world's highest battle zone is not only taking toll of human lives, economy but playing a crucial part in retreating the glaciers and risking the life of millions in South Asia. Demilitarization of Siachin glacier by both countries –India and Pakistan is been voiced by many environmental experts and security analysts. Peace advocates and security analysts stress that demilitarization of Siachin and then declaring Siachin as Peace Park is best way to solve this problem which will save human lives, economy and fragile environment of the area. India and Pakistan need to respect Indus water treaty to harness the power of Himalayan in the sustainable way.

India has millions hectares of degraded land which affects livelihood of millions. To tackle the problem India need to strengthen her irrigation facilities, expand water

availability, provide early warning alerts, regulate market scenario, check inorganic flows and imports and related external inputs. There should be water reservoir storages in areas which are rain fed or where water scarcity prevails.

Forest degradation/ deforestation which is caused by over exploitation, unsustainable practices and over grazing etc is a major concern to address for balancing the threatened bio-diversity of India. Protection of forests including forestation, classification of protected areas, increase in forest employees, ban on toxic effluents, mass education about importance of forests and strict imposition of laws should be stressed to overcome the depletion of forests. About 600 industries that were polluting the water were closed down in China recently and India should ponder over the existence of pollutants spread in every corner of her territory. Water pollution caused due to over exploitation, depletion of water resources surfaces in whole India. Government must regulate and check the pollutants contaminating water including monitoring of agriculture, inorganic, industrial, domestic sewage etc. There should be increase in proper sewage systems, monitoring stations and pollution checking centers as their existing number is very less in comparison to their distribution and supervision of vast areas.

The rivers of India which support life of millions are been polluted beyond recognition and one of the river Ganga is dirtiest but holiest rivers in India. Environmental ethics can be strengthened keeping in view the holiness of rivers through religious personalities. Faith based (Religion based) environmental awareness has played a significant role in environmental awareness and importance of ecology in many parts of the world even during Environmentalism. In this way government must take religious institutions and personalities of all faiths into account and support them in every possible manner to restore the life and quality of natural resources specially rivers.

India is still one of the leading green house gas emissions in the world. Brick kilns, cement factories; coal plants, other industries and sectors including transport are polluting the air quality and affecting health of millions. In order to mitigate the emissions, there is need to check the growing number of these pollution generating agencies and regulate the pollution level of existing ones from time to time. Clean energy technologies though

expensive should be prioritized over coal or other hazardous industry or technologies. Efficient environmental planning and management is an important need for protection of environment and biodiversity. While continuing economic growth and development Indian government must follow Environmental Impact Assessments (EIA) regulations. Every major and minor project in India should be brought under EIA so that assessments are taken from time to time and efforts are taken accordingly. Similarly Ministry of Forests having links and coordination with international organizations like UNEP, SAEP, ICIMOD, UNCED, should invite nation members of these organization for discussions to implement their successive policies in India. India should impart technical, research, financial and other assistance from these organizations. CPCB which lays emphasis on strengthening of environmental monitoring networks etc should expand its activities and increase number of monitoring stations.

While India is on path of achieving environmental sustainability, her efforts should be further strengthened by making assessments and regulations to fast environmental degradation. There should be systematic integration of principles of sustainable development, national resource use- land water, implementation of policies and programmes. To achieve Millennium Development Goals 7 (MDG7) target for post-2015 framework, India must acknowledge that all people should have access to dignified livelihoods that are ecologically appropriate, while talking about integrity of natural resources. India has to overcome many challenges to move towards achieving the goals of sustainability. The interest of Corporate could spoil India's goals, hence the Government should be very cautious that any change in policies that will go in the interest of corporate power would be another threat to ecological and environmental sustainability of India. Military interests are supposed as biggest challenge as they are interested in continuing the status quo. Militaries are also the biggest single institution which affects the environment and ecological sustainability. Military should be addressed as a cause of environmental pollution than a solution. In this way militaries need to be cooperative with the government and other stakeholders to protect the environment and increase the resilience of environmental sustainability.

## **Chapter IV**

### **Environmental Security and Sustainability in Kashmir**

## Chapter IV

### Environmental Security and Sustainability in Kashmir

#### Introduction

Jammu and Kashmir is situated between 32.15 degree and 37.05 degree north latitude and 72.35 degree with an area of 2,22,236 sq. kms including the areas under the occupation of Pakistan and China. The Himalayan state is divided into three regions including Jammu, Kashmir, Ladakh comprising 19 percent, 11 percent and 70 percent of the area of state respectively and distinguished topography, culture etc. The main valley is spread up to 15,520.3 sq kms and has average height of 1,850 meters (6070 ft) above sea level. The climate of the state varies; climate of Jammu is monsoonal and in hot season Jammu experiences very hot days. Climate of Ladakh is extremely cold and dry and climate of Kashmir is temperate with long cold winters and mild summer. Kashmir valley is enclosed by high mountain ranges from 10,000 feet to 18,000 feet high which has made Kashmir a specific geographical area in which culture, history, lifestyles and Kashmir identity has determined. Majority of the population depend on agriculture, growing wheat, rice etc. Rice is the dominant crop and grown in hot and moist climate, wheat and maize are major crops grown in the state. Saffron is the one of the world's most prized spices grown in Kashmir besides the famous fruits apple, walnut, almond, apricot, plums, strawberry, peaches are also grown in Kashmir.

The forests contain tree species of deodar; kail, fir, chir, etc constitute about 9.8 percent (222236 sq kms) of total geographical area. The state has 16 sanctuaries, 4 national parks, 26 reserve area which shelter diverse flora and fauna like Kashmiri stag/hangul, brown bear, leopard, snow leopard, Himalayan ibex, Kashmiri squirrel etc. In this fragile Himalayan region people depend on their natural environment for their sustenance, and region draws about 70 percent of its GDP from the surrounding ecological resources pertinently 75 percent people draw raw materials from natural environment itself including horticulture, agriculture etc. Kashmir and its beauty has been admired by naturalists, poets etc since centuries and was regarded as one of the most beautiful

frontlines in the world. Kashmir was the part of ancient silk route and had trade relations with central Asian and other regions.

Owing to its beauty, climate and natural resources Kashmir was conquered by outside rulers since 1586 by mughals, Afghans, Sikhs and dogra's. Since the bloody partition of 1947, Kashmir has become bone of contention between India and Pakistan, while both the countries claimed the territory and fought many wars. The whole undivided territory of Kashmir comprises of Gilgit, Kashmir under Pakistan (POK), Aksai chin under China and Jammu, Kashmir and Ladakh under India. The rise of armed conflict started in 1989 when Kashmiri youth backed by Pakistan took arms to fight for liberation of Kashmir. The armed conflict took huge toll of human lives, economy, education, society and environment. Kashmir also became one of the most heavily militarized zones in world with deployment of more than half a million troops dotting the pristine environment. The wars, armed conflict and continuous Militarization and military activities have brought destruction of environment besides hampering resource and livelihood access to thousands of people. Vegetation, flora, fauna and other natural resources have been lost during the last many decades and the conflict is still posing a threat to ecologically sensitive Himalayan valley.

This chapter will deal with causes and impacts of environmental change in Kashmir. It deals on how climate change, armed conflict, militarization and unsustainable tourism is affecting this ecological fragile area.

#### **IV.I.I. Armed Conflict and Environment**

Armed conflicts have serious direct and indirect implications on environment in almost every conflict ridden zone in the world. In addition to direct and indirect impacts, lack of investment and collapse of positive environmental practices are caused due to disruption of state institutions, policy coordination mechanisms because armed conflicts weaken already fragile governance. The governments have almost no control over its machinery during conflicts and its various institutions become collapsed. The armed conflict in Kashmir has been a tragedy in all respects including human loss, devastated economy, environmental

damage and huge military buildup (Kathwari, 2009:2). Among World's major armed conflicts, majority have occurred or occurring in most biologically diverse and threatened places on earth according to study by Scientific journal 'Conservation biology' that has reported out 34 bio-diverse hotspots in world including Kashmir (Kharoo, 2009:7). 'For Pakistan and India, this is the conflict about environmental resources that has massive implications for food and energy security' (Guda, 2012:6).

The armed conflict in Kashmir affected the natural resources, wildlife, natural habitats, water resources and contributed overwhelmingly to land degradation. One of the world's most ecological sensitive places its natural environment is been disturbed and defaced particularly during the combats. Wildlife has been target of the combat while fighting between militants and army (Shambaugh et. al, 2001:4). More than 200 forest and environment officials were killed during the conflict while delivering the duties and it has adversely affected the protection of environment and wildlife (Zia, 2010:3). During the conflict of Kashmir the forest cover reduced has decreased to half from 8000 sq kms. The forests were cleared by smugglers, Militants and forces during the last two decades. Tens of thousands of trees were cut down by renegades around Wular Lake in mid 1990's that affected the ecology of the area. The conflict affected the work culture and employees were not able to deliver the duties due to insecurity and threats from various organizations and army. This happened also with forest and wild life officials who didn't deliver their duties in forests and remote areas where battles and militia activities took place. The man animal conflict has increased in Kashmir because of conflict between military and militants (Rehman, 2012:5). Due to fighting between militants and presence of the duo in forests, wild animals are forced to enter in nearby villages and towns. The number of wildlife animals has decreased overwhelmingly e.g black bears were reduced to 137 and in addition to this more than hundred varieties of birds have virtually lost (Hamid, 2012:3). Snow leopards and Kashmiri Otter are now rarely seen in Kashmir (Crook, 1998:3). Land degradation and loss of vegetation and wildlife occurred due to fencing and land mines in vast areas of Kashmir (Kashmir times, 2009:7).

Habitat degradation, reduced access to water points, species loss, alternative of the natural food chain and additional pressure on bio-diversity are some of the problems associated

with land mines in Kashmir (Rehman, 2012:12). The forest reduction has led to increase in soil erosion and siltation loads in water bodies in Kashmir. The water bodies particularly lakes and wetlands are continuously reducing their area thus affecting the livelihood of thousands who depend on them. Nine wetlands will be vanished in the coming decade according to experts if they continue to be neglected (Hamid, 2012:3). One of the largest fresh water lakes of Asia namely Wular lake located in north Kashmir which acts as a hydrological reservoir for Kashmir valley is at the edge of extinction because of siltation brought by rivers and streams. The area of the lake has shrunk from 202sq kms in 1960 to 65 sq kms in 1999 and the people living around the lake are at risk of losing their source of sustenance (Jameel, 2007:6). Silt deposition, unplanned urbanization, encroachments and huge flow of sewage and effluents and pollutants are making Kashmir's water bodies to shrink at an alarming rate; similarly Dal lake has shrunk from 58 sq kms to 11 sq kms. During the last decades of conflict the Government was not able to treat the solid wastes and sewages in a scientific way; now the repercussions are being observed and it is believed that unscientific treatment of solid waste during last 30 years have degraded the ground water quality as studies are showing the turbidity of water is 5760 against the permissible limit of 10.

'The conflict has negative effects on horticulture industry also. The value of export of horticulture is roughly Rs. 2000 crore, but due to shutdowns, imposition of curfews and economic blockades tonnes of fruits got destroyed. Rs. 3000 crore was lost when few political parties in Jammu blocked the only opening link of Kashmir with outside world to protest the land transfer revocation move. Rs 20 crore is daily loss to Kashmir on account of shutdowns' (Shah, 2009:44). Traditional trade routes connecting Kashmir with central Asia and other parts of world have been closed during 1947 division of Kashmir. Before 1947 Kashmir farmers exported their prized apples, peaches, pears, saffron, handicrafts etc to central Asian and European cities which would reach there on time without being defected by weather conditions. Owing to be a landlocked place, Post-disaster reconstruction, rescue operations and relief activities were affected during 2005 earth quake due to closure of routes, restrictions imposed by military etc. The state lacks

effective disaster management, and in case if any disaster (flood, earth quake etc) happens in future, it will be more catastrophic due to lack of any effective planning.

During the last two decades the encroachment of land have increased manifold. Militants and government officials used their powers to grab the government land. It is estimated that out of 1,25,03,973 kanals of total area of state about 20,64,972 with estimated value of 24, 448 crore was under encroachment (Greater Kashmir, 2014:3). About 9497.64 hectares of forest land was grabbed in Kashmir valley and during the period between 1989 and 1996 about 1,30,291 cubic feet timber worth crores was illegally felled in Kashmir (Daily excelsior 2010:1).The wars between India and Pakistan have also taken huge toll of environment, wild life and natural resources. Large scale poaching of wildlife animals was caused due to troops mobilization in 2002 and rare species were disappeared during Kargil war (Ilmas et. al, 2004:37). In addition to abuse of environment by smugglers, militants, and renegades since 1990, the role of military in the exploitation of natural resources, occupation of vast land has lead to degradation of land, water and other assets.

#### **IV.I.II. Environment and Militarization**

Military as an institution is regarded as the largest single threat and pollutants to environment, most devastating than other institutions. Military can lead to use and degradation of land, resources and generation of toxic wastes (Renner, 1991:41). Military and military toxins destroy the nature and wildlife, contaminate air, water, land and disrupt native habitats<sup>4</sup>. The repercussions are numerous, multi dimensional and long term for the generations to come. Military presence anywhere in world is single most predictor to environmental damage. The recent advanced research argues that Militarization, military pollution and toxins can damage not only Environment but also reproductive health besides Socio- economic destructions. Having significant environmental impacts in times of war, Military activities also degrade environment in period of not-war, because militaries are preparing to fight next war (Barnett, 2001:153). In many cases environmental norms and recognitions are ignored, sidelined even in times of peace and not -war.

---

<sup>4</sup> See Appendix III

The case of Kashmir is no exception; the armed conflict started in 1990 seems deescalating now as the numbers of armed militants have decreased to 200-300 even claimed by the Government. However, the numbers (667,000 soldiers), space, Geographical expansion of Indian military in Kashmir has not decreased but increased overwhelmingly, making it 'most militarized zone and most dangerous hotspot in the world' (Dabla, 2009:65). Since last sixty years military forces have occupied vast tracts of land including forest land, horticulture agriculture and pasture lands worth market value of millions of rupees. 'Out of the 1,054,721 kanals (131,840 acres) of land spread to 80 tehsils of J&K occupied by Indian army, only 199,314 kanals (24,914.25 acres) were under lease license and acquisitions made under provision of land acquisition act. Thus under 80 percent land was under illegal occupation. Omar Abdullah CM of Kashmir claimed that 597,324 kanals were occupied by army for which no rent was paid'' (Conveyor, 2010:46). The number of military forces in this low intensity conflict is manifold, multiple times more than the deployments by N.A.T.O and U.S forces in intensive war zones like Afghanistan and Iraq. 'India's militarization is aimed at territorial control of Kashmir and control over key economic and environmental resources in the region' (Chaterji, 2010:03).

According to an estimate, Kashmir has the 'highest ever per capita ratio of troops per population in contemporary human history, with a ratio of one Indian armed military man for roughly every 3-4 Kashmiri youth (Husain, 1992:346). 'Real issues of existence of Kashmiris carry no weight; every issue is abstracted in Indo-Pak context. Larger issues of environment, ecology and real human catastrophes of hydro electric projects has not been discussed and analyzed and in this way loot of resources is being carried without considering its repercussions on Kashmir' (Peer, 2011:27). Environmental laws designed to protect environment, ecology and other assets in times of armed conflict are not being respected. Despite the decrease in armed militants and highly fortified borders to stop insurgency, the number of Military forces have not been reduced but their demands to acquire more land, powers, technology and facilities has highly intensified. Kashmir which was once known as paradise on earth is having devastative affect on natural resources, flora, and fauna besides socio economic condition of life for native population

in recent turbulent history of armed conflict and huge militarization. The impacts of militarization of Siachin glacier by both India and Pakistan is threatening food, water and health security of millions in Pakistan and both sides of Kashmir owing to its Trans-Boundary environmental traffic flows. Thousands tons of military garbage is dumped there since decades and about 200 tones of Carbon Dioxide is released every day (Zia, 2012:3)

It is interesting to note that most of the military camps in Kashmir are located in rich geographical tracts and fragile ecosystems like forests, river banks, orchards, agricultural lands, hills and vicinity of glaciers etc. 'Kashmir's richest natural resources are in highly militarized and opaque zones- which forms 17% of the state area. It is this vast region in Kashmir that contains all the glaciers, water and mineral resources, pine forests, animal and plant life etc. But this region is spread to 300km with varying depth 20-40 km is highly militarized over which the state government has virtually no control' (Peer, 2011:27). In spite of being ecologically sensitive Kashmir has large number of war preparation or artillery practice fields dotting mountains forests and other resources. Out of sixty four artillery practice grounds in India, Kashmir has majority of them up to twelve. Toxic wastes, chemicals, metals, uniforms, boots, shells, excreta and other hazardous substances being exposed to nature in forests, rivers, glaciers etc as there are no scientific methods to dispose these substances. Military Lories, helicopter radiations, military convoys, consumption of fuels, coal, kerosene and use of effluents and other heat generating equipments and technologies are producing green house gas emissions thus disturbing the climate and playing the role in receding of glaciers (Cussan, 2008:4).

Bulk of coal, kerosene and other fuels are imported to Kashmir annually to continue the military activities which degrade the atmosphere further. High level generation of green house gas emission by hundreds of military convoy's per day is damaging the fragile environment of Kashmir which is one of the causes of receding of glaciers (Wani, 2008:3). In Ladakh region alone about 1.2 billion litres of diesel are used annually by these vehicles (Parvaiz, 2009:2). Water contamination from the areas where military camps are located on banks of water bodies is also reported from time to time. The sewage excreta and solid waste of about 60 military camps on river Jhelum flow into its

waters thus causing contamination of water. The recent epidemic in Kupwara area and spread of water borne diseases is associated with military establishment near water bodies. Military concentration is regarded as the primary cause of water pollution as toilets and other sewage outlets are found on streams providing water to district (Kashmir monitor, 2014:5).

Military is also one of hindrances to sustainable development and Eco-tourism in Kashmir. Indian army's Badamibagh Cantonment is violating the master plan of Srinagar city and ecological sensitivity of the zone to which state government has shown helplessness<sup>5</sup>. Similarly 2500 kanals of land is occupied by forces in tourist resort Gulmarg out of which 1400 kanals are illegally occupied.

#### **IV.I.III. Ammunition depots, War Preparations, Environment and Livelihood**

'Military operations represent yet another source of military related peace time environmental degradation. Land that is used for military training is prone to severe degradation causing toxic contamination of soil and ground water. Fragile environments may take hundreds of years to recover from military assault' (Majeed, 2004:25). War preparations, military activities not only degrade environment by also affect sustainable livelihood of the people<sup>6</sup>. More devastating is the dumping of ammunition, planting landmines and practice of artillery drills, military accidents in ecological sensitive altitudes and civilian areas whose long term effects can have multi-dimensional consequences. The impact of khundroo tragedy is still risking large number of people. The sudden explosion of ammunition inside the military camp in south Kashmir left 20 people dead in 2007 and affected population of 25000 spread to 225 sq. km as 21,891 metric tons of missiles, ammunition, weapons and artillery shells were stored without proper precautions. Hundreds kannals of agriculture land is left barren as artillery shells

---

<sup>5</sup> Badamibagh cantonment, the supply and support base for Indian army in Kashmir (spread to 11668.296 kannals { 1458.337 acres} of land according to army records) has come up in the violation of the Srinagar master plan with most of its structures falling within the ecological fragile zone. While as Srinagar municipal corporation demolished 500 private illegal structures, it did nothing to sought inquiries against the violations made by military.

<sup>6</sup> Sustainable livelihood means, ' peoples capacity to generate and maintain their means of living, enhance their well being and that of future generations'.

have been embedded into fields and exploded from time to time taking toll of human, cattle and livelihood of the people. Water sources like springs and irrigation canals were filled with toxins leading to clean water scarcity in the area (Dar, 2009:03).

Similarly tens of thousands of people from Khag and Beerwah constituencies of central Kashmir are affected due to the artillery practices conducted on leased land by Indian army since 1960's in nearby Tosa –maidan meadow spread to 3000 kanals of forest land. The people and civil societies are against the extension of leasing land to army which ends in 2014, claiming they have lived in war like situation and argue that they were mass tortured during last many decades<sup>7</sup>. Land is devastated in many ways: ammunition and other guns are fired during “air to ground bombing” practice from one valley to another. During the practice orchards, livestock and forests have been destroyed and tones of waste have been poured downrange. The shelling and bangs have resulted in formation of cracks in majority of the houses and commercial buildings. Shupnag Lake in the meadow which is the source of water to population of Budgam and Baramulla is showing signs of contamination because chemical wastes, metal scrapes flow into the water bodies particularly during rains (Bhat, 2013:9).

The accidental explosion of shells and artillery scattered in forest and grazing area has taken toll of human loss, cattle and wildlife. During summer when people need forests most to collect grass, herbs and timber to store the same for coming bitter winter, they are issued notices by army to remain indoors. Because of degraded agriculture land, orchards, livestock loss, extreme winters and lack of other means of livelihood and employment, people particularly of Shonglipora etc largely depend on forests and its resources but have been unfortunately denied the sustainable and fair access from last fifty years. ‘In larger states of India like Rajasthan, MP, Tamil Nadu drills are organized only at 3 to 4 places/state, while as firing and artillery drills are practiced at 12 other places across Kashmir’ (Bhat, 2013:09).

---

<sup>7</sup> Note;.I have done field work from 15<sup>th</sup> may to 05 June 2014 in these areas (Tosa-Maidan,Khag, Budgam, Gurez, Amarnath (Sonamerg) and Wular lake etc.).

It has been reported that the artillery drills and their violent sudden sounds have imparted the hearing capacity and ability of large section of population particularly children and infants. The villagers have seen their entire generations being killed; handicapped, maimed, distressed and traumatized. The villager's put forth their demands as relocation of firing range to other place and Tosa-maidan to be brought to tourist map. Despite huge losses villagers do not demand compensation and want the lease must stop. Villagers also say that in coming summer of 2014 they will camp inside the Tosa-maidan if the artillery practices are not stopped. 'Lack of access to some highland pastures due to heavy military presence has constrained development of livestock, imparting traditional livelihoods and increasing dependency on costly imports' (Talib, 2010:27).

#### **IV.I.IV. Fencing, Environment and Livelihood**

The valley of Gurez has seen devastation of its ecology, environment, economy and society since 1947 when its villages, families were divided by LOC. During the confrontation of Indian and Pakistani army and exchange of shelling dozens have been killed, structures destroyed and people displaced due to close location of military bases near residential areas. Being important strategically to Indian army tens of thousands of soldiers were deployed in Gurez double than its population (Mir, 2008:4).

Despite the LOC demarcation Indian army decided to lay foundation of another internal demarcation line (200 km long) inside Gurez. In these processes hundreds of families were left landless. Internal demarcation divided forest land, affected wildlife habitats and divided their agriculture land and hindered easy access of natural resources, water availability and herbal plants. In past people would collect wild vegetables, herbal plants, firewood to store it for seven long months of winter when Gurez remains totally cutoff from outside world. Huge Military buildup doesn't only consume vast prime land of the area but also left people to depend on small land holdings which have difficult accessibility. The people going to their fields across the demarcation line (made of concertina wire) have to enter at specific points controlled by military at intervals of 2, 3 to 5 km even more. The farmers who have fields and farms close to their houses but across the line have to walk kilometers to reach the entry point and then walk back

towards fields across the line. At many places people particularly women follow the same strategy to walk miles for collection of woods, water and other things. The total area of agricultural land in Gurez (2500 hectares) is less in comparison to area (3200 kanals) under the military control. What little is left is prone to avalanches, landslides and remaining is exploited by NHPC and H.C.C in process of constructing 330 MW hydro electric project<sup>8</sup>. The population is increasing annually so are the demands of consumption as families have to depend on their limited available land and sources. Demographic resettlement can be witnessed after completion of Bandipora – Gurez vehicular tunnel and round year accessibility. There is possibility that majority of people who migrated to Bandipora and other parts of Kashmir during last few decades of conflict can resettle back in Gurez owing to onset of more development, communication links, cultural security in Gurez and relatively acceptable winters of past years. There will be more pressure on available resources and livelihoods which have already shown downward trend. There has considerable decline about 70% in agrarian production and economy from last many years as droughts, climate variations, change in rainfall patterns have affected the production of Maize, pulses, potatoes, peas etc .There are also apprehensions that the submersion of vast areas of Gurez under the dam in future may threaten the status of agrarian economy further. Small land holding, drought, non-accessibility of nutritive pastures because of restrictions imposed by military for security concerns has lead to decreasing livestock per home (Khan et. al, 2013:57).

#### **IV.V. Military Establishments, Environment and Sustainable Planning**

Military establishments not only effect environment but also hamper the sustainable economic and Wildlife planning. Jammu and Kashmir already stand divided by a barrier which consists of double row fencing and concertina wire eight to twelve feet in height, electrified and connected to a network of motion sensors, thermal imaging devices, lighting systems and alarms. However, the announcement made by defense ministry regarding the construction of high wall about two hundred kilometers long to stop

---

<sup>8</sup> NHPC is constructing an 330 MW hydro electric project in Gurez. The project dam will submerge half of gurez despite damaging the fragile ecology of the area. About 800 kannals of forest land has been allotted to HCC to dump project waste there. Hundreds of families have been left landless and homeless besides contaminating round year water source of gurez and some parts of Pakistani administrated Kashmir.

insurgency in Jammu region will further destroy the environment<sup>9</sup> (Rashid and Yasin, 2014:20). Despite concertina fencing, the construction of concrete wall will imbalance the ecology, wildlife habitats and damage environment. Indian Air Force had also proposed to construct a road in high altitude Gulmarg nestled in forests and glaciers. The proposition about construction of concrete 12 km road from Gulmarg to Apharwat by Indian air force to set up Mountain radar system in Apharwat will destroy the beauty and bio-diversity of the area. The State Cable Car Corporation and Gulmarg Development Authority have already raised objections in this matter so far. The proposal waits signal from Indian ministry of Defense and in case the road is constructed, it will damage the Slopes which are being used for international skiing and Gulmarg Gondola. The plan will damage the terrain prone to avalanches and landslides which will badly hit the winter tourism (Kashmir Scan, 2014:11). High altitude areas including meadows, pastures, forests etc are important component in ecological balance. However, owing to importance of these areas in military operations, military observations and surveillance etc most of the high altitude areas were occupied by military. The occupation of the grazing areas, pastures and meadows by military has lead to over grazing in majority of other pastures. The latest report released by Government also admits that increase in livestock number has posed threat to grazing pastures (Government of J&K, 2014:22).

Like in other parts of world, Civilians in Kashmir too have been systematically denied access to information regarding impacts of Militarization on environment and health of society before it shows devastative results. In these cases military secrets are protected at cost of life of people and their coming generations, In this way it is less possible for the people to protect their life and livelihoods. Women now report cancer, kidney diseases, birth and other health defects in Memphis after a military depot dumped chemicals in secrecy without informing the people (Gluckman et. al, 2003:10). In Australia and other places weapon testing areas cannot be used for alternative purposes even after testing ended decades before (Barnett, 2001:167).

---

<sup>9</sup> The wall will be a 10-metre high embankment running along the 197-KM stretch of the international border passing through 118 villages. Earth excavations are being pressed into service to dig trenches as military has already acquired land in 29 villages.

The vast land under the control of military in Kashmir has hampered the decisive and sustainable development including planning of roads and other projects. The occupation of prime land by military in cities and towns is forcing government to continue other projects and construction works in agriculture lands and flood prone areas. Landscape was disfigured all along the valley as dozens of hills in valley were cleared to provide earth filling for railway tracks (Ashraf, 2013:3). 'Millions of truck loads of earth were mined from hill sides which made Kashmir landscape unsightly and soil erosion prone. The rail alignments and the location of train stations, with military compounds adjoining the train stations would imply that rail project is more for military purposes. The rail alignment is unrelated to the existing habitation areas of the valley towns' (Khan, 2010:19).

The railway line and bye pass were thus constructed in flood plains of Kashmir while as the flood control aspect was not considered. Surprisingly flood control mechanism was ignored in the project. In this way 'Srinagar city will be subject to flooding as flood water will be guided by railway line towards Srinagar city away from flood plain' (Hussain, 2014:8). 'A rail alignment circling around the valley above the flood plain and below the forest areas would have opened up new areas more suitable for urban development, instead of a straight alignment cutting through the most productive agriculture land and most flood prone areas' (Khan, 2010:20). On the other hand vast land occupied by military is hampering agrarian economy. The control of land by military is not only affecting livelihoods of those people whose land is being occupied but that land has potential to provide sustenance and jobs to tens of thousands of people . 'Army is not paying the rent of the land it has occupied. It has affected livelihood of thousands of people which has forced many to file cases and get the land back which was taken away by military 60 years before. However, it didn't become a precedent for getting armed forces of India to vacate land it has occupied because the court didn't come out to declare what would be a reasonable period be after which requisitioned land must be restored to its original owners' (The Conveyor, 2010:46).

Government is not clear how much land is under Military and usually provides disputed figures of land from time to time. While as agriculture sector's contribution to GDP is

shrinking, Kashmir has huge area under Indian army; about 5.72 lakh kanals (supposed to be without rent). If this huge land is used for agrarian activities, it can contribute to additional 18% business to apple industry and agricultural GSDP will reach 7.2% from current menial growth rate of 1.44% and the land will provide jobs to 2.8 lakh people, more jobs than what Government has generated in last ten years (Ayoub, 2014:8). Many believe that more tracts of land worth billions of rupees are under military control against the area 5.72 lakh claimed by government. Head of the Hurriyat Conferance Syed Ali Shah Geelani of Kashmir claims that, about 28 lakh kannals of land are under military control. If he is to be believed than the land can provide million plus jobs and increase agriculture production manifold. If the rough estimates are made, then 28 lakh kanals have potential to provide 14 lakh jobs.

#### **IV.II. Climate Change and Implications in Kashmir**

The most challenging environmental problem being faced by humanity is Climate change which threatens security from individual, national to global and impacts are severe (Dovers, 2001:163). Climate change has disturbed agricultural production, water supply, human health, bio diversity and international security. The impacts of climate change have become severe in the highly sensitive ecological Himalayan region comprising of Glaciers, mountains and hilly tracts. Alterations in temperature are receding glaciers of Himalayan region, some have already disappeared and some are disappearing. Climate change in Kashmir has lead to receding of Glaciers, water sources and increase in temperature.

There has been average 1.45 degree Celsius rise in temperature in Kashmir and significant increase in maximum temperature of 0.5 degree Celsius per year. In addition to drying of springs water level has also decreased by two-thirds in almost all rivers and streams in Kashmir during last 40 years (Talib, 2010:3). Over the last many three decades the increase in temperature and less snowfall receding of glaciers is affecting the water level in rivers and streams. Kashmir receives its water from its surrounding glaciers throughout the year and in hydrological system of Kashmir glaciers play a significant role. The glaciers in Kashmir are receding at an alarming rate of one meter annually

unlike in other parts of Himalayas. The kolahoi glacier which is the main source of fresh water for the majority of people of Kashmir (South, North and Northeast Kashmir) is receding fast caused by climatic patterns and anthropogenic activities (Hashmi et. al, 1994:68). 'Woodrow Wilson research centre based in Washington BC and TERI Institute Delhi have reported that glaciers in Kashmir are on extinction and most of the springs in the valley have dried up' (Wani, 2008:4).

#### **IV.II.I. Climate Change and Agriculture**

Climate change has significant implication on agriculture production and productivity and during last many decades climate change is affecting and decreasing the agricultural production at an alarming rate. The effects of climatic change have different facets on food production and fruits in Kashmir and over the years there have been slow growth in production. Growth and output of crops like saffron have been affected and low returns from other rain fed crops are affecting the livelihoods, livestock and food security to communities living in different areas (Talib, 2010:18). Saffron which was once a premier product for export from Kashmir is losing its glory. World famous Kashmir saffron which is the main source of income to the people living in south Kashmir is producing less yield over last many years and is threatening the livelihood of thousands of farmers. Saffron in Kashmir has suffered 40 % drop in production (Datta, 2013:561). The increase in normal day temperatures since last many years has affected the quality of the apple fruit and the fruits are developing "Alternative Mali disease" due to the changing weather conditions.

The fungus caused due to high temperature affected 10-20 percent orchards in Kashmir and reduced apple production by 11 percent. The climate change is believed to have further implications that will intensify problems in Kashmir and can threaten the livelihood of millions (The Economist, 2008:7). The alterations in temperature caused 40-70 percent loss of crops like Cherry, plum, apricot, peach etc and if the fluctuation in temperature continues in future, it may lead to a fall of 15-30 percent in overall production yield in paddy (Talib, 2010:18).

**Table.1. Food Grain Production in relation to Population Growth**

Year	Population(m)	Production (mt)
1950-51	3.25	0.45
1980-81	5.99	1.31
2011-12	12.55	1.78

The annual grain production remains around 18 million tones against the requirement of about 24 million tones revealing a gap of 25%.

Source: Government of J&K. (2014).

The Gurez area which is higher in altitude than main Kashmir valley is largely affected by climate change. Erratic rainfall and droughts are reducing production of crops in the landlocked and highly militarized gurez valley. Potato's have decreased over last many years from 10 quintals per kanal to 4 quintal per kanal of land in 2013 and Maize production has decreased to 1 quintal per kanal in 2013 from 3.5 quintal in 1999. The unusual rainfall damaged standing crops and lead to floods in river Kishenganga thus creating damage to agriculture and trout fishes first time so much in 2012. In nearest Ladakh region climate change is destabilizing the fragile equilibrium with water supply becoming difficult and snow precipitation patterns have become erratic (Avard,2013:3). The unusual snow fall in 2009 lead to death of thousand of highly valued pashmina goats which provide raw material to traditional pashmina shawls .This caused loss of crores and affected the livelihoods hundreds of families.

The loss of production in agriculture and water scarcity is forcing people to switch most of their fields from agriculture to horticulture (Parvaiz, 2011:1). The shifting of farming from agriculture to horticulture is decreasing the food production in Kashmir. More communities are becoming dependent on markets and following other methods to obtain food grains due to failure of crops and dwindling food security (Talib, 2010:20). There is growing food deficit in percentage in terms of food grain production.

'In case climate change continues to slide uncertainty, endangered yields from fruits and crash crop, another danger will be in store; that is food insecurity. As more and more land under paddy cultivation is changed into orchards, Kashmir's 44 percent food grain deficit

is likely to touch over 60 percent in coming ten years and such a situation could lead to food insecurity in Kashmir' (Talib, 2010:20). The shifting to horticulture needs extensive use of pesticides and fungicides and other chemicals that are associated with increasing frequency of brain tumors and cancers recently (Wani, 2014:8). The climate change is not only affecting the livelihoods but also forcing people to change their traditional farming practices which is leading to food deficiency and health problems due to use of extensive pesticides and other toxic chemicals.

Table 2: Increasing population and low production leads to food deficiency.

Year	Production	Population	Requirement	% Deficit
1950-51	206.30	1795304	307.00	32
1980-81	486.92	3269276	559.05	23
2005-06	620	5985340	1023.49	40

Production requirement: As per minimum Nutritional standards of Cereals= 420 gm/day/head, Pulses=50 gm/day/head.

Source: Government of J&K (2009)

#### IV.II.II. Tourism and Environment

Besides the ongoing conflict in Kashmir, tourism is an evolving industry providing jobs to thousands of people directly and indirectly. Since the signing of cease fire in 2003 and decline in violence, the number of tourists visiting Kashmir has increased manifold. However, the mammoth rush of tourists to some fragile areas has raised debate over the environmental and tourism infrastructure in Kashmir. Pressure on natural resources, pollution and wastes, loss of biodiversity and harm to wildlife and habitats etc are the main potential impacts of tourism on environment (Malik et. al, 2013:1).

The valley of Kashmir particularly tourist resorts are filled with solid wastes during and after the peak tourist season in addition to damage of vegetation, contamination of land, water and even air. One of the main tourists places in Srinagar Dal lake is been damaged and its clear water are been polluted beyond recognition. Tones of waste are seen scattered in forests of Gulmarg which is degrading its pristine environment. The growing

number in hotels and houseboats is threatening the water quality further as they directly and indirectly flow sewages in lake. The unregulated flow of tourists particularly pilgrims is having severe impacts on forests, glaciers and water sources and its implications can snowball into a larger crisis in future (Syed, 2012:6). Tones of garbage and waste are seen lying on water bodies, valleys which finally flow in nearby rivers (Joshi, 2011:7).

During the pilgrimage about 70,000 kgs of waste is generated per day which is disastrous to the fragile area. Climate of this area is been disturbed by locals, tourists, security forces due to burning of wood, food points, use of generators, helicopters and other effluents which leads to receding of glaciers. Studies have shown that glaciers near this place are receding fast and many of them have vanished completely (Syed, 2012:5). During and after the end of pilgrimage the water of sindh and lidder rivers are not been used because of high contamination. Unusual reports of diarrhea and related diseases were reported from different villages located on these rivers. The pollution in water quality during the pilgrimage results to fatal diseases in Kashmir (Kashmir life, 2012:05). The route to amaranth cave is traversing through thajiwas wildlife sanctuary and has badly affected the natural habitat of wild animals. Ground water quality, flora and fauna is disturbed by human waste and toilets generated by tens of thousands of tourists etc along the sensitive tracks and water bodies. The current trend and huge flow of human excreta into ground water will lead to crisis in future, rice production and agrarian activities will be extinct in a decade and south Kashmir will face the repercussions first<sup>10</sup>.

#### **IV.II.III. Management of Tourism**

The pilgrimage is managed by State and Central governments while facilities and arrangements are provided mainly by central government. The principles of conservation, sustainability designed by National environmental policy and other national and state norms are been violated and the authorities are not acting to save the environment on Eco-tourism and other sustainable patterns. While responding to growing concern of

---

<sup>10</sup> Professor Gunderson was part of a research team to study receding of Kolahoi glacier in Kashmir. He argues that in Himalayas kolahoi is fastest receding glacier. He blamed that human activities particularly thousands of pilgrims visiting nearby holy cave is responsible for receding of this glacier which is only round year source of water to majority of people in Kashmir. He argued that if the number of visitors is not checked and eco-toilets are not provided, ground water of south Kashmir will be badly affected which can lead to extinction of agriculture particularly rice in a decade.

pollution and environmental sustainability, the Government decided to short the pilgrimage duration to only 40 days in 2012. However the expectations that curtailment will decrease the pressure and pollution of environment were proven wrong as the number of visitors increased manifold to 650,000 in 2012 the highest ever and generation of wastes and other toxic materials also increased manifold (Syed, 2012:3). There are no facilities of eco-toilets, scientific disposal of wastes and ban of toxic materials. The Supreme Court took strong note of the growing pollution and depletion of natural resources during the pilgrimage and asked the authorities to provide eco-friendly facilities to visitors, however it didn't mentioned that pilgrimage should be conducted on pattern of Gaumukh yatra<sup>11</sup>. The civil societies in Kashmir smell rat on the response of government which is allowing lakhs of visitors to this highly fragile area in Kashmir on one hand and regulating the number of visitors (150 per day) in Goumukh on the other hand. There is growing concern among environmentalists and civil societies that this route in Kashmir should also be declared eco-sensitive and managed on pattern of Goumukh by regulating number of visitors and respecting the environmental norms designed to protect environment. In setting policy framework and regulations governments have a important role to monitor the flow of visitors. In this way it is important for the government to strictly follow the norms of environmental protections and frame policies on eco-tourism pattern.

#### **IV.III. Environmental Sustainability Planning and Management**

Despite the fast changing environment , depletion of natural resources and other forms of environmental degradation, the governments both state and central have done little or mere to save and protect the environment of Kashmir. Environmental sustainability index for Indian states has categorized Jammu and Kashmir as less sustainable state. 'All states except Jammu and Kashmir exhibit lower anthropogenic pressures on the environment (Dash, 2011:27). Over last many decades millions of rupees were spent on restoration of

---

<sup>11</sup> In Gomukh Uttarkhand, government allows only 200 pilgrims per day to visit the holy site against 10000 pilgrims allowed per day in kashmir. In Gomukh, government is committed to respect carrying capacity of the fragile area. In 2010 government of India declared 135 km sketch between goumukh and uttarkashi as eco-sensitive zone. Toxic materials and hazardous items are banned and environmental laws are followed to protect the environment (Greater Kashmir, 2008:8).

water bodies including Dal Lake, but these continue to be degraded. State Pollution Control Board (SCPB), Lakes and water ways development authority (LAWDA), Directorate of environment and remote sensing (DERS) and other organizations were created to conserve, protect environment and coordinate with government on important environment issues. 'The environmental planning has not taken its roots; therefore there is no Central databank and no environmental planning in state' (Government of J&K, 2014:4).

There is no policy or action plan at present to deal climate change, however rupees 456 crore have been recommended to minimize impacts of climate change on agriculture and special cell on climate change has forwarded its recommendations also (Wani, 2014:4). Tourism department has also failed to promote Eco-tourism in Kashmir despite intensive demand from civil societies. It is violating the carrying capacity policies even if it comes to highly eco-sensitive areas of Kashmir. Pilgrimage tourism in which visitors through Amarnath cave is being managed by Sri Amarnath Shrine Board (SASB) in collaboration with central government and state government. The state Government has usually no control over management or cannot interfere in environmental issues related to Pilgrimage tourism. There are no eco-facilities in place for visitors which are economical and sustainable.

When it comes to military impacts on environment and livelihood of people, government has done little or negligible to address the issue because state government has no control over military and military interests that is being dominated or coordinated by government of India. Despite demands from civil societies that land should be returned back to its original owners, Government has only got 118 kanals of land back during last sixty five years. 'The government of Kashmir is unable to prevail politically or exercise control over Indian armed forces which have become increasingly more powerful and entrenched in Kashmir, India's militarization is portrayed as internal matter, refusing transparency, international scrutiny and adherence to international humanitarian law of conflict and war' (Chatterji, 2010:2). Military and their technologies including their vehicles which produce high level of green house gases are outside the purview of law enforcing agencies and don't come under the ambit of state law (Talib, 2010:25).

On the other issue also, like increasing urbanization which eats up prime land in Kashmir, projects, and economic development and allied activities, Government has not constituted any effective policy yet and environmental policies norms and existing laws are been violated openly in Kashmir. 'The records show that brick kilns, residential colonies and shopping malls have been constructed in hundreds of acres of agriculture land even though the land revenue act of the state bars conversion of any land under the cultivation of paddy, maize, vegetable or saffron. In such circumstances the rate of food grain deficiency is likely to touch 60 percent in the coming decade' (The Conveyor, 2010:22). However in future there is hope that environmental issues may be addressed as consciousness about protection and management of environment has increased among various stakeholders. 'Environmental planning emanating from environmental impact assessment needs to be incorporated in the planning process' (Government of J&K, 2014:5).

#### **IV.IV. Data Analysis and Interpretation**

In this study, attempts based on data collected from the field through the Interview/schedules have been made to understand the perception of the people regarding the environmental issues and its impacts<sup>12</sup>. The study in Kashmir was initiated at Gurez, Sonamerg and Tosa-maidan (Budgam) etc and most of the respondents are hailing from these two places. Gurez is a small but beautiful landlocked valley about 160 kms from Srinagar near the border with Pakistani Administered Kashmir. This high altitude place remains cut with outside world for six months due to heavy snowfall and thus people here have to store eatables etc. Gurez is one of few areas which have suffered so severely in Kashmir conflict with shattered economy, environment and livelihoods. The armed conflict, huge military buildup, military demarcations has affected the livelihood of people. The people revealed that there are about 60000 Indian soldiers in Gurez which has population of only 30000. On the other hand Climate change is leading to less agriculture production in this high altitude area, hence the increasing population, limited land and resources and reduction in produces has become a grave problem. To visit

---

<sup>12</sup> See Appendix IV

Gurez, one has to apply for movement pass from Bandipora police station as its majority of places are restricted for civilians. The Bandipora Gurez road was once a traditional route connecting Kashmir with Gilgit and Central Asian cities, but since the division of Kashmir in 1947 this road is closed and controlled by Indian military at Chorwan Gurez. Since 1947, people in Gurez have suffered from all sides.

Tosa-maidan is a meadow spread to an area of 3000 kannals in Budgam district of central Kashmir. Population of 60000 from Khag and Beerwah constituencies who depend on nearby Tosa-maidan for their livelihoods are affected by Military drills being conducted by Indian military on leased land of Tosamaidan. This place has been in news since two months because people here are against further extension of lease that will end in 2014. People admit that artillery drills have degraded resources of the area including water, forests, orchards etc in addition to losses met by people due to restrictions and other military activities.

Sonamerg is a beautiful tourist resort about 70 kilometers from Srinagar on Srinagar-Leh highway. The place is famous for Glacial lakes, trout fishes, green forests and Glaciers which are source for round year water to Ganderbal and Srinagar districts. During the tourist season this place remains busiest and polluted without any waste management system. Glaciers, water resources and wild habitats of this area are been disturbed during the tourist season. Many of its nearby glaciers have vanished and others are receding due to unchecked flow of humans, vehicles to this ecologically sensitive zone.

Data was collected using variables like sex, age, education, occupation etc. The respondents were asked to underline to their perceptions on the issues. The sample population (total respondents) is composed of 60 and during the selection of the sample size all variables like number of both male and females, education, age, occupation, etc were taken into account.

**The sample population structure:**

**Table no.3. Categorization of sample population on the basis of gender.**

Gender	Number	Percentage%
Male	50	83.33
Female	10	16.67
Total	60	100.00

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

Out of total sample population 50 were males and were females. Emphasis on gender was given to understand their perception on the issues and much because women in these areas cannot talk or meet strangers. However, it is important to mention that women suffer worst in these areas owing to their involvement in economic activities and responsibility of collecting things (Grass, water, fire woods etc) from nearby resources especially in Gurez, Sonamerg and Tosa-maidan (Badgam).

**Table No.4: Categorization of Population on the basis of age group**

Age Groups	Male	Female	Total	Male %	Female %	Total
16-25	05	01	06	10	10	10%
26-35	08	01	09	16	10	15%
36-45	15	03	18	30	30	31.34%
46-55	18	04	22	36	40	35.33%
56-65 and above	4	01	05	08	10	8.33%
Total	50	10	60	100	100	100.00

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

The respondents were from different age groups. Respondents from the age of above 26 years were preferred. The predominant number of respondents is from the age group of 46-55. Age of 65 is counted as the upper limit owing to the complexity of the decades old

problems (Environmental insecurity) in Kashmir on which the age groups between 46-55 and 46-65 or above can share their experiences and perceptions better. However, the lower age groups do talk about various offshoots of the problems owing to their own understanding of things.

**Table No.5: .Categorization of sample population on the basis of educational qualification.**

Educational categories	Male	Female	Total	Male%	Female	Total %
No formal education	4	02	06	8	20	10
Between Class I-V	08	01	09	16	10	15
Between Class V-X	14	02	16	28	20	26.67
Between Class X-XII	07	01	08	14	10	13.33
From XII-Graduation	08	02	10	16	20	16.67
Post Graduate or more	09	02	11	18	20	18.33
Total	50	10	60	100	100	100

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

Out of the total male respondents about 10 percent did not have any formal education and 15 percent had had education only up to Class V. 26.67 Percent of them had education between Class V and X and another 13.33 percent of the total respondents were from X to XII standard. While as 16.67 percent of respondents were graduates and remaining 18.33 of the respondents were post graduates and above.

Most of the respondents in Class of I-V and V-X were exercising agriculture practices. However, some of the respondents from XII-Graduation were either continuing their studies or running their own businesses while as four were NGO and environmental activists and one Indian Military official and one Forest department official. Intellectual respondents were mostly from Qualification Group of Post Graduate or more. Out of 11 such respondents 05 were Assistant and Associate Professors, 2 were teachers, one Ex official of Tourism department, one student, one politician (Separatist), one research scholar.

**Table No. 6: Is climate changing over 30 years?**

<b>Indicators</b>	<b>No. of respondents</b>	<b>% of respondents</b>
<b>Agree</b>	<b>50</b>	<b>83.33</b>
<b>Disagree</b>	<b>10</b>	<b>16.67</b>

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

83.33% respondents aged 45-75 agreed that climate is changing from last thirty years. Interestingly 16.67 of respondents disagreed that climate is changing. 83.33 percent of respondents agreed that since last many decades they observed changes in temperature, snowfall, more droughts and erratic rainfalls. One of the respondents argued that ‘ before 30 to 40 years Kashmir received heavy snowfall almost 10-15 feet in winters which was a blessing for people as water was available throughout the year , now snowfall is low almost 1-2 feet which has lead to water scarcity in Kashmir’. Another respondent who denied climate is changing said ‘droughts, erratic rainfalls, low snowfall etc are not continuously happening in Kashmir but witnessed after 5 to 6 years. Another respondent said that ‘changes in climate are a natural process and in future there might not be such issues so we should not need to be worry’.

Table No.7: What are the patterns of climate change in your opinion?

Indicators	No. of Respondents	% of respondents
Increase in temperature	15	30
Droughts	20	40
Erratic rainfall	15	30

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

From the table it can be easily understood that out of total respondents 30% believe that temperature is increasing, 40% say droughts are continuously been happening and 30% say that erratic and unusual rainfall is happening. The respondents believed that rainfall do not happen on time and usually lead to droughts.

Table No.8: What are the affects of climate change in your opinion?

Indicators	No. of respondents	% of respondents
Less production of crops	30	60
Low quality output	20	40

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

While as 60% of respondents argued that their crops produce less yields and 40% say that their crops are yielding low quality output. Respondents said that there is overwhelming decrease in crop yields which used to be more in past. 8 percent believed that crops yielded normally but the quality of the produce is decreasing and not satisfying. Many respondents who happen to be farmers claim that their fields, orchards produced more produce years before, One of the respondent Azad ahmad claimed that his land fetched him 20 quintals of produce which has now decreased to 5- 10 quintals over last 30 to forty years. Another respondent Ali mohammad claimed since last many decades his orchards are not producing quality fruits and usually got diseases. He claimed that erratic rainfalls, increasing temperature and unusual cold waves when his fruits are ripening on trees are affecting the quality of his produce.

Table No.9: Does climate change has any consequences on your livelihood?

Indicators	No. of respondents	% of respondents
Agree	28	56
Disagree	22	44

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

This question was deemed to be important by the author .Out of the total respondents 56 % agreed that climate change has affected their livelihoods and claim that climate change is affecting their only source (Agriculture and allied sector) of sustenance. One of respondents Gh Mohi-u-din bhat claimed that 'My income had badly been affected as agriculture is my only source of income. Few decades ago my produce generated good income and i made good saving despite fetching my family smoothly, but now I face problems to run my family and making savings is a dream now'. About 44 % do not agreed that climate change has any affects on their livelihoods and argued that better knowledge, adaptation methods and experience etc prove useful to respond the challenges of climate change.

Table No.10: Is Armed conflict and militarization a threat to environmental security and sustainability of Kashmir?

Indicators	No. of respondents	% of respondents
Agree	40	66.66
Disagree	20	33.33

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

The respondents gave mixed arguments, while 66.66% of the respondents agreed that armed conflict and militarization is threat to environmental security and sustainability of Kashmir and 23.33 percent of the respondents disagreed that armed conflict and militarization is threat to environmental security and sustainability. The respondents claimed that armed activities, military preparations and activities etc are having significant impact on environment and sustainability of Kashmir. One of the respondents Aahiq ahmad said that, 'Kashmir conflict brought mayhem to environment; forests were cleared by insurgents (Armed militants), encroachments increased during most turbulent history of Kashmir, now it is impossible to recover that damage'. He said even now the

movement of (armed forces) in forests is affecting the work culture of employees and thus forests are been cleared.’ One of the respondents ‘Mathanji’ argued that felling of Willow trees around wularlake has lead to its shrinking. Smugglers take advantage of absence of forest protection forces who left the area early fearing movement of armed forces.

Figure. 4.1: Fallen Trees in Wular forests bandipora.



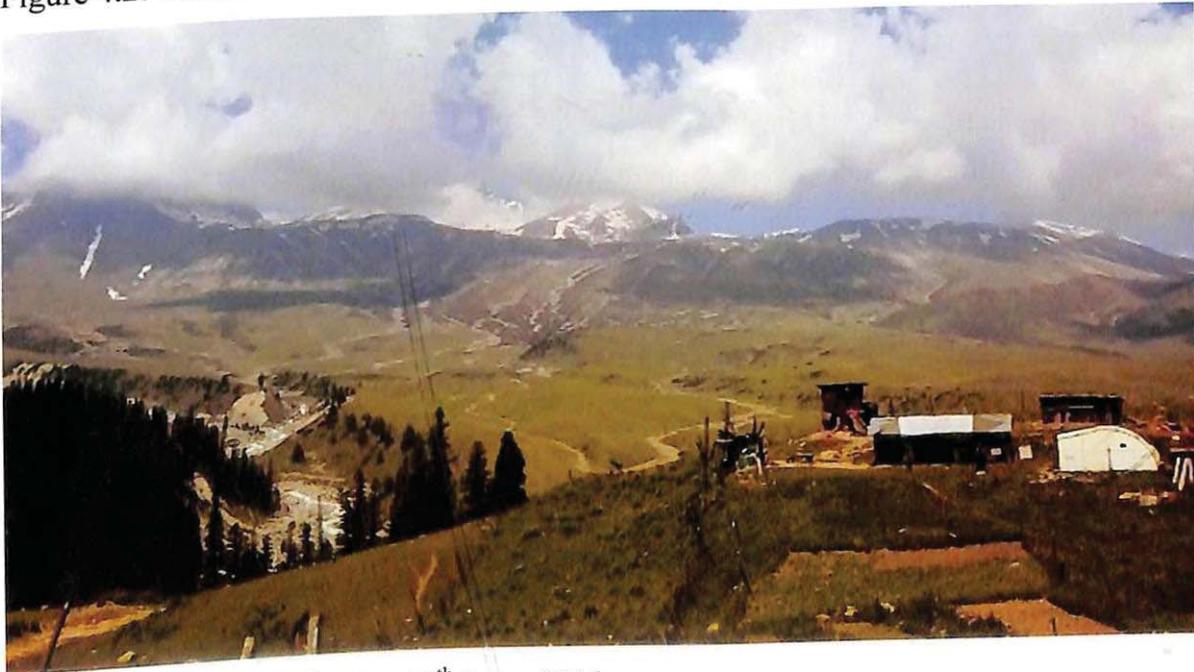
Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

Many respondents claimed that fragile environment of Kashmir including glaciers, forests, meadows and water bodies are badly affected and damaged. One of the respondent Ab Qadeer who is the head of an famous organization ‘Voice of victims’ claimed that ‘due to armed conflict and militarization our natural resources are badly been affected and in this case our coming generations will face resource scarcity problems too.’ He claimed that ‘Conflict in Kashmir is the root cause of all the problems including social, economic and environmental’ adding that use of agriculture lands, forests, pastures etc for military activities is affecting climate, environment and water

resources of Kashmir and new places that are being occupied by military in Kashmir met the same fate.'

One of the respondents Muneer ahmad an environmental expert claimed that due to conflict in kashmir our natural resources are been destroyed ,and deforestation, pollution of water bodies, receding of glaciers has increased manifold since onset of conflict. He further added that 10-15 lakh kanals of prime land is under forces since 1950's which if bring under cultivation can decrease the food deficiency in Kashmir and in this way we can see hope of survival of our coming generations''. Another respondent who is a ecologist said that 'present pace of development, planning is not sustainable because the aspect of conflict, militarization and its negative affects is unfortunately not being recognized thus threatening the environmental sustainability of Kashmir'.

Figure 4.2: Tosa-maidan meadow used for artillery practices..



Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

Head of the Hurriyat (Pro-freedom) group in Kashmir Syed Ali Shah Geelani argued that, 'Indian state and its forces are deliberately degrading our environment here as a method to damage the basis of survival of kashmiris. He said, 'under different schemes like sadbhavana, tourism, development etc more and more lands are occupied by government.

He said, forests in Kashmir are being chopped by military officers to make furniture to be sold in different states of India. About 5200 kannal of forest land was grabbed by military to make an cantonment and ammunition depot there and about 3 to 4 lakh trees will be chopped there for the purpose. He added that Indian Government is using Tourism as a tool to show Kashmiris the strength and power of the Indian state so that their voice is suppressed. He argued that Tourism is too politicized by Indian state to justify the presence of six lakh Indian troops in Kashmir. In this way allowing seven lakh tourists to Kashmir, Indian state justifies that its troops are enough to protect tourists from any attacks and I call this Cultural aggression from Indian State. However, we are not against tourists but against the policies and system of Indian State which Justifies Kashmir militarization by these aggressive tactics'. He added that 'according to our own survey and inputs about 28 lakh kannals of land is under military here, not 5.7 lakh kannals as claimed by government which has left thousands of families land less''.

However, 33.33% of respondents argued that Kashmir conflict has not any affects on environment. One of the respondent Naseer ahmad bhat a scholar in geography claimed that 'the conflict in kashmir is not so much intense and dangerous unlike other parts of world because armed battles, fights do not take place usually here, so I don't think conflict is having any bad affects on environment here. Few argued that, armed conflict, movement and presence of military, insurgents in forests stopped smugglers to chop off tress. An wildlife official said, 'deforestation has stopped due to military presence in high altitude places and forests, wood and wildlife smugglers didn't dared to continue their illegal activities. Citing examples of Sonamerg, Gulmerg , Budgam , Tragabal etc the officer said that military presence and camps in these areas has stopped the deforestation and smuggling. Other respondents argued that armed conflict has no direct affects on environment but indirect because government was not able to protect the environment and resources.

Table No.11: Is armed conflict and Militarization affecting environment and livelihood of the common people?

Indicators	No. of respondents	% of respondents
Agree	25	62.05
Disagree	15	37.5

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

Out of total respondents about 62.05 percent agreed that the conflict and military presence near farms and natural resources is affecting their livelihood. Some respondents claimed that the conflict particularly Militarization has lead to degradation of their lands and that war preparation, demarcations and military wastes have affected their land and has constrained them to access their livelihoods fairly particularly from natural resources. One of the respondent Ab Satar lone from gurez said that, ‘the intense shelling and firing between Indian and Pakistani military in 2002 forced Indian army to occupy pasture land, forest and agriculture land of hundreds of families to draw an demarcation line inside the border, in this way hundreds of families including me lost only source of income and sustenance. He further added that ‘ we have lost agriculture lands and now we have to depend on costly market imports and during winters when gurez remains cut from world for six months due to harsh winters and snowfall we remain hungry in most part of winter’’

One of the respondent an civil society member claimed that, armed conflict has brought miseries to them , ‘ first in 1990’s we were asked not to collect herbal plants from nearby forests for security reasons which lead to downfall of our traditional businesses, then our land were taken from us by military and since last many years we were told not to use pastures to graze cattle. Now hundreds of families have left their pastoral life and have to depend directly on market products which are costlier.’’ One of the senior officer of Sheep and Animal husbandry department said that, ‘the biggest ecological problem in Kashmir is that our pastures are overgrazed since last many years now which has disturbed the habitats, wildlife and ecological balance of our natural resources including forests, the cause is military forces have occupied all the nutritive pastures making

compounds, camps and artillery practice grounds there. Thus people, nomads are forced to graze cattle in available pastures and meadows leading to over grazing.”

In few cases respondents revealed that their lands have become useless because of military waste like shells and other explosives have embedded into their fields and internal concertina demarcation has consumed their only available lands that may have provided them dignified livelihood rather.

However 37.05% of the respondents argued that their livelihoods were not affected and they have other livelihood options available. One of officers in Indian Military said that, ‘Military is not responsible for environmental degradation in Kashmir, we have proper ways to dispose wastes, in combat also we respect nature and do our best to save environment in operations. Military forces are strictly being advised not to pollute and damage nature. While showing author different kinds of tress the officer said that every soldier has to plant a tree and in this way military took huge forestation programs despite organizing awareness programs in schools. He said that the owners whose land is under military are fairly been paid their rent and if they are not satisfied with rates, they can take the issue with government’’. He added that in case of any natural calamities like earth quakes, floods, forest fires, snow avalanches and landslides etc, it is military which come first to rescue people and their livelihoods . Many respondents said that they avail different schemes and facilities from government and military hence don’t face any problem.

Table No.12: Is tourism in Kashmir a threat to environment?

Indicators	No. of respondents	% of respondents
Agree	44	73.33
Disagree	16	26.67

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

Astonishing 73.33 % believed that tourism is a threat to environment of Kashmir. The respondents argued that poor due management of tourism industry, whole kashmir is been turned into garbage damp. While as 26.67% respondents disagreed that tourism is having any threats to environment. One of the respondent said that tourism activities have

no damaging impacts on environment; he said 'few months of tourism season has not any impact because government has enough time to repair and clean the environment'. He added that 'garbage wastes and disposing wastes in open and natural resources at few places don't mean environment of whole kashmir is being polluted'.

Table No.13: What kind of tourism you think is most disturbing Kashmir environment?

Indicators	No. of respondents	% of respondents
Adventure tourism	10	22.72
Pilgrimage tourism	24	54.54
General tourism	10	22.72

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

There seems to be mixed reaction on the question as 22.72% argued that adventure tourism is most disturbing environment of Kashmir, 22.72 believed that general tourism or tourism on the whole is threatening Kashmir environment. Respondents said that adventure tourism like snow skating, mountain biking and races, fishing etc are being organized in fragile areas hence affecting the environment. Overwhelming 54.54% believed that pilgrimage tourism is most disturbing environment of Kashmir. The respondents say that during the pilgrimage time water bodies, land and forests are dumped with garbage and there are no facilities for visitors so that environment is not polluted. Few respondents also claimed that tens of thousands of visitors are allowed at a time keeping aside the carrying capacity of the fragile area.

Table No.14: What are the consequences and impacts of tourism on environment?

Indicators	No. of respondents	% of respondents
Water contamination	10	22.72
Land degradation	08	18.18
Depletion of natural resources	07	15.90
All the above	19	43.18

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

The respondents gave mixed views on the issue of impacts of tourism on environment. About 22.72% argued that water contamination is caused due to tourism, 18.18% believed that land is degraded by tourism activities and 15.90% say that tourism leads to depletion of natural resources. 43.18% claimed that tourism has its impacts on all the issues. Few respondents said that during tourist season pressure mounts on resources of Kashmir including demand of consumption and generations of tones of wastes only to be exposed in open.

Table No.15: What is the role (Management and responses) of Government, civil societies, political parties, etc to address the environmental issues?

Indicators	No. of respondents	% of respondents
Satisfactory	14	31.81
Unsatisfactory	30	68.18

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

Out of the total respondents 31.81% respondents claimed that role of government and other organizations are satisfactory to address the issue and blame directly tourists responsible for environmental pollution and degradation. One of the Respondent a member of Traders federation in Sonamerg said, 'after the pilgrimage ends , tones of garbage is collected and left on river which automatically finds its way in river because the authorities have no disposal system. He said that, during the pilgrimage our livelihood is affected because all facilities are provided free to tourists from food to lodging etc. Earlier traders were benefitted because during pilgrimage foreign tourists visited this area in thousands and they were giving us profitable prize. Now Government had stopped the entry of locals (Kashmiris) and foreign tourists in Pahalgam and Sonamerg during pilgrimage from last fifteen years to make pilgrimage hassle free, which has badly affected our business. Majority of respondents 68.18 percent believed that the role of government and other organizations is not satisfying .The respondents claimed that governments have no polices to manage the tourism efficiently. Few respondents say that due to lack of facilities and policies both environment and tourists are suffering.

Table No.16: How do you think this problem can be solved?

Indicators	No. of respondents	% of respondents
Educate tourists/stakeholders to respects nature	08	18.18
Better policies/ facilities	10	22.72
Regulate no. of tourists	10	22.72
All the above	16	36.36

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

There was also a mixed response from the respondents on how the problem can be solved. 18.18% respondents say that government; NGO's, civil societies and religious organizations must educate tourists, local labors and tourism stakeholders about importance of environment and how to protect and save environment. About 22.72% say that there is need of better facilities and policies to address this issue while as 22.72% respondents argued that there should be regulation in number of tourists visiting fragile areas. Numbers of respondents say that government should not allow tens of thousands of tourists at fragile places at a time. Few respondents who were environmental activists and civil society members gave example of management and regulation of tourists in Goumukh Uttarkhand and said Govt must follow carrying capacity of the area and declare the high altitude areas as eco-sensitive. 36.36% agreed that there should be better facilities/policies, regulation in number of tourists and education to tourists to respects and not to harm environment.

Table No.17: Is the web of Climate change, armed conflict/Militarization and tourism threatening environmental security, sustainability and livelihoods in Kashmir?

Indicators	No. of respondents	% of respondents
Agree	39	65
Disagree	21	35

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

65% of respondents agreed that all the factors pose a threat to environmental security and sustainability of Kashmir. Many respondents say that due to high eco-sensitivity of Kashmir Climate change and all the above factors have significant threats on environmental security of Kashmir. Respondents argued that on one hand the climate change is leading to food deficiency in Kashmir and on the other hand depletion of natural resources and environmental degradation or change by huge military presence and unchecked tourism is threatening environment. 35% respondents agreed that these factors and causes are collectively damaging the environmental sustainability and resilience of Kashmir. Few respondents (Academicians, Environmentalists) gave examples as how all these factors are contributing to environmental insecurity in other parts of world especially in some African states. People living in Budgam district and Gurez valley Kashmir argued that earlier they were not facing any livelihood and other problems despite their vast lands occupied by military, but changing climate since last many decades is having severe repercussions on their livelihoods now. However, 35% of respondents disagreed that these factors threaten the environmental security and sustainability of Kashmir.

Table No.18: In your opinion how can these issues/ problem be solved or managed?

Indicators	No. of respondents	% of respondents
Demilitarization	08	20.51
Follow environment norms	09	23.07
Better policies and framework	07	17.95
All the above	15	38.46

Source: Fieldwork, 15<sup>th</sup> May-05<sup>th</sup> June, 2014

The question was deemed to be important by the author to know what the people are thinking about the solutions of these problems. From the table it is clear that 20.51% of respondents argued that demilitarization is most particularly from the high altitude areas to save further degradation of natural resources. Few respondents said like demilitarization, it is also important to encourage disarmament of armed militants and engage them in jobs. Many respondents say that valleys and highlands of Kashmir can

only be proposed for tourism and grazing activities only if they are demilitarized first. 23.07 percent of respondents argued that government, military must follow environment laws and norms to protect the environment. Equally 17.95 of respondents say that there is need of better policies and frameworks to solve these polices. Few respondents (Govt. officials) argued that militarization is must on one hand to save natural resources of Kashmir from smugglers and exploitation. They stressed that better policies that should be acceptable of all stakeholders must be constructed. On the other hand 38.46 % of the respondents argued that all the above factors are must to save the eco-sensitive environment of Kashmir.

### **Conclusion**

Kashmir is one of the beautiful but environmentally sensitive areas in Himalayan region. Since centuries it has attracted natural lovers, conquerors and visitors. It is rich in natural resources, minerals, biodiversity, fruits, costly spices and wildlife. However the region has been the cause of dispute and wars between India and Pakistan since last six decades. The armed conflict from 1989 and wars took huge toll of human lives, economy, and environment of Kashmir. Over the years Kashmir became one of the most heavily militarized zones in world. In this way ecological sensitivity, flora, fauna and natural resources have been lost in addition to hampering access to livelihood of thousands of people.

Kashmir is among the 24 bio-diverse hotspots in world and among most diverse biologically threatened places on earth. Due to loss of forests and other resources in conflict, lakes of Kashmir have shrunk more than half of their areas which is threatening livelihoods of thousands of people. Ground water quality, encroachments, timber extraction has increased overwhelmingly during last two decades of conflict.

Military and their activities are degrading the environment even in condition of not war. Their expansion, interests and demands to acquire more land, technologies and facilities have only intensified. Most of the security camps are located near or inside forests, water bodies; agriculture lands etc. Kashmir has most number of artillery practice grounds in

India despite being an eco-sensitive zone. Due to water contamination spread of diseases is being reported from time to time. Military establishments, cantonments are affecting sustainable development, ecology and hinder effective future policies in Kashmir.

Ammunition depots, war preparation practices are not only affecting the environment but also livelihood of thousands of people. Forest land, agriculture land and water resources have been contaminated and degraded due to exposure of artillery wastes into the resources. Militarization of grazing areas, forest and other sources is restricting people to access their resources and livelihoods fairly or completely. Interior fencing in border areas have consumed vast forest and agriculture areas besides affecting environment, wildlife habitats and livelihoods. Military establishments also effect sustainable planning of economic development in Kashmir. Because of vast land under army highways, railway lines were constructed in flood plains of Kashmir which can be disastrous in times of floods. The huge chunk of land under military in Kashmir can increase 7.2 GSDP from 1.44 % if the land is utilized for agriculture and other sectors properly and will provide lacks of jobs in Kashmir.

Climate change in Kashmir is disturbing agriculture production, water resources and leading to receding of glaciers which are the main sources of water to majority in Kashmir. Saffron, apple, agriculture and other crops are severely affected by impacts of climate change. The repercussions of climate change is forcing people to change the agriculture practices into horticulture which leading to food deficiency in Kashmir. This practice may lead Kashmir to food insecurity in addition to exposure of diseases caused by pesticides and chemicals. The people have to depend on other sources which are unsustainable, costly and inappropriate for the environmental conditions of Kashmir. Tourism is having significant impact on environment directly or indirectly. The numbers of visitors to Kashmir have increased manifold thus mounting pressure on environment .is leading to depletion of natural resources, pollution, pressure on resources. Tones of garbage and wastes are seen lying in forests, water bodies etc as there is no scientific method to dispose them. The unchecked and unregulated tourism is also leading to receding of glaciers, disturbing wildlife, water bodies and ground water. If the tourism is continued in same way, it may lead to food crisis in future because ground water quality

is severely been contaminated due to wastes, human excreta and toilets. The tourism is not managed efficiently as thousands of visitors are been allowed to reach the eco-sensitive places of Kashmir. Government is not upholding the environment norms, carrying capacity aspects while managing the tourism. Voices are growing that tourism should be managed on the pattern of eco-tourism and that carrying capacity must be respected.

While looking into the web of all these problems, it is clear that environmental problems dismantling from all these factors are severely affecting the environment of Kashmir. They are very much intermingled and cannot be solved separately without addressing them all. Climate change is leading to conversion of large lands into horticulture. Military establishments, cantonments and compounds on prime land is forcing government to construct projects in flood plains of Kashmir which can be disastrous in future. Thus people construct business and residential colonies in flood plains and agrarian lands which is leading to shrinking of open land and ultimately to future crisis in Kashmir. On the other hand tourism is depleting the water resources which are main source of water to majority in Kashmir. Solution of one problem and continuation of another cannot go hand to hand and it may not be much useful. Thus, there is need to reduce the pressure on environment by taking all stakeholders into consideration. Environmental security, sustainability and resilience can be only be possible if these problems are collectively been solved.

**Chapter V**

**Conclusion**

## Chapter V

### Conclusion

Environment has directly linked with various aspects of economic, societal, and political and is serious matter of debate at local, national and international security. Human induced environmental degradation has damaged nature, economy, livelihoods and health of the societies. It has been estimated that human activities have disturbed three quarters of habitable surface of the earth. In the race of economic globalization fuelled by global resources, south is most vulnerable of the impacts of environmental degradation.

Environmentalists have used environmental security to 'securitize' environmental issues that demand urgent responses. In this way scholars have propounded theories, filters and other techniques to conceptualize environmental issues that need emergency remedial measures to address. Environmental security has been criticized by some scholars because it is premised to maintaining the 'status quo' which serves the interests of the developed countries and powerful nations. However, many countries have framed and implemented policies concerning environmental security. Environmental security requires implementing existing policies, not compulsorily demand new policies.

Consumption levels and generation of wastes are much higher in North whereas most of environmental problems are being faced by the South. The condition of India is no different because growth of industries, population, urbanization and transportation have caused immense damage to environment. The environmental change or degradation doesn't only affect the economy and social sustainability but also health of the millions of people. The present pace of development, growth and resource use is unsustainable and hence there is urgent need to look for environmental security policies. Impacts of climate change and other human induced environmental degradation including water, air and land pollution undermines economic and social sustainability, human development and livelihood of millions and India is expected to have future repercussions more dangerous owing to increasing population, urbanization and misuse of resources. As a non-traditional security threat environmental insecurity is yet to be brought under serious

analysis, however voices are emerging to bring environmental security in the policy dynamics like recently implemented food security.

While India is on the path of achieving environmental sustainability, there should be integration of principles of sustainable development, making assessments and implement policies and programmes. India, like other countries is also on the path to achieve Millennium Development Goals 7 (MDG7) target for Post -2015 framework. While talking about integrity of natural resources, India must acknowledge that all people should have access to dignified livelihoods that are ecologically appropriate. India has to overcome many challenges to move towards achieving environmental security e.g interests of corporate and military. Military interests are supposed as biggest challenge as they are interested in continuing the status quo. However, military activities and its interests are not a big challenge in other states of India except conflict ridden North East and Kashmir where military is a cause to environmental insecurity.

Kashmir is among the 24 bio-diversity hotspots in world and among most diverse biologically threatened places on earth. It has been cause of dispute between India and Pakistan since 1947 and has become world's most heavily militarized zone. The wars and armed conflict including activities of armed militants and military took toll of human lives, economy and environment of Kashmir thus ecology, flora, fauna and natural resources have been lost in addition to hampering access of livelihood of thousands. Most of the military camps and compounds in Kashmir are located near or inside forests, water bodies, agriculture lands etc. Kashmir has also the highest number of artillery and war preparation grounds in India despite being an eco-sensitive zone. Ammunition depots, artillery practices, military activities and their control of prime and productive land are not only affecting environment but also livelihood of thousands. The huge chunk of land under military in Kashmir has potential to increase GSDP in addition to providing jobs to Lakhs of people if it is utilized properly. Due to occupation of prime land by military, government and people are forced to expand construction activities in flood plains and agriculture lands and thus military is hampering the sustainable development and planning in Kashmir.

Climate change is disturbing agriculture production and leading to receding of glaciers which are only source of round year water to Kashmir. Because of repercussions of climate change, people convert agriculture practices into horticulture which is leading to increasing food deficiency in Kashmir. Like other human induced causes tourism is leading to depletion of natural resources, pollution and pressure on resources and is expected to have destructive impacts on agriculture and water sources in future. Environmental norms, carrying capacity aspects are been ignored and sidelined as state government has no control at few tourism spots located in ecologically fragile area. Environmental problems dismantling from all these factors are intermingled and may not be solved separately without addressing them all.

### **Findings**

- Armed conflict, military activities, climate change and tourism have significant direct and indirect impacts on environment.
- Ammunition depots, war preparation practices not only affect environment but also livelihood of thousands of people.
- There is significant pressure on resources in Gurez because people have to depend on limited resources owing to huge land under military.
- Internal demarcations and fencing inside border areas has left families landless, affected wildlife habitats, divided forests and agriculture lands and hindered access to livelihoods and other resources
- The vast land under military has hampered sustainable development and planning in Kashmir. Urbanization and other projects are constructed in flood plains and agrarian land which can lead to crisis in Kashmir.
- Food deficiency is increasing in Kashmir because of shrinking of agriculture land and occupation of prime land by Military.
- Owing to livelihood impacts of all these problems, the people have to depend on other sources which are unsustainable, costly and inappropriate for the environmental conditions of Kashmir.

- If the current trend (population increase, production and food deficiency levels) continues, it will ultimately lead Kashmir into a crisis for which resource scarcity or environmental scarcity will be a cause.

### **Policy Prescriptions**

- There is an urgent need to frame environmental planning and databank in Kashmir.
- In order to reduce food deficiency in Kashmir, government must devise plan and strategy to stop conversion of agriculture land into horticulture and urbanization.
- Non state actors, institutions and organizations including NHPC, military should be brought inside the purview of the law enforcing agencies and under ambit of state law.

### **Further Studies**

There is need to carry out scientific research to assess the impact of armed conflict and other activities on biodiversity, Flora, fauna, water, land and air to unravel the complex issues of environmental security and sustainability. Further studies are also needed to examine the resources such as water, land, energy etc being consumed by Militia and military to understand how environmental resources of Kashmir can be better used for alternate purposes. Future study also need to focus on land conversions for horticulture and urbanization in flood prone areas that may result natural disasters and increasing food deficiency in Kashmir.

Environmental security has emerged as one of the important discourses of the 21st century. Since the end of cold war, this field has played an important role in highlighting the environmental problems which were otherwise being ignored systematically. The flood of literature on this field propounded that environmental insecurity can be as dangerous as conflicts owing to its effects on human health, livelihood of societies and potential of creating tensions. The goals of environmental security are to reduce human induced vulnerability to environment in a peaceful way so that pressure on environment and other resources are reduced, mitigated or avoided.

*[Faint, illegible text, likely bleed-through from the reverse side of the page]*

**Bibliography**

*[Faint, illegible text, likely bleed-through from the reverse side of the page]*

## Bibliography

### Primary Sources

Government of India (2012), 'Draft twelfth five year plan (2012-17) document, Vol 1, Faster more inclusive and sustainable growth', Planning commission.

----- (2013), Economic survey (2012-13), Ministry of finance, New Delhi: Oxford University press

----- (2013), Union Budget (2013-14), Ministry of finance

----- (2012) , Report of the working group on 'Effectively integrating industrial growth and environmental sustainability' Twelfth five year plan (2012-17)

----- (2014), Annual Report 2012-13, Department of Animal Husbandry

----- (2013), Annual Report 2011-12, Ministry of Forests.

Government of Jammu and Kashmir, (2014), 'Economic Survey (2011-13)', Directorate of Economic and statistical Planning, J&K.

----- (2014), State of Environment Report Jammu and Kashmir, Department of Environment, Ecology and Remote Sensing ,2012-13.

World Bank (2013), India: Diagnostic Assessment of select environmental Challenges- an analysis of physical and monetary losses of environmental health and natural resources, Report No: 70004-IN.

## Secondary Sources

Abdel Rahim, N. (1991), *Green War, Environment and Conflict*, London: Panos Institute

Adams, W.H (2009), *Green Development, Environment and Sustainability in a Developing World*, New York: Routledge publishers.

Ayoub, Ejaz (2014), *Economy Entangled, Greater Kashmir*, Srinagar [10 May 2014]

Barber, C. (1989), *Global Environmental Security and International Cooperation: Conceptual, Organizational and Legal Frameworks. Draft*, World Resources Institute, October 1989.

Barbier, Edward (2012), *Scarcity and frontiers-How societies have developed through natural resource exploitation*, Cambridge: Cambridge University press.

Barnett, Jon (2001), *The meaning of Environmental Security: Ecological Politics and Policy in the New Security Era*, London: Zed books.

Barnett, Jon, Stephen Dovers (2001), 'Environmental Security, Sustainability and Policy', *Pacifica review*, Vol., 13, No.2: pp-157-168

Barnett, Jon (2012), 'Environmental Security' in Allan Collins' (ed), *Contemporary Security Studies*, Oxford: Oxford press.

Basu, Ratan Lal (2010), 'Environment and ecology in Kautaliya's Arshashastra' in Raj kumar Sen, A Mukherjee and P Pal (eds.), *Environment and sustainable development in India*, New delhi, Rawat publications.

Bhat, Raja M (2013), 'Tosa-Maidan Wasteland', *Kashmir Life*, Srinagar [12 August 2013]

Biswas, N. R (2011), 'Is the environment a security threat', *International Affairs review*, Vol. 20, No. 1

- Bohman, J and E.N Zalta (2012), *Critical theory: The Stanford Encyclopedia of Philosophy*, London: Spring publications.
- Bronwyn Cussan, War zone's melting glacier: "A colossal risk", *The National*, 21, September, 2008.
- Brundtland, G. H. (1993), 'The Environment, Security and Development'. In: SIPRI Yearbook 1993: *World Armaments and Disarmament*, Oxford: Oxford University Press
- Brundtland, (1987), *Our common future*, the World Commission on Environment and Development, Oxford: Oxford university press.
- Buzan, B. (1991), *People States and Fear (Second Edition)*. Boulder: Lynne Reinner Publishers, Inc
- Buzan, .B (1998), *Security-A new frame work for analysis*, London: Lynne Reinner Publisher
- Carter, F.W. and D.T, (1993), *Environmental Problems in Eastern Europe*, New York: Routledge Publishers.
- Chacraborty, Debashish and Mukherjee (2012), *Environmental Scenario in India: Success and Predicaments*, London: Routledge publishers.
- Chakrabarty, K.C (2013), 'Environmental and social sustainability: Key issues and concerns', lecture delivered on april 25 at the Event on Environment and social risk management: Mumbai.
- Charles, W Kegley (2009), *World politics, trends and transformation*, Belmont: Wadsworth press ,
- Chatterjee, Anjana, Gautam navlakha et. al. (2010), *Military governance in Indian administered kashmir*, Srinagar: JKCCS.

- .Cohen, J. E. (1996), 'How Many People can the Earth Support'? *Population Today*, Vol.,24, No1.
- Connely, James, Graham smith et. al. (2012), *Politics and environment- from theory to practice*, London: Routledge publishers.
- Crook, Jennifer (1998), *Conflict and Environment in Kashmir*, [www.american.edu/ted/ice/kash/ht/cas]
- Crosby, Alfred. (1986), *Ecological Imperialism*, New York: Cambridge University Press.
- Columbo, Peoples and Nick Vaughen (2010), *Critical Security Studies*, London: Routledge Publishers.
- Dabelko, G.D. and D. Dabelko. (1995), *Environmental Security: Issues of Conflict and Redefinition*, Environmental Change and Security Project. Washington: The Woodrow Wilson Center. Issue: 1.
- Daily Excelsior (2010), How green is J&K, Srinagar [8 Jan 2010]
- Dalby, Simon (1994), 'The Politics of Environmental Security' in Jykri Kakonen (ed.), *Green security or militarized environment*, Aldershot Publishers: Dartmouth,.
- Dabla B A (2009), "Social impacts of militarization in Kashmir", *Kashmir life*, Srinagar, [19 September 2009].
- Dahl, A. W. (1992), "Environmental Destruction in War", *Disarmament*, Vol. XV No:2: 113-127
- Dar, Hamidullah (2009), Khandroo Ammo Depot: A constant torment, *Kashmir Life*, Srinagar [28 March, 2009]
- Datta, S (2013), 'Impact of Climate change on Indian horticulture- A review', *International journal of Science, Environment and Technology*, Vol., 2.No:4. pp -661 671

Doherty, Brain (2007), "Environmental Movements" in Okereke C (ed), *The politics of environment- a survey*, London: Routledge Publishers.

Vasudeva, G (2011), *Environmental security – A South Asian Perspective*, TERI, India.

Eijaz, U rehman (2009), *Impact of Armed conflict on environment in Jammu and Kashmir- an overview*, [ [www.scribd.com/mobile/doc/14892353?width=400](http://www.scribd.com/mobile/doc/14892353?width=400)] Accessed on 11-02-2014.

Emmers, Ralf (2012), 'Securitization', in Allan Collins (ed.), *Contemporary Security Studies*, Oxford: Oxford Press.

Floyrd, Rita (2006), "Securitization theory and Securitization Studies", *Journal of International Relations and Development*, Vol., 9., pp-53-61.

Gadgil, Madhav, Ramchandra Guha (2008), *The Use and Abuse of Nature: Incorporating the fissured land- An ecological history of India*, New Delhi: Oxford University Press.

Galtung, J. (1982), *Environment, Development and Military Activity*. New York: Columbia University Press

Gautam, P.K (2010), *Environmental Security: new challenges and role of Military*, Shipra publishers: New Delhi

Gleick, P. (1990), "Global Climatic Change and International Security", *Colorado Journal of International Environmental Law and Policy*, Vol. 1: 41-56

Gleick, P. (1993.), "Water and Conflict: Fresh Water Resources and International Security", *International Security* 18: 79-112

Gleditsch, N.P, Strand , Eriksson., Solenborg and P Wallenstein (2001), 'Armed conflict 1946-99: A new dataset.' 42<sup>nd</sup> Annual Convention of the international studies association, Chicago, February 2001.

Gluckman, Rahael Kamel (2003), *Militarized Zones: Gender, Race, Immigration, Environment*, U.S.A: American Friends Service Committee.

Gupta, Shreekant, Partha Sen and Suchita Srinivasan (2012), 'Impact of Climate change on the Indian economy: evidence from food grain yields', *International Journal of Physical and Social Sciences*, Vol. 2, issue 6

Hamid, Ab (2012), 'Impact of turmoil on economy of Kashmir', *International journal of Social science tomorrow*', Vol.1, No.8,

Hannes, R and Stephen Fariborz (2007), 'International Organisations and Global environment' in Okereke C (ed) *The politics of environment- a survey*, London: Routledge publishers.

Haque, M. S (1997), 'Development of India's wastelands through credit- A 15 year plan' in T,K Sarkar, R.C Vaish, V Verma and S.P Gawande (eds.), *Advances in wasteland development, soil conservation society of India*, New Delhi , pp 155-159.

Harriet, Bigas et. al. (2012), *The Global water crisis-Addressing an urgent security issue*, United Nations University Press, Hamilton, Canada.

Hassan, S. (1991), *Environmental Issues and Security in South Asia.*, Adelphi Papers 262, International Institute for Strategic Studies, London

Homer, Dixon, (1991), 'Environmental Change, Economic Decline, and Civil Strife in Developing Countries' in *International Studies Notes*, Spring: New York.

Homer, Dixon, (1994), 'Environmental scarcities and violent conflict: evidence from cases' *International Security*, Vol 19, No:1.

Hussain, Tasaduq (2010), 'The next Century flood of Kashmir', *Greater Kashmir*, Srinagar [29 June 2014]

- Hussain, Mushaid (1992), 'The Kashmir issue: its new International Dimensions' in Raju C.C Thomas (ed.) *Perspectives on Kashmir: The roots of Conflict in South Asia*, Boulder & Co: Westing press.
- Hveem, H. (1979), 'Militaryization of Nature: Conflict and Control over Strategic Resources and Some Implications for Peace Policies', *Journal of Peace Research* Vol.16, No:1.
- Imber, M.F. (1994), *Environment, Security and UN Reform*. New York: St. Martin's Press
- IPCC (2007), 'Impacts, Adaptation and Vulnerability', Cambridge University press.
- IPCC (2012), *Handbook of Climate Change in India*, Oxford: oxford university press.
- Jameel Jamsheed (2007), 'Beauty lies in lakes', *Greater Kashmir*, Srinagar [14 June 2007]
- Jameel, Jamsheed (2004), 'The Wular lake on World environment day', *Kashmir monitor*, Srinagar [05 June 2004]
- Jeanna, hacker (2005), *Promoting environmental security assessment: study of Kalimantan Indonesia*, institute for environmental security: Brussels.
- Jessica, Mathew (1989), 'Redefining Security', *Foreign Affairs*, Vol 68, No:2, pp- 162-177
- Kashmir informer (2013), 'Protest against troopers over land occupation', Srinagar [22 April 2013]
- Kashmir Monitor (2014), 'Epidemic panics Kupwara', Srinagar [9 June 2014]
- Kathleen, F Bush, George luber, Rani Kotha and S Dhalwal (2011), 'Impacts of Climate Change on Public health in India: Future research directions,' *Environmental health perspectives*, Vol. 119, no:6, pp -765-770.

- Kay Sean (2006), *Global security in the Twenty-first century*, Rowman and littlefield, Oxford
- Kazi, Seema (2009), ‘Between democracy and nations-gender and militarization in Kashmir’ *Women unlimited*, New delhi .
- Khan, A.A, A , Dar and M.S Mir (2013), ‘Status of livestock in Gurez Valley of Jammu and Kashmir in India’, *Indian journal of Hill Farming*, Vol., 26. No.2: pp- 54-58.
- Khan, A Ragique (2010), ‘Engineering Kashmir: Drains, ditches and darya Jhelum’ Srinagar, *The Conveyor*, Srinagar, [18 decemeber 2010]
- Kharoo Anzar (2009), ‘Bio-diversity and Conflict’, *Greater Kashmir*, Srinagar [15 Aapril 2009]
- Kothari, Ashish (2013), ‘Development and Ecological sustainability in India: Possibilities for the Post-2015 Framework’, Oxfam India working Paper series No XVI.
- Kumar, Shashi Bhusshan (2010), ‘Environmental Impact Assessment’ Chronicle, [October 2010].
- Lama, M.P (2010): *Human Security in India: Discourse, Practices and Policy implications*, Delhi: Rawat Publications
- Latha, Asha K.V, Muniswamy gopinath and A. R. S Bhat (2012), ‘Impact of Climate Change on Rainfed Agriculture in India: A case study of Dharwad’, *International Journal of Environemntal Science and Development*, Vol 3, No 4. pp- 368-371.
- Leelakrishnan P (2010): *Environmental law case book*, Butterworths publications, Nagpur.
- Levy, B.S., Lee C, and B.S Shahi, ‘The environmental consequences of war’, in B.S , Levy and V.W Sidel (eds.) *War and public health*, New York :Oxford University Press.
- Linkov, Moul B (2006), *Environmental Security and Environmental Management – the risk assessment*, *Security through Science*, series: 4, N.A.T.O .

Majeer Abdul (2004), *The impact of militarism on the environment-* an overview of direct and indirect effects, Canada: Physicians for Global survival.

Malhotra, Ravi (2011), *Environmental Security and Sustainable Development in Asia*, New Delhi: Global Union Publishers.

Malik, A Rashid, Bhat Irshad Hussian and Bhat Fayaz ahmad (2013), 'Impact of Tourism on Environmental Conditions of Jammu and Kashmir', *International Journal of Advanced Research in Economics, Commerce, Research*, Vol.1, No.1. pp-05-22.

Martiniz, Alizer (2003), *The environmentalism of poor*, A study of ecological conflicts and valuations, Cheltenham.

Mathew, A Richards (2011), "Environment, conflict and sustainable development", Necla Tschirgi (ed) *Security and development*, Delhi:Viva books.

Mihalic, T (1996), "Tourism and warfare – the case of Slovenia" *Tourism, Crime, and International Security Issues*, Vol 11., No.2. pp-112-121.

Micheal Redclift (2003), *Sustainable development: Exploring the contradictions*, New York: Routledge publications. .

Myers, Norman (1986), 'The environmental dimension to security issues', *The Environmentalist* Vol. 6, No. 4. Pp-251-257

N. Ahmad,N H Hashmi, (1994), "Glacial history of Kolahoi Glacier", *Kashmir Journal of Glaciology*, Vol.13, No.68. pp-111-116

Najam, Adil, David Runnals and Mark Halle (2013), *Environment and Globalization: five propositions*, International institute for Sustainable Development, Manitoba, Canada.

Narain, Jai P (2012) "The challenges of health and environment, profiling risks and strategic priorities for now and future", *Indian journal of medical research*,Vol., 136 pp 185-191.

Neumayer, E (2004), "The Impact of Political Violence on Tourism" *Journal of Conflict Resolution*, Vol.,48, No:2.pp- 259- 281

- Nicholos L and T B Subha (2012), *Environment and Society*, Orient Blackswan, New Delhi.
- Okereke, Chukumereke et al. (2007); *The Politics of Environment – A survey*, London: Routledge Publishers.
- Panchmukhi, V R (2010), ‘Globalization and sustainability issues and challenges’ in Raj kumar sen (ed) *Environment and sustainable development in India*, Delhi, Deep publications. .
- Parvaiz, Athar (2013), *Agriculture in era of uncertainty*, Kashmir Times, Srinagar [23 February 2013]
- Peer, G Rasool (2011), ‘The loot of resources’ Conveyor, Srinagar, [18 May 2011].
- Prins, Gwyn (1990), ‘Politics and the environment’, *International Affairs*, Vol., 66.No: 4. Pp-711-730
- Rai, Basant (2013), ‘Pollution and conservation of Ganga river in modern India’, *International journal of Scientific and research publication*, Vo., 13,No:4
- Ramachandaran, R (2012), *India in the IPCC, Handbook of climate change and India*, Oxford :Oxford university press
- Ramanathan, V Agarwal, H.Akimoto et.al. (2008), *Atmospheric Brown Clouds-regional assessment report focus on Asia*, United Nations Environment Programme
- Rehman , Aijaz (2009), *Impact of Armed conflict on environment in Jammu and Kashmir- an overview*, [ [www.scribd.com/mobile/doc/14892353?width=400](http://www.scribd.com/mobile/doc/14892353?width=400)] Accessed on 08-05-2014.
- Renner, M. (1991), ‘Assessing the Military’s war on environment’ in *State of world 1991*, Washington D.C: World watch institute.
- Renner, M (1997), ‘Environment and health effects of weapons production, testing and maintenance’ in B.S .Levy and V.W Sidel (eds.) *War and public health*, New York: Oxford University press.
- Robert, Picciotto, R Weaving (2008), *Security and Development*, London: Routledge Publishers.

- Ruckley, R (2010), 'Environmental impacts', in David beaver (ed.), *The Encyclopedia of Eco-tourism*, Cambridge: CABI Publishers.
- Saha, D (2012), *Sustainable Environmental science*, New Delhi: New India publication agency.
- Schwencke, A.M , M.S Berger and W.B Drees (2012), *Globalised Eco-Islam: A survey of Global Islamic Environmentalism*, Leiden University Press: Leiden.
- Skarlato, Olga, Irene Telesh (2008), *Environmental security and policy making: concepts and practices in North America and Europe*, Rostock:Canada.
- Saxena, H.M (2004), *Environmental Geography*, Rawat Publication: New Delhi.
- Seager, Joni (1991), *Patriarchal Vandalism: Militaries and the Environment , dangerous intersection*, South AB Press: Boston.
- Shah, S. A. R (2007), 'Kashmir losing its most precious natural resources', *The Kashmir times*, Jammu [16 June 2007]
- Shah, Amita, (2012), 'Agriculture and environment in India', in Chakraborty Debashish, S, Mukherjee (eds.), *Environmental Scenario in India-Successes and predicaments*, Routledge Publishers: London.
- Shah, Mubeen (2009), 'Kashmir economy', *Conveyor*, Srinagar, [16 June 2009]
- Shahi, G S and V W Sidel 1997, 'The impact of military activities on development, environment , and health' in G S Shahi et al (eds), *International perspectives on Environment, Development, and Health*, Newyork, Springer publishing company.
- Sharma, R., Sharma, V.K., Waris, (2012), "Impact of Peace and Disturbance on Tourism and Horticulure in Jammu and Kashmir" *International Journal of Scientific and Research Publications*, Vol.2, No.6: pp:1-7.

- Singh, Kartar and Shishodia (2009), Environmental degradation and measures for its mitigation with special reference to India's agriculture sector', *International Journal of Agricultural Economics*, Vol., 64 No.1: pp- 40-61
- Sheehan, M (2010), *International security-an analytical survey*, New Delhi: Viva books.
- Smith, T Andrew, (2002), *The health of nations*, London: MIT Press.
- Syed, Asma (2012), *Playing with Nature*, Kashmir Life, Srinagar [24 December 2012]
- Tim Rayner and Chuwumereje (2007), 'The politics of climate change', Okereke C (ed) *The politics of environment- a survey*, London: Routledge publishers.
- Talib Arjmand Hussain (2010), *On the brink? A report on Climate Change and impacts in Kashmir*, Bangalore, Books for change.
- The Conveyor (2010), '*On the brink of Disaster*', Srinagar [April 2010]
- Timons, J Roberts (2007) 'Globalization, the environment and development debate' in Okereke, C (ed.), *The politics of environment- a survey*, London: Routledge publishers.
- Tufail, M , "Role of the Conflict Situation in the Natural Resource Endowment and Environmental Stress: An Analysis of Tourism Sector in Kashmir Valley" *International Journal of Social Science Tomorrow*, Vol.,1, No.6: pp-1-7
- Ullman, Richard (1983), 'Redefining Security', *International Security*, Vol., 8, No.1: pp- 129-153
- UNEP (2012), *21 issues for 21st Century- process on emerging environmental issues*, Nairobi
- UNEP (2013), *Emerging Issues in our Global Environment*, UNEP: Kenya

Wani, Arif shafi (2008), 'Kolahoi Glacier melting fast' Greater Kashmir, Srinagar [9<sup>th</sup> November 2008

Westing, Arthur (1986), *Global resources and International conflict: Environmental factors in strategic policy and action*, Oxford University press.

Zia, Athar (2008), 'Climate change will only intensity problems in Kashmir', The Economist,[23 october 2008]

### **Internet Sources**

Gurmeeta Vasudeva (2004), 'Environmental security: A South Asian perspective', [www.unpan1.un.org/.../unpan015801.pdf] Accessed on 19 December 2013.

Parvaiz Athar (2009), 'First come the gun, than the chocking air'[ [www.panos.org](http://www.panos.org)]. Accessed on 18 May 2014.

Faint, illegible text, possibly bleed-through from the reverse side of the page.

**Appendix**

Faint, illegible text, possibly bleed-through from the reverse side of the page.

## APPENDIX I

### Annexure 2.1 Principles of Environmental Justice

Adopted at the First National People of Color Environmental Leadership Summit Washington, DC, October 24–27, 1991 We, the people of color, gathered together at this multinational People of Color Environmental Leadership Summit, to begin to build a national and international movement of all peoples of color to fight the destruction and taking of our lands and communities, do hereby reestablish our spiritual interdependence to the sacredness of our Mother Earth; to respect and celebrate each of our cultures, languages and beliefs about the natural world and our roles in healing ourselves; to insure environmental justice; to promote economic alternatives which would contribute to the development of environmentally safe livelihoods; and to secure our political, economic and cultural liberation that has been denied for over 500 years of colonization and oppression, resulting in the poisoning of our communities and land and the genocide of our peoples, do affirm and adopt these Principles of Environmental Justice:

1. Environmental justice affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction.
2. Environmental justice demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias.
3. Environmental justice mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.
4. Environmental justice calls for universal protection from nuclear testing, extraction, production and disposal of toxic/hazardous wastes and poisons and nuclear testing that threaten the fundamental right to clean air, land, water, and food.
5. Environmental justice affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples.

6. Environmental justice demands the cessation of the production of all toxins, hazardous wastes, and radioactive materials, and that all past and current producers be held strictly accountable to the people for detoxification and the containment at the point of production.
7. Environmental justice demands the right to participate as equal partners at every level of decision-making, including needs assessment, planning, implementation, enforcement, and evaluation.
8. Environmental justice affirms the right of all workers to a safe and healthy work environment, without being forced to choose between an unsafe livelihood and unemployment. It also affirms the right of those who work at home to be free from environmental hazards.
9. Environmental justice protects the right of victims of environmental injustice to receive full compensation and reparation for damages as well as quality health care.
10. Environmental justice considers governmental acts of environmental injustice a violation of international law, the Universal Declaration on Human Rights, and the United Nations Convention on Genocide.
11. Environmental justice must recognize a special legal and natural relationship of Native Peoples in the U.S. government through treaties, agreements, compacts, and covenants which impose upon the U.S. government a paramount obligation and responsibility to affirm the sovereignty and self-determination of the indigenous peoples whose lands it occupies and holds in trust.
12. Environmental justice affirms the need for an urban and rural ecological policy to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and providing fair access for all to the full range of resources

*Principles of Environmental Justice*

13. Environmental justice calls for the strict enforcement of principles of informed consent, and a halt to the testing of experimental reproductive and medical procedures and vaccinations on people of color.

14. Environmental justice opposes the destructive operations of multinational corporations.

15. Environmental justice opposes military occupation, repression and exploitation of lands, peoples and cultures, and other life forms.

16. Environmental justice calls for the education of present and future generations which emphasizes social and environmental issues, based on our experience and an appreciation of our diverse cultural perspectives.

17. Environmental justice requires that we, as individuals, make personal and consumer choices to consume as little of Mother Earth's resources and to produce as little waste as possible; and to make the conscious decision to challenge and re-prioritize our lifestyle to insure the health of the natural world for present and future generation.

## APPENDIX II

### Annexure 3.1: Key messages of IPCC Report 2014

- In developing countries there will be not only effects on agrarian output but also outbreak of water and Mosquito born diseases such as malaria and diarrhea
- India is likely to be hit hard by global warming and loose 1.7 percent of its GDP.
- India is already regarded as most disaster prone countries in world with its 1.2 billion people living in such areas which are vulnerable to different hazards such as droughts, cyclones and floods.
- Exposure to climate change and India's high vulnerability will impact the health and development, slow down India's economic growth and affect food security and will make reduction of poverty tougher.
- India is likely to suffer in all major sectors including farming, transport, tourism and energy (Balla 2014).
- Fish community will be affected because some fish and other marine animals will face extinction by 2050.
- Continuous shrinking of Glaciers including Himalayas will affect run-off and water resource downstream and can become cause for armed conflict in the region by middle of 21<sup>st</sup> Century

### Annexure 3.2 Environmental legislation in India

Damodar Valley Corporation (Prevention of pollution of water) Regulation Act, 1948.

1. River Board Act, 1956,
2. Water Preservation and control of pollution Act , 1974 and 1977
3. Atomic Energy Act, 1972
4. Radiation Protection rules
5. Wildlife Protection Act, 1972.
6. Factories Amendment Act, 1987.
7. Environmental Protection act, 1986.
8. Central Motor Vehicles Rules, 1989

Source: Government of India (2007:117)

### **Annexure 3.3: Principles of Ministry of Forests and Environment.**

Conservation of critical environmental resources

Intra-generational equity

Livelihood security for the poor

Integration of environmental concerns in economic and social development

Efficiency in environmental resource use

Enhancement of resources for environmental conservation

Right to development for all

Equity in the use of environmental resources.

Source: Government of India 2012

### APPENDIX III

**Table 4.1: Ecotoxicology of Selected Chemical Wastes Generated by Military Processes**

Plant pathogen	Disease caused	Environmental effects	Bio-weapons potential
Polychlorinated Biphenyls (PCBs)	-Present in paints and Adhesives	<p><b>-Mammals:</b> low lethal toxicity, reduced weight gain, reduced growth.</p> <p><b>-Birds:</b> low lethal toxicity, eggshell thinning, embryo deaths prior to hatching.</p> <p><b>-Fish:</b> very high lethal toxicity, reduced mating, decreased growth, premature egg hatching.</p>	<p>cause reproductive and immunologic effects in wildlife</p> <p>-bioaccumulation in organisms; correlations with trophic levels in aquatic birds and mammals</p>
Dibenzo- <i>p</i> -dioxins and Dibenzo- <i>p</i> -furans	Chemical weapons incineration -Explosives and production systems	<p><b>Mammals:</b> suppressed immune reaction, adverse reproductive effects, wasting</p> <p><b>-Birds:</b> decreased growth, shortened beaks</p> <p><b>-Fish:</b> lethargic swimming, feeding inhibition, eggs exhibit high toxicity</p>	<p>potential of bioaccumulation of significant concentrations</p> <p>- bioconcentration factor of 26, 707 reported in rainbow trout</p>
Heavy Metals (cadmium, zinc, lead, copper, mercury)	Electroplating of aircraft and other military hardware	<p>-reproduction affected in aquatic organisms in parts per billion</p> <p>-freshwater fish exhibit impaired processes such as feeding, swimming</p> <p>-suppression of growth in vertebrate and invertebrate aquatic species.</p>	<p>significant to severe modifications in community structure involving reductions in a number of species, including complete absence of some species.</p>

Sources: *Chemistry and Ecotoxicology of Pollution*, Connell and Miller 1984; *Persistent Organic Pollutants Assessment Report*, IOMC 1995

APPENDIX IV

Questionnaire

Dear Respondents,

I am conducting a survey for my M.Phil dissertation, "Environmental Security and Sustainability in Kashmir", I humbly request you to fill the following details to the best of your knowledge.

Name.....

Permanent Address.....  
.....

Present Address.....  
.....

Gender: Female ( )                      Male ( )                      Others ( )

Age.....

Nationality.....

Religion.....

Occupation.....

Q.1 Is Climate changing over last 30 years?

Agree

Disagree

Q.2 What are the changes in your opinion?

Increase in temperature

Droughts

Erratic Rainfall

Q.3. What are the affects of Climate Change in your opinion?

Less Production of Crops

Low Quality output

Q.4. Does Climate Change has any consequences on your livelihood?

Agree

Disagree

Q.5. Is Armed Conflict and Militarization a Threat to environmental security and Sustainability in Kashmir?

Agree

Disagree

Q.6. Is Armed conflict particularly huge Military presence on edges of farms, natural Resources etc effecting environment and livelihood of the people?

Agree

Disagree

Q.7. Is Tourism in Kashmir a threat to environment?

Agree

Disagree

Q.8. What kind of Tourism you think is most disturbing Kashmir Environment?

Adventure Tourism  Pilgrimage Tourism  General Tourism

Q.2.9. What are the consequences and impacts of tourism on environment?

Water contamination  Land degradation

Depletion of Natural resources  All the above

Q.3.0 What is the role (Management and responses) of Government, civil societies, political

Parties to address the environmental issues?

Satisfactory

Unsatisfactory

Q.3.1 How do you think this problem can be solved?

Educate Tourists/stakeholders to respect nature  Better Policies/facilities   
Regulate No, of tourists  All the above

Q.3.2 Is the web of climate change, armed conflict/militarization and tourism threatening Environmental security, sustainability and livelihoods in Kashmir?

Agree  Disagree

Q.3.3 In your opinion how can these issues/problems be solved or Managed?

Demilitarization  Follow Environment norms   
Better Policies and framework  All the above

Signature

Place:

Date:

Jamsheed Jameel Mir

Research Scholar

Dept. of PCM, SU.

Thank you