INTERNATIONAL ENVIRONMENTAL SECURITY CHALLENGES AND NEPAL'S FOREIGN POLICY AND DIPLOMACY

A Dissertation

Submitted to the

Department of International Relations and Diplomacy (DIRD),

Faculty of Humanities and Social Sciences, Tribhuvan University

In fulfillment of the

Requirement for the Degree of

MASTERS OF PHILOSOPHY

In

International Relations and Diplomacy (DIRD 720)

SUBMITTED BY:

HEMANTA BUDHATHOKI

MPhil-PhD

Roll No. 35/ (2021-22)

Exam Roll No. 2038421/ (2021-022)

T.U. Regd. No. 5-1-22-48-2002

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LETTER OF RECOMMENDATION

I hereby certify that the dissertation entitled "International Environmental Security Challenges and Nepal's Foreign Policy and Diplomacy" has been prepared by Mr. Hemanta Budhathoki under my guidance and supervision, in partial fulfillment of the requirements for the degree of Master of Philosophy in International Relations and Diplomacy. I therefore recommend this dissertation for final examination by the Research Committee of the Department of International Relations and Diplomacy, Faculty of Humanities and Social Sciences, Tribhuvan University.

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Prof. Dr. Khadga K. C.

Supervisor

त्रिभुवन विश्वविद्यालय
TRIBHUVAN UNIVERSITY
मानविकी तथा सामाजिक शास्त्र संकाय
FACULTY OF HUMANITIES AND SOCIAL SCIENCES
अन्तर्राष्ट्रिय सम्बन्ध तथा कूटनीति केन्द्रीय विभाग
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LETTER OF APPROVAL

This dissertation entitled **"International Environmental Security Challenges and Nepal's Foreign Policy and Diplomacy"** submitted to the Department of International Relations and Diplomacy (DIRD), Tribhuvan University, Kirtipur, Kathmandu, Nepal by **Mr. Hemanta Budhathoki** (Cohort 2021) has been approved by the members of the Evaluation Committee.

Evaluation Committee

Prof. Dr. Khadga K.C.
Dissertation Supervisor

Dr. Ramesh Raj Pant
External Examiner

Dr. Khaga Nath Adhikari
Internal Examiner

Date: May 02, 2025

DECLARATION

I hereby declare that the thesis entitled "International Environmental Security Challenges and Nepal's Foreign Policy and Diplomacy", submitted to the Department of International Relations and Diplomacy, Tribhuvan University, is entirely my original work prepared under the guidance and supervision of Prof. Dr. Khadga K.C. I have duly acknowledged all ideas and information borrowed from various sources during the preparation of this thesis. The results presented herein have not been submitted elsewhere for the award of any degree or for any other purpose. I further affirm that no part of this thesis has been published in any form prior to this submission.

Hemanta Buhathoki

Date: May 02, 2025

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ABSTRACT

This dissertation analyzes the interconnectedness between international environmental security challenges and Nepal's foreign policy and diplomacy. The study has employed a qualitative research method. A deductive approach of research has been applied to explore the solution. This study examines the realist theory, liberalist theory, constructivist theory, and green theory to explain the international environmental security challenges and Nepal's foreign policy and diplomacy. The global environmental framework and its interrelationship with regional and national environmental institutions have been analyzed holistically based on research question one and objective one, the identification of the global, regional, and national environmental challenges has been performed.

The study examines whether the international, regional and national environmental security initiatives/efforts are sufficient to address international, regional, and national environmental challenges or not. The study concludes that hundreds of international, regional, and national environmental security challenges to address/manage the international, regional, and national environmental challenges since the 1970s. But the industrialized and developed powerful states, have still been taking the environmental security issues as their 'bargaining tools' for the 'power balance' and power reserve. So, some of the powerful countries have not signed the international legal instruments regarding environmental security challenges., The least developed states like Nepal have been facing the international environmental challenges that relate to the research question number two and objective number two.

The study analyzes whether Nepal's foreign policy and diplomacy are effective to address the international, regional, and national environmental security challenges. In addition, the study concludes that there are both strong (positive) and weak

(negative) aspects of the effectiveness of Nepal's foreign policy and diplomacy to address the global, regional, and national security challenges.

The study also analyzed the other theories the neo-classical economic perspective, liberal institutionalist theory, and neo-liberal institutionalist theory as well. It fails to address the environmental security problems of the least developed countries like Nepal. Therefore, least developed countries, like Nepal have to strengthen their national interest in the light of artistic diplomacy for making effective foreign policy, to address the international, regional, and national environmental challenges properly.

Keywords: *International Environmental Security, Climate Change, International Legal Instruments, Nepal's foreign policy, diplomacy, National Interest*

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LIST OF ABBREVIATION/ACRONYMS

AMR	Anti-Microbial Resistance
AWG-KP	Annex Parties under Kyoto Protocol
BC	Black Carbon
BIMSTEC	Bay of Bengal Initiative for Multisectoral Technical and Economic Cooperation
CBD	Convention on Biodiversity
CCDR	Country Climate and Development Report
CFC	Chloro Floro Carbon
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conferences on Parties
CSD	Commission on Sustainable Development
DDT	Dichloro Diphenyl Trichloroethane
DNA	Deoxyribonucleic Acid
DOE	Department of Energy
EIA	Environment Impact Assessment
EPA	Environmental Protection Agency
ER's	Ecological Resilience
GEF	Global Environment Facility
GHE	Green House Effect
GHG	Green House Gas
GLOF	Glacier Lake Out Brust Flood

GRULAC	Group of Latin America and the Caribbean
HKH	Hindu Kush Himalaya
HSG	Hatridge Smoke Unit
ICIMOD	International Centre for Integrated Mountain Development
IFC	International Finance Corporation
IMF	International Monetary Fund
INFOTERA	Internal Referral System for Source of environmental Information
IPE	International Political Economy
IPPC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
JI	Joint Implementation
MNCT	Mahendra Natural Conservation Trust
MOFA	Ministry of Foreign Affairs
NAPA	National Adaptation Plan of Action
NDG	Nationality Determined Contributed
OECD	Organization of Cooperation and Development
PACC	Paris Convention on Climate Change
PM	Particulate Matter
POPs	Persistent Organic Pollutants
PPM	Part Per Million
SAARC	South Asian Association for Regional Cooperation
SARS	Serve Acute Respiratory Environmental Syndrome
SDG	Sustainable Development Goal
UNCED	United Nations Conference on Environment and Development

UNCLOS	United Nations Convention on Law of Sea
UNECOSOC	United Nations Economic and Social Council
UNEP	United Nations Environmental Program
UNESCO	United Nations Economic, Social, and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNHE	United Nations Conferences on Human Environment
UNIGTF	United Nations Inter-Governmental Task Force
UNO	United Nations Organization
UV	Ultra Violet
VCD	Voluntary Carbon Standards
WHS	World Heritage Site
WSSD	World Summit on Sustainable Development
WWF	World Wildlife Fund

CHAPTER ONE

INTRODUCTION

1.1 Background

The natural environment comprises water, air, soil, forests, pastures, and wildlife (Bhattarai, 2010, pp. 21-64). International environmental problems are the negative impacts on the natural environment caused by human activities, which are viewed as detrimental by a significant number of people. These problems often have transboundary or international aspects (Sijapati, 2019, p. 39). Environmental issues are considered global problems due to their nature; however, some are inherently local or national, such as access to water and air pollution. Nonetheless, the impacts of these national and local environmental problems contribute to global challenges. An environmental problem is characterized by a collective judgment that the environment is unacceptable or that there is a threat to environmental quality (Sijapati, 2019, p. 39). Global environmental problems include deforestation, desertification, and rapid population growth, and climate change, depletion of the atmospheric ozone layer, acid precipitation, hazardous waste, noise pollution, and air pollution.

The environment has become a top priority in recent times. It is now considered a necessary element in addressing all potential future problems. The economies of Brazil and China have been growing, leading to an increase in the number of middle-class individuals in those countries. Meanwhile, the United States withdrew from the Paris Agreement, which has posed challenges for smaller states like Chile. Countries like Nepal are also being affected by climate change.

According to World Bank statistics (2019), global warming has resulted in the equivalent destruction of 50 *billion and* 20 million. Natural disasters have caused an additional 5 billion and 10 million in damages. There is a need for collective efforts to address global environmental challenges, and these efforts should focus on protecting the environment.

Due to the excessive increase in environmental degradation, rising energy demand, and harmful human habits, environmental security issues continue to persist. Collective initiatives such as the Paris Agreement and Agenda 21 aim to promote sustainable development through international cooperation, particularly to support weaker states and establish frameworks for alternative solutions.

Wealthy countries are not immune to the climate crisis, and they possess the power to hold polluters accountable. The roots of the climate crisis were established decades ago, but it was not until the mid-2000s that wealthier nations began to take notice, particularly after significant forest fires in California and Greece. Many people have started to recognize that the climate crisis is a real phenomenon requiring urgent action against climate change. Historically, wealthy countries have emitted a disproportionate amount of carbon dioxide (CO_2) since the Industrial Revolution, and the impacts of this excessive emission are felt most acutely in poorer nations. During the industrial era, population and prosperity increased, but so did the exploitation of natural resources. It became evident that the Earth could not withstand such levels of resource exploitation, leading to concerns about the planet's limited capacity. After the 1990s, most countries did not make significant efforts to minimize natural resource consumption, focusing instead on controlling gas emissions.

Environmental security examines the threats generated by events and attitudes within communities and states. It focuses on how environmental problems cross state borders and affect human conflict and international relations. Environmental security is a crucial concept in international relations, development, and human security. The major aims of international development include reforms in food security and water security, with energy security recognized as an aspect of sustainable development at the United Nations level. The strategies of the Millennium Development Goals (MDGs) have also prioritized environmental security on an international scale.

The definitions of international security have evolved over time and in different contexts. After World War II, academic discourse regarding the definition of security expanded to include the utilization of resources and political influence, alongside environmental threats. By the 1980s, environmental security was recognized within academic circles as the relationship between armed conflict and political impact. Environmental changes, degradation, and climate change have led to internal and external violent conflicts within states, potentially weakening national security.

Environmental pollution is the remainder of the objects that human beings make, use, and throw. Due to an increase in pollution, the space for every man have been narrowing and the demand of mankind have been increasing, so environmental pollution has also been increasing year by year (Khadka et al, 2006, p. 1).

The interrelationship between human beings and the environment is incomparable. The environment protects human beings from possible risks and threats. On the other hand, human beings protect the environment. The pollution and toxic elements of the urban area reflect the careless behavior of human beings towards the environment. The intervention into the natural ecosystem- air and water pollution- has led to the

melting of glaciers and the rise of the sea level. Consequently, the sea level rise creates risks and threats for millions of people who live in the coastal areas of the Sea. The uncontrolled deforestation leads to degradation of soil and that affects agriculture and finally invites food insecurity (Upreti, 2013, pp. 211-250).

The climate change and its impact on environment is a major problem. Due to consequences of global warming, the flood, wildfire, drought, erosion, in coastal area has been inviting in every year. Due to the sea level rise the Iceland countries are under threatened forever. The melting of ice in mountainous region is a major concern. The increasing pollution in urban area has become a worldwide problem. The emission of greenhouse gases due to anthropogenic and it causes the climate change (Shrestha, 2022, pp. 8-22). During the first decades of establishment of the United Nations Organization (UNO), the concern regarding the ecology is seen quite negligible in number. In 1960s, due to the spoiled of oil in the Ocean, few international agreements are signed. After the exposure of the events and degradation in environment, the international community expresses their concern about the effect of development in ecology and human welfare. Subsequently, the UN started to remain as the main advocate and frontline representative of the sustainable development (The Basic Facts about United Nations organization, 2017, p. 188).

According to United Nations Environmental Program, the carbon dioxide (CO_2) atmospheric concentration increases 323 Parts Per Million (PPP) per year. The yearly global temperature anomaly is 1.42^0C, the monthly global temperature anomaly is 1.42^0C. The arctic sea ice extant within a day is 1.28 million $(Km)^2$, the global mean sea level changes within three months has been 84.2 millimeters since 1992 and, change in glacier mass is 1.23 mwe per year (UNEP, 2024).

The mountainous region of the world is distributed worldwide. Their characteristics are based on their altitude and latitude. The mountainous regions are in risk due to climate changes. The temperature of the mountainous region increases which does not only affect the local biological diversity and population. The indirect impact of the climate change can be seen in the mountainous region. The research of the mountainous region is important to grab interactions among mountainous ecosystems. During the research, the exchanges of knowledge play a vital role. Therefore, resources have to expand their accesses (UNEP, 2024).

The three major crises of the nature are climate change, increasing pollutions and biodiversity loss. Due to increasing compounding energy and increasing food insecurity, Russia-Ukraine war, has invited excessive human pains over the recent years. During COVID-19 Pandemic, the global greenhouse emission was decreased historically but for short period of time, the emissions of the total greenhouse gases was decreased by 5.6 percentage (UNEP, 2024). The emission of methane and nitrous oxide remained unchangeable from 2009 AD to 2021 AD. The emissions of fluorinated gases increase continuously but its increasing rate has started minimizing. In between 2000 to 20009, the average annual increasing rate of fluorinated gas was 1.1 percent and in between 2010 to 2019, the average annual increasing rate of fluorinated gas was 2.6 percentage (UNEP, 2024).

The rate of the emissions of the greenhouse gases is unequal according to regions and countries. The top seven emitters of GHG are United States of America, China, European Union (E27), Indonesia, Brazil and Russian Federation. The members of G20 are collectively responsible for 75 percent of GHG emission. The emission of the United States of America is 14 t CO_2e, Russian Federation is 13 t CO_2e, China is 9.7 t CO_2e, Brazil is about 7.5 t CO_2e, Indonesia, and European Union are 7.2 t CO_2e and

India 2.4 t CO_2e and the least developed countries emit 2.3 t CO_2e on average annually (UNEP, 2024).

The passing of the proposal regarding clean, healthy and sustainable environmental rights is one of the successful endeavors for the environmental justice. The worldwide challenges of the air quality include various kinds of standards permanent and temporary terms and conditions and other involved actors. Due to air pollution the 7-million-people die yearly worldwide, among them, 650,000 are children (UNEP, 2024). The air pollution not only affects health of human being it also effects in ecosystem and crop production. The air pollution is also closely linked with climate change. Therefore, the international, regional and national actions should be encouraged against air pollution (UNEP, 2024). Persistent Organic Pollutants (POP) are the chemicals used as the remainder in the environment knowingly and unknowingly. POP are not destroyed and it can be stored for living beings from food chain and they are toxic for human and other animals. The POP has been restricted by the Stockholm conference, 1972. Nevertheless, there is the existence of POPs. Up to 2020 the 31 items of the POP has listed as the pesticides and industrial POPs, the chemicals of the POPs are producing regularly due to that the human and environmental security is threatened by these POPs. The mercury, antimicrobial resistance etc. are major anti-microbial of POPs (UNEP, 2024).

The climate change is a serious threat to the human health, the threshold of global warming up to end of this country i.e. 2-degree centigrade global warming may become the cause of death of more than one hundred billion people due to critical seasonable events. I.e. excessive heat drought, calamities of infectious diseases, scarcity of the food materials etc. Besides, during that phase, is also, the increasing of

Anti-Microbial Resistance (AMR) fails. Due to that, billions of people have been affected worldwide (Balasegaram, 2024, p. 4).

The primary concern of this dissertation is to identify the international and national environmental security issues and challenges. According to the existing literatures regarding environmental security, the global warming, melting of ice in mountainous region, glacier lakes outburst floods (GLOF), climate change, ozone layer depletion, air pollution, hazardous solid waste, land pollution, biodiversity loss, water pollution including marine water pollution, noise pollution, acid rain, deforestation and desertification, chemical pollution, conservation of world heritage cites, drought, wildfires etc. The national environmental security issues of Nepal are global warming, melting of ice, glacier lake outburst, climate change air pollution, hazardous solid waste, land pollution, soil erosion, biodiversity loss, water insecurity and water pollution, noise pollution, soil erosion, deforestation, desertification, and acid rain etc. These environmental security issues are interrelated to each other. Theoretical question may arise how Nepal has been facing or managing these international and national environment security challenges through its foreign policy and diplomacy? Nepal has been participating in most of the international summits, conferences and programs regarding conservation and protection of environment and has become a member of the environmental security related conventions, declarations, covenants, protocol and, treaties (Dahal, 2002, p. 555).

According to Country Climate and Development Report (CCDR) 2022, due to increasing temperature South Asia, the people, economy, environment and development additionally affect in Nepal. The flood due to the annual climate changes 350, 000 Nepalese peoples would be affected in 2030. (The Himalayan Times, 2024, para, 1). Nepal has internalized the international legal instruments regarding

environmental issues. The Constitution of Nepal, 2015 mentioned the right to clean environment as a fundamental right. In addition, Nepal has domesticated international environmental issues related instruments through promulgating laws, acts, regulations, policy and programs etc.

Another question might arise who are responsible for climate change? The responsible countries of climate change are developed and industrial states which emit GHGs including carbon dioxide excessively. Most of emissions of the GHGs and carbon dioxide are from developed countries and by those that have industrializing in the late 1970s. The major cause of the excessive emission of GHGs is anthropogenic activities. There has been a continuous debate in the division of responsibility of the GHG emission. In decade of 2000, the percentage of GHGs emission by China was less than the United States of America. Nevertheless, the GHGs emission by China has increased drastically. After Rio earth Summit 1992, the least developed countries like Nepal were not liable for compensation of GHGs due to moral reason (Maslin, 2024, p. 12). On other hand, the powerful countries have not signed and ratified dozens of international legal instruments regarding environmental security issues. The United States of America have not signed and ratified some of legal instruments regarding environmental security. The United States of America has not signed and ratified some of the legal instruments regarding environmental security.

The some of the other countries including China, Russian Federation, and India also have not signed and not ratified some of the international legal instrument regarding environmental security. Nepal and other most of the least developed countries signed and ratified the most of the international legal instruments regarding international environmental security. In this dissertation, the researcher also aims to attempt to examine the international and national environmental security challenges,

international and national effort/initiative to manage international environmental security issues and importance of managing international and national environmental security challenges through Nepal's foreign policy and diplomacy.

1.2 Statement of Problem

The average earth's temperature increases every year. It is predicted that, the earth temperature becomes 0.5 degree Celsius to 2 degrees Celsius by 2030. By 2090 it could be between 3 degrees Celsius to 6.3-degree Celsius (Pandey, 2023, p. 41). The study talks about worst future of nature due to climate change. Nepal is least developed mountainous country of the South Asia. Nevertheless, the mountainous ranges of the Nepal have been facing critical risks due to the climate change. According to Scientist Joseph Shea, glacier hydrologist of Centre for Integrated Mountain development (ICIMOD), the amount of ice has been decreasing in the mountainous regions. Previously the mountains contained the largest volume of snow and ice but the thickness of snow and ice has been decreasing over the years due to climate change (Greate Way Magazine, 2017, pp.19-31). The above report clearly provides signals that the least developed countries like Nepal also have been facing problems due to climate change and environmental degradation.

As climate change, air pollution, hazardous solid waste, biodiversity loss, water pollution, acid rain, Glacier Lake Outburst Flood (GLOF), noise pollution etc. are the major environmental security challenges of the global, regional and national level of all the states including Nepal.

The international community has been trying to focus on collective efforts to minimize the environmental security threats in international, regional and national level respectively. But initiations/efforts of the international, regional and national

level have been sufficient or not to address these environmental security issues of global, regional and national level is still questionable.

One of the important issues of the national interest is environmental cleanness (Draft Report of National Interest Protection Committee, CA, 2066, p.118). More than 130 countries of the world have mentioned regarding environmental issues in their directive principles and policy in their constitution including United States (Pant, 2070, pp.123-128).

The area of Nepal is 147,516 square KM. That covers only 0.1% of the earth. But from the perspectives of bio-diversity, the status of Nepal is very important. In decades of the 1980s the conservation area of Nepal covered only 8% but it covered the highest area in comparison to South Asia in 2007/8s. Due to excessive emissions of Carbon Floro Carbon (C-F-C) by the industrialized and developed states, the temperature of earth has been increasing and Nepal has become victim of greenhouse gas in of South Asia. Nepal has been declared as the critical zone of the climate change (Report of Nepal's foreign Policy in the Changing context, 2068 B.S., pp. 31-32).

According to the recent research on Climate Accountability Institute, only 20 companies of the world emitted 35% Carbon among 430-billion-ton Carbon dioxide, and Methane, gas of the world. Nevertheless, the powerful nations Including USA and China have not been participating in recent international; Climate Change Conferences (Acharya, 2024, pp.55-59).

The foreign policy is the extension of domestic policy of any countries. Therefore, foreign policy guided by the municipal policies of the concerned states. The mountainous region and surrounding areas have been facing serious environmental

degradation and climate change (Acharya, 2016, pp.129-136). The active role of the any state also helps to resolve the global problems like environmental degradation and climate change (Hamal, 2014, p.3) Nepal has been expressing deep concern about the problems of climate change as the least developed and vulnerable countries (Hamal, 2014, p.287).

So, in this dissertation, the researcher has attempted to study about dimensions of international and national environmental security challenges, effects and implications of international environmental security challenges, and management of international environmental security issues through Nepal's foreign policy and diplomacy have been described.

While describing international environmental security challenges and Nepal's foreign policy, this study has focused on identification of the major international environmental challenges i.e. climate change, ozone layer depletion, loss of biodiversity, the disappearance of species, greenhouse effects, deforestation, desertification effects, etc. In addition, in this study, international, regional and national initiatives/efforts to manage international, regional and national environmental security challenges have examine. Effectiveness of Nepal's foreign policy and diplomacy to address management of international, regional and national environmental security challenges have analyzed.

For problematizing the international, regional and national environmental security challenges and Nepal's foreign policy and diplomacy, the research questions have been framed accordingly.

1.3 Research Questions

a) What are the international, regional and national environmental security challenges?
b) How the international, regional and national initiatives/efforts contributing to manage international and national environmental security challenges?
c) Why Nepal's foreign policy and diplomacy have to make effective to address international, regional and national environmental security challenges?

1.4 Objectives of the Study

a) To identify the international, regional and national environmental security challenges.
b) To examine the international, regional and national initiatives/efforts contributing to manage international, regional and national environmental security challenges.
c) To analyze the effectiveness of Nepal's foreign policy and diplomacy to address the international, regional and national environmental security challenges.

1.5 Significance of the Study

The findings of this dissertation have contributed to providing information about how Nepal has been facing or managing international, regional and national environmental security issues through its foreign policy and diplomacy. Besides, this study has suggested how international environmental security-related multilateral legal instruments have been internalized, domesticated and enforced in Nepal by its foreign policy and diplomacy.

This study has not only contributed to adding knowledge regarding security but also environmental foreign policy, environmental diplomacy, climate diplomacy. The environmental issues have been quite shadowing in the least developed countries due to being one of the least vulnerable and least developed nations in terms of environmental security. Therefore, this research paves the way for further research regarding environmental security, environmental foreign policy, and environmental diplomacy.

Lastly, the environmental security concern is one of the major issues of international relations and diplomacy. Global warming and climate change issues have been becoming the major issue of international affairs and forums. Furthermore, the findings have also become sources for students of political science, sociology, law, conflict, peace and development and history as well.

The world has been badly affected by recent international, regional and national environmental problems, i.e. climate change, loss of biodiversity, ozone layer depletion, and greenhouse effects. Due to these major environmental problems, Nepal has been facing the problem of irregular rainfall, flooding, landslides, acid rain, the disappearance of animals and plants, etc. So, this study mainly focused on identification of international, regional and national initiatives/efforts to manage international, regional and national environmental security challenges and analysis of Nepal's foreign policy and diplomacy to address the international, regional and national environmental security challenges.

This study has identified how Nepal has been facing international, regional and national environmental security challenges. In addition, this study also examines how international, regional and national initiatives/efforts contribute to managing international, regional and national environmental security challenges. This study also

analyzes the effectiveness of Nepal's foreign policy and diplomacy in addressing international, regional and national environmental security challenges.

1.6 Limitation of the Study

This study has been performed within the theoretical framework of the realism, liberalism, neo-classical economic perspective liberal institutionalist theory, neo-liberal institutionalist theory, constructivist theory, green theory, and foreign policy analysis and diplomacy. The secondary data has been applied in this dissertation.

1.7 Organization of the Study

This study has been undertaken within the theoretical framework of realism, liberalism, neoclassical economic perspective, liberal institutionalist theory, neoliberal institutionalist theory, constructivist theory, green theory, and foreign policy analysis and diplomacy. The secondary data have been used so far. This study is categorized into seven chapters. The first chapter deals with the introduction. In the introduction, the context of the study, the background of the study, statements of problems, research questions, objectives of the study, significance of the study, and delimitation of the study, and organization of the study.

The second chapter presents literature review, i.e. theoretical review, and empirical review of available literature. In the theoretical review, realist theory, liberal theory, constructivist theory and green theory have been included. In an empirical review of the concept of the environment, environmental security, environmental security issues, national, regional and international environmental security challenges, national, regional and international initiatives to manage international, regional and national environmental security challenges were included.

The third chapter elucidates research methodology. In the research methodology: philosophical position, ontology, epistemology, axiology, research design, nature and source of data, data collection tools and techniques, data analysis procedures, ethical considerations, and conceptual framework are included.

The fourth chapter have explained about the international and national environmental security challenges of Nepal i.e. global warming, melting of ice in mountainous region, glacier lake outburst, sea level rise, climate change, ozone depletion. Air pollution, solid waste hazardous, land pollution (soil erosion etc.), biodiversity loss, water pollution including marine pollution, noise pollution, deforestation and desertification, acid rain radioactive substances, chemical pollutants and, heritage cites conservation etc. have included.

The fifth chapter outlines the international and national initiatives/efforts to manage the international, regional and national environmental security challenges of Nepal. In this chapter, international multilateral legal instruments, i.e. conventions, declarations, protocols, treaties, agreements regarding environmental security challenges, i.e. international legal instruments regarding global warming, climate change, ozone depletion, biodiversity loss, air pollution, water pollution, solid waste hazards, chemical pollutants, water pollution including marine water pollution, land pollution including soil erosion, radioactive substances, and conservation of heritage cites. Furthermore, Nepal's constitutional provisions, legal provisions, plans, policies, and strategies regarding environmental security issues have been explained. How Nepal's foreign policy and diplomacy are important to address international and national environmental security challenges is explained.

The sixth chapter embodies data analysis, interpretation and research findings. In this chapter, the analysis of the effectiveness of Nepal's foreign policy and diplomacy address the international, regional and national environmental security challenges. .

The seven chapter consists of summary and conclusion. In each chapter, the data have been analyzed. While doing content analysis the descriptive and explanatory method have been used. The findings and results are explained under the sub-topics. The discussion based on summary of findings and results.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Realist Theory

The human nature is pessimistic and the international relations among states are necessarily conflict-oriented and these, conflicts of the world are ultimately resolved by war, the values of national security have to prioritize for the survival of the states. The fundamental doubts of the international politics can be compared with domestic political lives which are the fundamental concepts and perspectives of the realist theory of international relations (Jackson & Sorenson, 2014, p. 66).

The main assumptions of realism are world system is anarchic, war is inevitable, there is insecurity in the world, states are main actors of the world system and states are decisive for world politics. Realists have assumed that the willingness of human being is broad and dynamic/changeable but during diplomatic behavior the selfish nature of human being they give emphasis to limit the willingness of the human being (Donnely, 2005, pp. 29-54).

The realism give emphasizes interrelationship between states. However, it is not related with idealist world. It is international explanation of human behaviors. Individuals are compulsorily selfish and they seek power to fulfill their interest and to overcome other (Khanna, 2014, p. 8).

According to realist thought of international relations the bipolarity is more stable than multi-polarity. In bipolarism, there is a balance of power and the relative gain is better than absolute gain. According to political realism, the politics is taken as the

struggle for power and it attempts to explain on the basis of the power, security, and national interest" (Ghai, 2017, p. 34).

Realists believe that state is naturally positivist. In international system, there is check and balance of power. Realism cannot explain other things except war. The realist theory has explained the international politics in the context of power and changeable interest has guided the politics more than other things. And it is irrelevant to understand the action of politicians on that basis of his mentality and thought is only cover of power politics. The state man only thinks about national interest and then acts based on national interest.

According to classical realist theory, the politicians and act according to national interest. The priority order of national interest is the most important thing while politician think and act. Therefore, it is better to categorized then most important and least important thing while working on behalf of state (Nie, 2016, pp. 422-444).

The environmental issues i.e. biodiversity, deforestation and climate change are not that much prioritized by the realists. These issues move the geo-strategic and military concepts backward because the environmental threats are for the complex and the environmental security is expensive as well. However, in international system the environmental threat must be informed to the states but strengthen, healthy economy is a major concern (Pease, 2015, p. 245).

If the climate change is the consequences of the human life style, the people have to change their lifestyle. Nevertheless, it is difficult to change life style of peoples without any important cause and the realist argues that in climate change agreement 'free riding' is easy and high possible policy. The states which are major contributors

of climate change have to pay compensation to the less contributors of emitters of GHG (Pease, 2015, p. 245).

The realists of developed and developing countries have protested against the sovereignty of states by the international laws regarding climate change. The realists of least developed countries have seriously taken the concern about how the special rights can be provided to the international institutions by thinking about possibility of unknown ‘free riding’ (Pease, 2015, p. 246).

In academia of security the realist tradition has been highly affective. The most of the realist expressed pessimistic and rational perspectives in international relation (Elman, 2008, pp. 15-58). The scholars of realist have argued that all of the contemporary theories of international relations are incarnations of the realist theories (Elman, 2008, pp. 15-58). According to Kenneth Waltz, the international systems have been created by structures and their interactive units, there are two permanent elements of structures of international systems i. e. first, the concept of anarchy and the theory of self-help (Elman, 2008, pp. 15-58).

Defensive Structural Realism (DSR) and neorealism are similar regarding some concepts. The scholars of DSR and neo-realism states that, the states seek security in anarchical international system and they are mainly insecure from states. There are mainly three differences between neo-realism and defensive structural realism. First, neo-realism, allows for several micro-level bases to explain the behaviors of the states. On other hand, the defensive structural realism depends on only rational choice. Secondly, defensive structural realism includes security balances as a variable. The defensive structural realist has argued that existing technology or geographical situation strengthen security of concerned states but the resources are controlled; by

the states that do not strengthen the resources controlled by any states. Thirdly, the DSR emphasizes on the status quo (Elman, 2008, pp. 15-58).

2.1.2 Liberalist Theory

The human nature is naturally good and philanthropic. Therefore, peoples are capable of cooperating to each other. The basic interests of human towards welfare of other human beings make possible progress of human beings. The worse behaviors of the human beings are not consequences of the evil but worse institutions and systems which encourage to express opportunist behavior and to harm other and to perform war as well. The war is not inevitable and it can be minimized and there is possibility in eradicating anarchy. The war and injustices are international problems to overcome, the war and injustice collective and, multilateral attempts have to be proceeded in place of the any individual states. International society has to reform institutionally which can remove the anarchical situations like wars (Weber, 2014, p. 45). According to liberal thought of international relations, the state is hierarchical, the obtaining of property is important as security and power is very specific. The additional characteristics of liberalism are the sharing of common interest which is more important than power sharing, the regime and recognition assist top cooperation and after disintegration of Soviet Union from the starting phase of 1990. The effect and influence of liberal theory increased within the academia of the international relation (Burchill, 2005, p. 55).

The liberal perspective has advocated that, the moral world is the instrument/ tool for making an ideal world and to secure legal states not only secure their development and prosperity by means of morality and norms and values of morality but also to eliminate the war, inequality, autocracy, suppression, violence and use of force in the world (Ghai, 2017, p. 33).

According to liberalist school of thought, hegemons are not always stable. Any strategy may be balanced along with the repeated game. The actors of the repeating game have to be conscious about world. The large shadow of future cannot encourage cooperation. The liberalist theory of international relations works properly with issue of cooperation but not with issue of distribution of the uncertainty, education, and international organizations. Previously, the conflict did not arise not for regime or power but for dissimilar theories and ideas (Malhotra, 2010, p. 114-115).

There are two sub-branches in liberalist's approach of international relations regarding the subject matter of climate change. These are:

a) Neoclassical Economic Perspective and
b) Neo-liberal institutionalist.

2.1.2.1 Neo-Classical Economic Perspective

During Kyoto Protocol, the neo-classical economic perspective was supported by United States of America. The major aspects of neo-classical economic perspectives are minimization of emissions of GHG and limitation in GHG emission (Pease, 2015, p. 247). There are rights of each state to emit GHG on the basis of their economic production i.e. that refers to emission of GHG gas (Metric Ton). Gross National Product (in per million Dollar).

According to that concept the involved states for the objective have right to buy and sell. The proposal of United States of America was based on its experience of tradable permission for emission of Sulphur dioxide domestically. That kinds of market resolution increase the capacity and keep maximum limitation of holistic emission. In neo-classical economic perspective the better way for protection of global commons is privatization. According to them while granting right to pollution to state, they

provide right to property theory through both which the environment and economic development become sustainable (Pease, 2015, p. 247).

2.1.2.2 Liberal Institutionalist

The concept of the liberal institutionalism directed an important role of the government and international institutions. According to liberal institutionalist, the national governments and international institutions are necessary for international environmental governance, in absence of global governance. In international environmental governance there are international environmental organizations, Non-profit non-governmental organizations, business and scientific communities etc. Liberal institutionalist is categorized in to centralized and decentralized forms. In concept of centralized liberal-institutionalist, the government has agreed to the set of actions calibrated to achieve the designed reduction in emissions. To control over the GHG emission the better option is taxation in illegal activities. That Carbon tax has to be monitored by International Monetary Fund (IMF) which can report to the authority which implement the climate change related Convention and treaties (Pease, 2015, p. 248).

During Kyoto Conference the centralized concept was not seriously taken because the veto holder country USA strictly vetoed in the favor of the Neo-classical economic perspective. After Kyoto protocol the liberal institutionalisms have argued that the USA can make oblique to involve in Kyoto protocol by linking international trade agreements with international struggle against climate change and, world organization may assist that context and by restriction of import commodities from non-participant states in Kyoto protocol. They encourage to ratify Kyoto protocol. Nevertheless, Neo-classical liberalist challenge to start trade war as their strategies (Pease, 2015, p. 249).

The decentralized concept of the climate change is about local, municipal, sub-national regional and international activities. It accepts complex wave of the actors. In this process the various thoughts can be listened in market that process promotes progress in knowledge and make liable to become serious about environmental issue especially climate change issue (Pease, 2015, p. 249).

The non-governmental institutions make a comprehensive network of supervision of the agencies of environmental problems and they consult and lobby with governments and international governmental organizations for rules and regulations of the environmental conservation. The regulation of environment affects their interest to implement international law and standards for addressing climate change which should be assisted by states.

2.1.2.3 Neo-Liberalist Institutionalism

In M. Norkevicious's perspective, neoliberalist institutionalism is the most influential theoretical perspective for international cooperation and assistance. This theory expresses the demand for increasing aspects of international assistance due to increasing interdependence. International institutions are established to solve problematic issues including environmental issues and lead towards collective tasks with certain objectives (Norkevicious, 2014, p. 101).

According to Robert Keohane, international regimes are not raised by institutionalism but established by states to achieve their goals. While states face contradictions regarding cooperation and assistance to full their interests, the state gives emphasizes on the increasing international institutions capable. The laws, rules, and institutions are established because they assist to solve common problems (Norkevicious, 2014, p. 101).

In Greco's concept, neoliberal scholars have special lenses to study today's international relations, international cooperation, and global systems differently. They advocate that, international cooperation can highly protect economic development. In addition, they logically claim even if there is no existence of interests of the state, which can lead to creating institutions, it can continue the protection and promotion of international cooperation. On the other hand, the neoliberal institutionalists agreed with the thought that states are the major players in world affairs and they logically follow their primary goal i.e., to promote national interests (Grieco, p. 487).

The neo-liberal institutionalism recognizes that anarchy is the existing reality of today's international system because any central bureaucracies cannot govern. In the view of the neo-liberal institutionalists, there are difficulties even if the state shares their common interests because the existing anarchical conditions provide a shape to avoid the agreements. To resolve that problem, the neo-liberal institutionalists claim that the states can establish international institutions which assist to minimize to encourage selfish and might encourage attraction towards honesty (Grieco, 1988, p. 487).

International institutions can cross the basic obstacles of international cooperation. There is valuable enlightenment regarding assistance among international institutions, institutionalized states, the world system, and universal affairs. The states endeavor to maximize their absolute gain and they are offset to gain benefits achieved by others (Grieco, 1988, p. 487).

In Norcovicious's perspective, neo-liberal institutionalism is one of the major statistical events. It is also the characteristic of states, which lead toward logic and cooperation. While behaving with neo-liberal institutionalism, the state is defined as

the effective gatekeeper that defends the domestic and international arenas. This viewpoint gives emphasizes on how the role of the state is made stronger through successful cooperative management of common problems (Norkevicious, 2014, p. 101).

Institutionalist theories focus on methods under which there are possibilities of raising cooperation, provided in the domain of international relations by strategic interactions. In decades 1997 and the 1980's, there existed a dominant trend that had aimed to emphasize the economic and environmental sectors rather than security systems (Norkevicious, 2014, p. 101-102).

In S. D. Krasner's view, neo-liberal institutionalism has brought international law and international relations discipline together. The ontological framework of neo-liberalism is mostly the same as the discipline of international law. The classic model of international law is a shadow of the liberal theory of the state. The state has been taken as an individual at the international level. Sovereignty, freedom, and consensus of the states can be compared with the status of the individual in the liberal system (Krashner, 2000, 96-97).

In Scolnikoff's perspective, the increasing consciousness, complexity, and seriousness of cross-border environmental problems lead to an increase in international assistance. The states have included Non-Governmental Organizations (NGOs) to work in the field of international protection because the participation of NGOs increases the capacity to regulate environmental protection technically and politically. The terms and conditions while performing the agreement between states and NGOs reflect the source, skill, and domestic influence. Besides, the participation of NGOs provides policy advice, and determinations and assists for regulating representatives and

minimize the risks and facilitates signals of government, and parties. The states provide participation by testing specific terms of the participation of NGOs neither increase effectiveness nor to affect democratic characteristics. These effects are normal but creates participation of NGOs that may lower the effectiveness of governance and form moral abstracts and invite worse results from the viewpoint of the environment (Skolnikoff, 1990).

The existing analysis of the "NGO Phenomenon" either becomes fully descriptive or the international law that has failed to have a proper explanation of the participation of NGOs. As per one of the surveys of international environmental politics, inside the treaty-making system, the only authentic voting power is vested in states but in the based caretaker sufficient roles have been provided to the NGOs, and the rights provided to the NGOs are unexpected (Skolnikoff, 1990).

2.1.3 Constructivist Theory

Constructivist has argued that, constructivism itself is a prescribed and matured form of dynamics. Traditionally, the concept of security is closely related with realism in terms of security controversies and power balance. The constructivist thinker Alexander Wendt has argued that, as the other thing, the security is also socially constructed and the strategic actors can have changed the structural transformation regarding security sector (McDonald, 2008, pp. 59-71).

Constructivist theory of international relations focuses on ideational factors and social construction of world politics. The Copenhagen School of Constructivism is deeper and explore the nature of its contribution to understand the academicians of security. Constructivism has been raising as a theoretical approach since 1980s. The constructivist theory argues that the world has formed socially by inter subjective

interactions i.e. agents and structures with the ideational factors, norm's identity and ideas (MC Donald, 2008 pp. 59-72).

There are three major aspects of the constructivist theory of international relations. First, the world politics is guided by the common thought, standards and, values or the actors. Secondly, the structure of thought is constructive because it does not affect decisive influence of actors in social process. The structure can redefine the interest and identify actors. Thirdly, the agents are mutually constrained to each other's. Actors construct agent and structure for their identity and interpret but the structure originated is re-originated and can also be changed by the controversial behaviors of agents (Kumar, 2011, pp. 156-1576).

The constructivist has claimed that they are capable of providing dynamic concepts and prescribes the concepts of traditional security. Constructivists give emphasize on constructing social security and they are also conscious about how security has been maintained in world politics and how the concepts of threats of security come in to existence (McDonald, 2008, pp. 59-72).

Constructivist theory has been characterized about how the worldwide climate change regime created, and how it's standard and values developed and published, how interests are defined and redefined etc. Constructivist relatively research as how the identity of actors are created and how some identities are provided special rights. In the issue of climate change the actors are individuals, states and international institutions. The identities are designed and framed by the structure of the framework conventions from interaction between other actors that assist to understand development process and dynamics of the common definition and understanding. The

most of the persons have taken climate change as the experimental signal by a scientific method, socially constructed itself (Pease, 2015, pp. 254-255).

The norms creation is the focal point of the climate change. To address the problem of the climate change, all of the state has to participate in UNFCCC but the decision of the USA not to take part in Kyoto conference created debate with other states. The rejection of the USA to take part in UNFCCC forced UNO to change its position and eventually it created identity of European Union to address the problems of the climate change. While the USA has participated in Copenhagen Conference, there is a creation of competition regarding the climate change issue for their leadership in an inter-individualistic identity. By participating in Copenhagen Conference, China has established its interest as USA and EU. Another standard of climate change is equity for those who are responsible to expend while fighting against environmental security challenges including climate change (Pease, 2015, pp. 254-255).

2.1.4 Green Theory

Green theory is the theory of international relations. In contrast of mainstream theories of international relations, it leads environmental issues as the focal point. According to green theory, the mainstream theories of international relations i.e. neo-classical realism and neo-liberalism are unable to understand environmental problems through their skeptics and state-centric analysis. The green theory focuses on universal justice, international development, modernization, and security study. In context of international relations, the green politics has emerged as the one of the reactions of international issues regarding environment in the 1970s debate.

Up to the end of 20th century, green theory was established as a discipline. The green theory ranked in the post positivism generated by so called third and fourth debates of

international relations. The green theory can be divided in to International Political Economy (IPE) oriented wing and a universal wing. Initially, green theory invested in the environmental management. David Held, Andrew Linklater, Henry Shue, and Thomas Pogge have contributed to environmental issues.

Jil Steans, Lloyd Pettiford, Thomas Diez and Imad El-Anis Longman opine, "The interrelationship between environmental practice, green philosophy, and politics is important. There may/might be different political and theoretical situations. The increasing environmental problems are scarcity, acid rain, ozone depletion, and global warming "(Jil Steans et al, p. 208). The environmental threats and military threats are in different priority order. Therefore, they have to be address differently. While the environmental and ecological problems are taken as the security threats, it assists to promote protection of the sustainable development (Eckersley, 2013, pp. 266-283).

2.2 Empirical Review

2.2.1 Concepts of Environmental Security and International, Regional and National Environmental Security Related Issues and Challenges

2.2.1.1 Concepts of Environmental Security

The holistic form of the physical, biological, social, and cultural aspects is known as the environment. The word 'environment' is derived from the French word 'Environ'. The literal meaning of the word environment is the external circumstance or condition of the earth. The definition of the term environment is not unanimous. The combination of biological, physical, and chemical aspects of the surrounding the earth determines its form and living conditions (Sharma, 2060, p. 5). The term environment refers to the total situation created out of the interaction between natural and artificial things, living and all of the physical matters. According to the Resource Management Act of New Zealand, the term environment includes the human, community

ecosystem, natural and physical sources, the quality of the contribution of any area cordially, with service and cultural aspects, the influence of social, economic, and cultural situations (Sharma, 2060, p. 6).

UNEP's (2022) analysis indicates that the world is facing three major ecological environmental problems: climate change, the biodiversity, and pollution. These are mostly resulted by human activities and the framework of sustainable consumption and production (UNEP, 2022, p. 6).

The environmental security is related to the activities of the biosphere and natural resources. According to World Commission on Environment on Environment and Development (WCED), environmental threats have no military solutions. There has been a long history between environment and security that is relevant to understand the relationship between these two aspects. There is a strategic importance of the environment for the nation-states, which are willing to build power formation in the international arena. Natural resources like water, oil, gas, and other minerals come under the domain of environmental security. The environmental security studies about environmental degradation of the state and its effect on the economy (Narklaria, 2015, pp. 100-111).

In Bishnu Raj Upreti’s perspective, environmental security is a relatively new and less developed concept. In the decade of 1980, the discourse of security started to unify with environmental concerns in the policies. Environmental security refers to not only a concept but also a process and consequences as well. Environmental security is a scarcity generated by the environment, ecosystem, climate tension, anthropogenic security, and natural process as well. Human security has mainly been created by the ecological sector, excessive exploitation of the resources of environment,

consumerism, and scarcity of natural resources, breaking of laws and rules, and non-enforcement of international conventions (Upreti, 2013, pp. 211-250).

Environmental security is not limited to national borders and experiences. If there are possibilities of environmental insecurity in one country or places as well, it can affect other countries and places. The concern of ecology should go beyond the limitation of the regional boundary of any country (Upreti, 2013, p. 211).

Environmental security is related to the conservation of nature that is concerned with the protection of human health, biodiversity, sustainable development, ecosystem, etc. Environmental security is one of the major non-traditional securities, which consisting of environmental degradation, and environmental security. Environmental threat is the most important increasing tension in the world. Environmental security consists of human beings, physical, social, and economic elements. The water resources, crops, land, jungle, climate, and other environmental events, etc. are finally related to human security (Upreti, 2013, pp. 211-250). Environmental security is also related to human security and political security. During the period of international and national warfare, environmental security has become very weak. To defeat the enemies, the use of "biological weapons" was also practiced during wars of different countries. The destruction of the natural environment, the use of herbals, chemical bombs, chemical agents, fire, siltation of fertile land, and origin of fresh water, the construction of harmful dams and other infrastructures, etc. (Upreti, 2013, pp. 211-250).

Environmental security issues were formally taken as an international issue after the dissemination of a report entitled "Our Common Future" in 1987 AD. After the dissemination of the document entitled "Our Common Future", the Brundtland Commission was formed to study the environmental degradation in the World. After

that “World Earth Summit” Conference was organized by United Nations (UN) in Rio De Jenerio, Brazil in 1972 AD (Dabley, 2008, 260-273). The concept of environmental security challenges the political aspects of the conflict. The effects and consequences of environmental change are linked with the non-traditional concept of security. The expanding circumstance of international security consists of the loss of the biosphere, climate change, and global warming. These issues expand human understanding regarding environmental change, conflict, etc., and are analyzed to protect human security, peace, and stability (Narklaria, 2015, pp. 100-111).

Environmental security is a preliminary step regarding the conservation of the environment. To develop proper cooperation regarding environmental security issues, the states, governmental and non-governmental organizations should develop regulatory frameworks, legal provisions regarding environmental protection, public awareness, regular supervision, and the development of environment-friendly new perspectives for contributing to environmental security (Uprety, 2013, pp. 211-250). One of the major risks is the vision of development is not eco-friendly. While undertaking big projects regarding development, the concerned party has ignored environmental aspects, and the provisions international, regional and national have not been abided by properly (Upreti, 2013, pp. 211-250).

In Chandra Lal Pandey’s concept, environmental security is one of the important and increasing threats to human beings. Environmental security is directly and indirectly linked with national security. The increasing natural calamities have led to the migration of refugees, and conflict for basic needs like food, and water, etc. Environmental degradation harms all human beings due to obstruction in the ecological region. The policies promulgated by developed countries to address lead

developed and failed state is not that much effective? These policies might cause the national security of poor and failed state least developed unstable, and effect seriously international state system (Pandey, 2018, pp. 17-28).

When environmental issues entered in the discourse of environmental security, they became major international agendas. Consequently, the Rio Summit on Environment and Declaration, organized in 1992, was signed by states of the world. The Rio-summit was focused on social and economic dimensions, the conservation, and management of natural resources, and creating the situation of strengthening the role of states and personnel for resource management. The Rio Declaration emphasized on changing environmental quality effects on living beings. These effects create calamities and violent and non-violent conflicts. The very process is termed as environmental insecurity. While discourse about environmental security has been raised, it might be challenged by international politics (Upreti, 2013, p. 5). The people are victimized by environmental changes that lead to the scarcity and deficiency of resources, ecological insecurity, pollution, global warming, and natural calamities. The people, who are under the poverty line of the least developed countries, are mainly victimized by environmental degradation and the prosperous and powerful states are mainly responsible for environmental degradation (Upreti, 2013, pp. 211-250).

2.2.1.2 International, Regional and National Environmental Security Related Issues and Challenges

Environmental issues were re-raised as the international agenda in the last phase of 1980 AD after the end of the Cold War. These issues were related to Ozone layer depletion, deforestation, and climate changes. In the decade of 1980, the issues of

environmental security got space in policy-making discussion and media as well (Dalby, 2008, pp. 260-273).

In the decades of 1990, the issues of environmental degradation were taken as the problem of the Southern populous region of the World. However, it has proven that the problems of environmental degradation are not the issue of a particular region or part of the world but this issue generates problems worldwide (Dabley, 2008, pp. 260-273).

Currently, millions of chimneys, motor cars, airplanes, fireplaces, and stoves have been emitting carbon dioxide gas into the atmosphere billions of tons of coal, petrol, and firewood have been burnt annually. Deforestation also leads to an increase in carbon dioxide gas. The lithosphere is covered by carbon dioxide, nitrogen oxide, CFCs, and other gases. The increase of these gases the absorption of due to the heat emitted from the Sun has blocked by Carbon dioxide. Consequently, the temperature of the Earth increases, and then global warming also increases and its effect on the environment gets worse. In addition, the plants absorb 60 billion tons of Carbon annually but these return to the atmosphere, while the plants are in decaying process the Carbon dioxide remains balanced in Atmosphere. The imbalance in Carbon dioxide change is called Global warming (Sijapati, 2014, p. 78).

The pangolin eats only certain species termites and ants. If these particular species of termites disappear then there is the possibility of the disappearance of the Pangolin. In addition, the blue whale, African Lion, Elephant, Rhino, American Watson, and large Panda have large heads and big sizes. Therefore, there are difficulties to secure themselves from their enemies. There is more possibility of the disappearance of these large-shaped species (Sijapati, 2014, p. 7).

Air pollution can bring change in the form of climate and lead to problems of drought, partial rain, excessive rain, etc. Due to industrial activities, the air is polluted, and it generates acid rain. On the other hand, various kinds of gases are collected in the upper part of the atmosphere and there is an increase in the Green House effect. Then the Ozone layer starts to deplete (Sijapati, 2014, p. 7).

The environmental issues were non-political issues which came into the domain of the UN specialized agencies i. e. Food and Agriculture but could not became an agenda of United Nations General Assembly. In 1968, UNGA agreed to organize UN Conference on the Human Environment (UNHE). That conference formed United Nations Environmental Program (UNEP) and other environmental departments. That provided the political base for the concept of sustainable development. Before preparing the report of the Brundtland Commission in 1987, in the decades of 1970 the environmental issues were in the shadow due to the economic crisis and the Cold War (Vogler, 2019, pp. 319-333).

`The land, water, and air are necessary for all living beings. On the one hand, the environment provides the base for human beings. On the other side, human beings have been creating risks and threats to the environment by using natural resources recklessness way. As a result, the environment is under a serious threat. There is a direct and proportional relationship between human life and the environment (Upreti, 2013, pp. 211-250).

Climate change alters the structure of the atmosphere worldwide. Climate change is a natural process that constructs a suitable environment to live in the earth for human beings and other organisms. The major problems of the climate change process are global warming, anthropogenic emission of greenhouse, etc. UNFCCC and Kyoto

Protocol are binding international legal instruments regarding controlling climate change. Before 1850 AD, the status of emission of greenhouse gases was not that much terrible. Nevertheless, during the industrial revolution, the use of fossil fuels increased the emission of greenhouse gases (Uprety, 2013, pp. 185-210).

According to the Human Development Report of the United Nations Development Project (UNDP) in 1994, human security and environmental security have become more relevant. After that, the term environmental security is linked with international security. Where their environmental security expanded, then the domain of environmental security also broadened due to the increase in the negative impact of environmental degradation on the daily life of human beings. The "War Economy" based on environmental loss and resources and its impact on human life have been adding new dynamics, i. e. peace, and conflict. Scholars, researchers, and other concerned persons have actively been involved in debates on environmental security. The discourse regarding environmental security has entered the domain of the policy sector in some states. For illustration, the United States of America has linked the issue of environmental security to military security (Upreti, 2013, pp. 211-250).

The major environmental problems are natural calamities i. e. earthquakes, floods, landslides, and droughts. The effect of climate change, melting of glaciers, increases at the level of the sea in coastal areas, and cause infective diseases i.e. Covid- 19, bird flu, HIV/AIDS, and severe acute respiratory syndrome (SARS), etc. (Upreti, 2013, pp. 211-250).

The "World Earth Summit" organized in 1972 is the largest international conference that raised the environment as an international issue. During the United Nations Conference on Environment and Development, the representatives of participated

countries promised financial assistance for environmental reformation (Vogler, 2019, pp. 319-333).

In Kelly -Kate S. Pease's conception, one of the major challenges of environmental conservation is to maintain balance. Capitalist production consists of the use of natural resources, bio-diversity, non-polluted air, and land. On one hand, environmental conservation weakens profit, industry, and employment. Environmental problems are parts of economic development. On the other hand, Sustainable development assists in permanent economic development that also attempt to address environmental issues (Pease, 2015, p. 231).

Environmental degradation is one of the causes of international and domestic conflicts. Due to environmental degradation, sufficient resources are not available for the livelihood of environmentally problematic regions and areas of the world. Due to the lack of sufficient natural resources, international and national conflicts arise in the problematic regions. Therefore, to avoid war and conflict generated due to environmental degradation, the international organizations like the UN and other governmental and non-governmental organizations should be aware of global, regional, and local environmental security issues.

In Simon Dalby's viewpoint, there was an occasional climate change in the past. There is no doubt about climate change and its impact on the world. The changing atmospheric system of the earth and the increasing of carbon dioxide and other greenhouse gases (including chlorofluorocarbon, methane, etc.) have been creating and intensifying tension in the international arena (Dalby, 2008, pp. 260-273).

Due to climate change, Northern Europe has been becoming hotter than the place of the same longitude in other parts of the world. Due to environmental changes, the

agricultural product has been decreasing year by year which leads to food scarcity. Due to the migration of people, most of the cities have been facing shortage of pure drinking water which led towards flood and drought in the cities (Dabley, 2008, pp. 260-273).

During domestic conflict and armed conflict, questions about the role of military forces regarding environmental aspects were` been raised. During the Second World War, the American army was criticized regarding the polluted drinking water. Environmental degradation contribute to drought, desertification, and the disappearance of aquatic animals (Upreti, 2013, pp. 211-250).

The Paris Agreement 2015 AD is one of the legally binding international treaties regarding climate change. To implement Paris Agreement, economic and social transformation is required. The Paris Agreement is active in 5 cycles. Based on climate change actions, the member states established an enhanced transparency framework (ETC). Under the ETC, the states can report about decreasing climate change.

Water security is one of the basic factors of environmental security. Water security is a consequence of population growth, drought, climate change, and senseless use of natural resources, problems of poverty management, and other anthropogenic and other environmental causes. Besides, existing changing trends of population, economic activities, and weak management of available water have led to the rise of water security as one of the important environmental issues. As per the second ministerial declaration of the world water forum 2000, securing fresh water, and coastal water, protecting the ecosystem, promoting sustainable development, and political stability determine the water security of the world. If their basic needs of

pure drinking water are not fulfilled, it may lead to an environmental crisis i. e. water conflict. The 31 states of the world have been facing tensions and scarcity of water. Water security can become five times more critical in 2025. According to the Survey of world water forum, more than 1 billion people in the world cannot have any access to pure drinking water. The predicted population of the world in 2025 can reach about 8 billion. Which will add pressure on natural resources and environmental services and it will eventually lead to conflict and insecurity. The conflicts in the name of natural resources at the regional level have been increasing. These conflicts might be either violent or non-violent (Upreti, 2013, pp. 211-250).

Due to a lack of proper cooperation among sovereign states regarding environmental security and bad environmental governance, there are dozens of international conflicts regarding environmental security issues. International water disputes among Egypt, Ethiopia, and Sudan about the Nile, the disputes between Belgium and Netherlands about the Maas and Schade concerning sanitation and industrial pollution, the dispute among France, Netherlands, Germany, and Switzerland regarding industrial pollution, the disputes between India and Bangladesh regarding siltation, flooding and water flow diversion in the Brahmaputra and Ganges rivers and the conflict between Mexico and the USA about the Rio Grande and the Colorado rivers concerning sanitation, water flow, and agrochemical pollutions, etc. are the international conflicts pertaining to environmental issues. Besides, conflicts about Summerton Forest, the Massi forest conflict, the Yellow Stone National Park conflict, land disputes between Israel and Palestine, grazing land disputes between the China and Nepal, the Kalapani land dispute between Nepal and India, land disputes among ethnic peoples, and white minorities in Zimbabwe etc. are conflicted regarding environmental issues (Upreti, 2013, pp. 211-250).

The war between Russian Federation and Ukraine has contributed to environmental degradation and an increasing threat to world environmental security. The Russia-Ukraine War started on 24 February 2022. The intense discussion on nuclear, biological, and space security among powerful states of the World is important. The issues of nuclear security and biological security are explicitly related to environmental security (Upreti, 2013, pp. 211-250).

Climate change is interrelated with human security. Therefore, states, international, intergovernmental, and non-governmental organizations have to address the problems created by global warming effectively and transparently. Scientists agree that the main cause of global warming is human activities and emissions of greenhouse gases. As the consequences of the cooperative approach of member states of UNO, the draft of UNFCCC was prepared and presented in 1992. It was opened for signature at the Rio-Earth summit in 1992. That very document was promulgated in 1994 and accepted in 1997. But the USA did not sign in this protocol (the USA was the main greenhouse gas emitter of that period i.e., in the initial phase of the decade of 1990). There was a discussion about climate change in the decades of the 1980s and 1990s. In 1988, the intergovernmental panel on Climate (IPCC) was established and the first evaluation report was published in 1989. In 2007, the fourth evaluation report was published. According to the fourth evaluation report, due to the melting of snow, the level of the ocean has been increasing across the World (Uprety, 2013, pp. 185-110).

Principles have been developed regarding environmental protection in the international arena. These principles are basic guidelines for the states, governmental and non-governmental organizations of the world. These principles are precautionary principle, polluter pays principle, the public trust doctrine, public liability insurance,

the prevention principle, the environmental damage that should be rectified, and the integration principle. By properly obeying these international environmental principles, the world community and small states can be protected from environmental problems.

There are dozens of international legal instruments made by the UN and other international environmental institutions by promulgating these international environment-related legal instruments, international environmental security can be maintained in world and Nepal.

2.3 Concept of Foreign Policy and Diplomacy and International, Regional and National Environmental Security Related Issues and Challenges

2.3.1 Concept of Foreign Policy

According to Prakash Chandra, "Foreign policy is a series of inputs and actions that a nation makes the use of influencing the behavior of other nations in the pursuit of its prescribed goals" (Chandra, 2013, p. 1). A successful foreign policy gain enhances a nation's power and prestige in the comity of nations. Foreign policy gains also increase a government's credibility in the eyes of the public internally as well as externally (Malhotra, 2010, p. 184). Foreign policy is an external exhibition of the internal power and goal of a state. There is no continuous process, decisive elements of state, and theoretical basis as it is constructed so that there is a fusion of long experience, actual basis, and subjective situation, and it moves to change according to the situation (Siwakoti & Dahal, 2003, p. 315). Foreign policy is an important tool for the protection and promotion of national interest (Pokharel, 2013, p. 109). Due to cause of the geopolitical location, it is necessary to have a non-alignment and neutral foreign policy for Nepal (K.C., 2001, p. 36).

Foreign policy refers to the policy of one state to establish or not establish relations with another state. Foreign policy is the study of actions, interactions, and reactions between states and state organizations, and states and organizations (Dahal, 2002, p. 2). A country prepares and implements its own political strategy and action plan towards another state on the basis of foreign policy. So, foreign policy remains as the theoretical basis, aim of the state, power exhibition and interest of determinants of relations with other states. Foreign policy is an external exhibition of internal capacity and aim, so it is also called extension of domestic policy. Determinants of foreign policies are geography and geopolitical basis, population, natural resources, industrial resources and capacity, military power and capacity, language, religion and culture, ideology, decision-making, world public opinion, world organizations, reactions of concerned states, psychological factors, alliances and coalition, capacity in comparison to other states, etc. (Dahal, 2010, pp. 7-10).

2.3.2 Concept of Diplomacy

Diplomacy is one of the means or methods of conducting the foreign policy of a nation. It is the process of formulation and conduct of the foreign policy of a nation. Thus, diplomacy can be said to be a method and process of conducting relations among nations. Generally, diplomacy is supposed to secure the maximum advantage for a nation through negotiation and compromise (Rathod, 2004, p. 4). There is much importance of diplomacy in international politics. Diplomacy accelerates dynamism and unity for elements of national powers. Diplomacy makes it possible for one to make different elements of powers to protect national interests (Siwakoti, 2015, p. 58.). Foreign policymaking is closely related to one important function of diplomacy, which is reporting and negotiation. The feedback received from ambassadors of the home government, as well as negotiations carried on simultaneously at different world

capitals and the UNO, greatly influence foreign policy decisions. This way, diplomacy plays an important role in the foreign policy decision-making process (Malhotra, 2010, p. 391). On the other hand, these days, politicians not only frame foreign policy but at times conduct negotiations, participate in summits and conferences and actively indulge in diplomacy during foreign visits. These functions of policymakers are akin to the role of diplomats. Moreover, the policymakers continue to monitor the progress of diplomats in respect of the accomplishment of objectives determined by them and give the necessary help wanted by the latter (Malhotra, 2010, p. 391). Diplomacy is the art and practice of conducting negotiations between sovereign states for the attainment of mutually satisfactory political relations. Direct diplomatic negotiations between heads of state occasionally take place, but for the most part, they are conducted through diplomatic agents. Diplomacy relates to the forms of international negotiations, the relations of independent countries to one another, and the management of envoys accredited to the foreign courts. (K. C., 2001, p. 1).

There are different perspectives about meaning and the concept of diplomacy. The present 21st-century era is the era of encouraging the concept of internationalism, globalization. During the determination of bilateral and multilateral relations between and among different states, recent trends and revolutions in the information and technology have transformed the world into the global village. World politics affects diplomacy. Diplomacy should be defined according to the changing context of world politics (Dahal, 2010, p. 52). The scholars of foreign policy and diplomacy defined diplomacy in different meanings and forms. According to the Oxford English Dictionary, “Diplomacy is the management of international relations by negotiation, the method by which these relations are adjusted and managed by ambassadors.”

Professor J. R. Childs has defined diplomacy as the “process by which foreign policy is carried out George F. Kennann describes “It as the business communicating between governments” (Rathod, 2004, p. 5). Charles D. Davis once said, “Diplomacy is easy on the brain but hard or hell on your feet.” Prof. Quincy Wright speaks of diplomacy in two senses—in a popular sense and in a narrow or specific sense. In a popular sense, diplomacy means the tact, skill, and intelligence through which negotiations are carried out. Partciularly, diplomacy means the art of negotiations. As the art of negotiation, it tries to achieve the maximum of group objectives with a minimum of costs, within a system of politics, in which war is a possibility (Rathod, 2004, p. 5).

According to Joseph Stalin, “A diplomat’s world must have no relation to actions.” British Ambassador Sir Henry Wotton remarked that “An ambassador is an honest man who is sent abroad to tell the lie for the good of his country.” A diplomatic agent is always considered as the representative of his government and its interests abroad. Prof. Earnest Swatow has defined diplomacy as the “application of intelligence and tact to conduct the official relations between the governments of independent states” (Rathod, 2004, p. 5). Harold Nicholson opines that diplomacy seeks to adjust national interests with international interests. Major conflicts between sovereign nations are prevented from the use of reasons, conciliation, and exchange of interests. He looks upon diplomacy as an instrument of peace. When negotiations break down, says Nicholson, diplomacy, which is the instrument of peace, becomes imperative and the issue is settled by war. Prof. Morgenthau describes diplomacy as the “task of framing and executing foreign policy at all levels (Rathod, 2004, p. 5). According to the Encyclopedia of Britannica, “diplomacy is said to be an art of conducting international negotiations.” The Encyclopedia of Social Science defines “diplomacy

as the method of communications between governments" (Rathod, 2004, p. 5). According to the Encyclopedia of Britannica, "diplomacy is said to be an art of conducting international negotiations." The Encyclopedia of Social Science defines "diplomacy as the method of communications between governments" (Rathod, 2004, p. 5).

2.3.3 Nepal's Foreign Policy and Diplomacy and International, Regional and National Environmental Security Challenges

2.3.3.1 Nepal's Foreign Policy and Diplomacy

The determinants of Nepalese foreign policy are geography, river system, population, socio-cultural condition, history, politics, psychology, foreign trade, and trade diversification, and regional and international environment (Dahal, 2002, pp. 10–20). Jayaraj Acharya argued that the conditioning factors of Nepalese foreign policy are geography, history, language, religion and culture, economic strength, military strength, trade, and commerce, political leadership, and changing international situation (Acharya, 2014, pp. 4-8). The foreign policy priorities of Nepal are socio-economic development, relations with immediate neighbors, role in the United Nations, relations with other nations and SAARC and the Non-alignment movement (Acharya, 2014, pp. 19-26). Ram Kumar Dahal (2009) has argued that Nepalese foreign policy has been suffering from political, economic, administrative, socio-cultural, diplomatic, psychological, communications, environmental, demographic, relations with immediate neighbors (India and China) weaknesses. Moreover, all these problems require immediate attention. Nepal has to play active and dynamic roles in international and dynamic roles in international and regional forums (Dahal, 2009, pp. 28-74).

Madhavji Shrestha analyzed that Nepal has been undergoing a prolonged political transition in the last eight years with no expected economic growth and a well-planned strategic approach to foreign policy and diplomatic issues. (Shrestha, 2015, p. 48). Nepal and the Nepali people have suffered a lot with a long-lingering political instability caused by never-ending political wrangling between major political parties. People do not expect anything big beneficial to happen in the country (Shrestha, 2015, p. 48)). According to Ram Kumar Dahal, Nepalese foreign policy of the modern era can be categorized into foreign policy of Prithvi Narayan Shah (1742-1775 A. D.), Bhimsen Thapa's foreign policy, Foreign policy under Ranas (1986-1951 A. D.), Nepal's Democratic foreign policy (1951-60 A. D.), Nepal's foreign policy under king Tribhuvan (1951-1955 A. D.), Foreign Policy under King Mahendra (1955-1958), Foreign policy of first elected government of Nepal (May 27, 1959–Dec. 15, 1960), Foreign Policy of King Mahendra during Panchayati Regime (1961, January 31, 1972), Nepal's foreign policy under king Birendra during Panchayati regime 1972-1990 A.D.), Foreign policy of Nepal in post first People's movement (1990–2001), Nepal's Foreign Policy under king Gyanendra (2001-2006), Foreign policy of Nepal posts second people's movement (2006 till now) (Dahal, 2002, 8-178).

As per the Nepalese foreign policy, 2077 BS, the guiding principles of Nepalese foreign policy are the protection of independence, sovereignty, territorial integrity, national interest, and promotion of national respect and prestige. The basis of conduction of foreign policy is the constitution of Nepal, existing Nepalese Laws, national security policy and other policies which remain concerned with foreign policy, sectoral policies of the government of Nepal, and periodic plans. Economic policy and program, Charter of the United Nations, treaties, agreements, bilateral regional and multilateral declarations, charters of / statutes of regional and sub-

regional organizations, international laws, including the Vienna Conventions, international laws, customs, practice and established norms and values (Shrestha, 2020, pp. 6-7).

According to article 50 sub-article (4), i.e., state policies of Nepal, Nepal's international relations are directed towards enhancing national prestige by maintaining international relations on the basis of sovereign equality while promoting and protection of independence, sovereignty, territorial integrity, and national interest of Nepal [Constitution of Nepal, Article 50 (4), p. 20]. As per article 51(m) (1) of the Constitution of Nepal, i.e. Policy regarding international relations, the foreign policy of Nepal has to be conducted by prioritized interests of Nepal on the basis of principles of *panchasheel* (mutual respect for sovereignty, territorial integrity and national independence, non-aggression, non-interference in each other's internal affairs and equality and mutual benefit and peaceful co-existence), international law and values of world peace with determination of sovereignty, territorial integrity, independence. As per article 51(m) (2) of the Constitution of Nepal, to review the previous treaties and to perform treaties and agreements on the basis of mutual interests (Budhathoki, 2024, pp. 31-37). Nepal entered the United Nations Organization in 1955 AD. Nepal has been showing its concern regarding conservation and protection of the environment and sustainable development. Nepal has been signing and ratifying international legal instruments regarding environmental security issues. The international conferences regarding the environment and sustainable development have also been beneficial for Nepal (Dahal, 2002, pp. 555-557).

2.3.3.2 Nepal's Foreign Policy and Diplomacy and International, Regional and National Environmental Security Challenges

The issue of the environment is still relatively new in the Nepalese political landscape. However, the non-governmental sector has been giving considerable focus

to it and has successfully familiarized the public with environmental concerns in recent times. Nevertheless, very few steps have been taken to relate this issue to the overall security environment of the country. Much of the credit for this progress should go to donor communities that have been advocating for the recognition of environment-related conflicts within government agencies. The time has come for countries like Nepal, where the growing population and limited resources create a significant gap between urban and rural populations, as well as between the rich and the poor. If this issue is not addressed in a timely manner, it will inevitably lead to various forms of conflict and ultimately harm the security environment at both the local and national levels (Bhattarai, 2010, pp. 21-64).

The temperature of the Earth has been increasing day by day due to both natural and anthropogenic causes. The natural causes of this temperature increase include natural calamities such as volcanoes, earthquakes, and tsunamis. The anthropogenic causes are primarily due to the emissions of chlorofluorocarbons (CFCs) and other greenhouse gases resulting from human activities, particularly the emissions of carbon dioxide (CO2) during the use of sophisticated means of living. This increase in temperature is mainly responsible for climate change, which has been recognized as a serious global problem since the industrial revolutions of the seventeenth century. Scientists have discovered that the ozone layer over Antarctica is becoming thinner. As a result, ultraviolet rays penetrate the atmosphere of that continent, affecting the living organisms in the region. Greenhouse gases, including CFCs, are primarily responsible for the depletion of the ozone (O3) layer not only over Antarctica but also over other continents. The rise in the Earth's surface temperature causes not only ozone layer depletion but also global warming, melting of ice in mountainous regions, glacial lake outbursts, rising sea levels, biodiversity loss, food insecurity, and the

migration of humans and other animals. Additionally, wars are also contributing to climate change.

Initially, people thought that climate change was only a problem for developed and industrialized states, as these countries were mainly responsible for the global increase in temperature. However, research and scientific findings have shown that climate change affects not only developed and industrialized nations but also the least developed countries, like Nepal, which contribute far less to climate change compared to developed countries. Thus, climate change has become a global problem.

After the end of the Second World War in 1945, the United Nations (UN) was established. Following its establishment, the global community began to plan and strategize solutions to the causes and effects of climate change. The United Nations Environmental Program (UNEP) was created, and a global conference was held in 1972 in Kyoto, known as the United Nations Framework Convention on Climate Change (UNFCCC). Subsequently, UN members gathered to discuss and create action plans to address the challenges posed by climate change. Research indicates that developed countries such as the USA, China, the European Union, and India are the largest carbon emitters compared to the least developed countries like Nepal. According to statistics, the least developed countries, including Nepal, emit only 1.1 percent of global carbon emissions annually, while developed industrialized countries are responsible for 98.9 percent of carbon emissions.

Since the establishment of the UNFCCC in 1972, worldwide climate change conferences have been organized annually. Recently, COP-29 was held in Baku, Azerbaijan. The global community has committed to reducing carbon emissions and compensating the least developed states that are less responsible for climate change. Climate change poses a serious threat to human civilization and the universe as a

whole. Developed and industrialized states, which are responsible for the large volume of emissions, must take serious action to resolve the causes and consequences of climate change. Besides, least developed countries like Nepal must also take this issue seriously.

2.4 Research Gap

Based on the existing literature review, the researcher has found that, the nature of international, regional and national environmental security challenges is comprehensive. The international community has started to become serious since 1970s regarding environmental security challenges. However, promulgation of environmental security related issues started in the 1940s at the regional and national level. Nepal has been participating in most of the international; environmental security related forums and ratified most of the international legal instruments. There are hundreds of international regional and national legal instruments environmental security related legal instruments that have promulgated yet. The existing research has not addressed the issues of comparative identification of the international, regional and national environmental security challenges, comparative study of the international, regional and national initiatives/ efforts to manage international, regional and national environmental security challenges. In addition, the previous researches have not analyzed the international, regional and national environmental security challenges from the dimensions of foreign policy and diplomacy. Therefore, this study has been attempting to study the effectiveness of Nepal's foreign policy and diplomacy to address the international, regional and national environmental; security challenges.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Philosophical Position

The philosophical foundation of this study has a cooperative worldview to analyze international environmental security issues of world as well as Nepal. The concepts of powerful states and weak states are mainly focused on a comparative study of the powerful states and weak states. There is a narrative that the powerful state can lead the world but the weak states cannot. In the context of environmental security issues, most of the environmental polluter states are powerful states, which have already completed their industrial revolution. But the effect of environmental degradation is equal on powerful and weak states. For example, England was industrialized in 1850 AD. Due to the industrial revolution, global warming started to occur in 1850 AD. The small island state Maldives has a risk of sea level rise and sinking into the Sea. So, the objective reality is that powerful states do what they want but powerless states have to do what they must. So, the cooperative worldview is mostly a tool of least developed states like Nepal. The cooperative approach is suitable for the study of the international and regional environmental security and Nepal through international cooperation. This study is mainly based on the qualitative method. The qualitative method is suitable from the ontological perspective as well. This study will apply interpretivism as the epistemological aspect. It focuses on subjective reality rather than objective one. Epistemologically, this study analyzes the causes, consequences, and present status of international environmental security of world, Asia region and Nepal. The major questions regarding international environmental security challenges for world, Asia region and Nepal: what are the major international, regional and

national environmental security challenges? How international and national initiatives/effort have been managing international, regional and national environmental security challenges? Why Nepal's foreign policy and diplomacy have to make effective to address international, regional and national environmental security challenges. The research design has been developed on the basis of the research objective.

3.2 Ontology

Whether there is occur climate change or not there has been increasing environmental security challenges. Due to environmental security challenges, there has been raising problems in international, regional and national level. To face with these national level's environmental problems each sovereign country formulates their foreign policy and diplomacy.

3.3 Epistemology

The various scholars have been written about environmental problems of Nepal. By studying these books, articles, the environmental challenges of Nepal can be point out. Each country has made their own foreign policy to manage environmental challenges. So, by studying foreign policy of concern country every person knows what has been performed regarding environmental security.

3.4 Axiology

The environmental security has country specific. The environmental security challenges are a contextual phenomenon. In another word, the environmental security challenges are different according to time and place/context. The different countries have different kinds/sorts of environmental security challenges. The behaviors of

state/state behaviors construct the security challenges of that particular state/country. There are dozens of international and regional conventions, covenants, declarations, treaties, agreements, etc. However, some powerful states have not become state parties to these international treaties regarding environmental security-related legal instruments.

Nepal has also ratified most of the international and regional legal instruments, i. e. conventions, covenants, agreements, treaties, and declarations, etc. In addition, there are provisions regarding environmental security i. e. constitution, laws, plans, policies, programs, etc. However, there are challenges in the implications of international, regional and national legal instruments regarding environmental security challenges.

3.5 Research Design

In this study, mostly qualitative methods have been applied. However, the quantitative method has been also applied. This method has been useful to describe and show the relationship between variables. In this research, international, regional and national environmental security challenges have been the principal independent variable. The international and national initiative/efforts to manage global, regional and national environmental security challenges and diplomacy and management of environmental security challenges through Nepal's foreign policy and diplomacy are dependent variables.

3.6 Nature and Sources of Data

This study has focused on secondary data. The objective of the study is to analyze the effectiveness of Nepal's foreign policy and diplomacy to address the international, regional and national environmental security challenges. The secondary data have been collected to find out the international, regional and national environmental

security challenges of including issues of global warming, climate change, disappearance of species, ozone layer depletion, greenhouse effect, loss of biodiversity, deforestation, desertification, air pollution, noise pollution, water pollution including marine water pollution, natural calamities, acid rain, melting of ice of glaciers and Himalayas, sea level rise, irregular rainfall, flood, water insecurity, wildlife conservation, conservation of heritage cites solid waste hazardous, air pollution, threat of nuclear war etc..

Secondary data have used to explain the international, and regional environmental challenges and Nepal. The source of secondary data are books, documents, government and non-government reports, journal articles, newspaper articles, and the international and national reports regarding international environmental security challenges and Nepal's foreign policy and diplomacy. Publications of the Ministry of Forests and Environment, Department of Environment the Ministry of Foreign Affairs (MOFA), and the Institute of Foreign Affairs (IFA), has been collected and analyzed in detail to study the international, regional and national environmental security challenges and Nepal's foreign policy and diplomacy.

Field:

My field are documents (academic and policy) and space regarding international, regional and national environmental challenges and Nepal's foreign policy.

3.7 Data Collection Tools and Techniques

For this study, secondary data have collected. The sources of data are books, documents, reports, journal articles, and other publications regarding international, regional and national environmental security challenges and Nepal. The qualitative and quantitative data have collected from available books, documents, research reports, and journal articles.

3.8 Data Analysis Procedure

3. 8. 1 Content Analysis

The researcher has gathered available books, documents, journal articles, and newspaper articles regarding international, regional and national environmental security challenges and Nepal's foreign policy and diplomacy. Then researcher have categorized the collected information. So, the content analysis has measured the analytical aspect of this research. The content analysis method of data analysis has used in this research report. The analysis of this research is descriptive and explanatory. This research has sought to explore, describe and explain the cause-and-effect relationships of the international, regional and national environmental security challenges and foreign policy of Nepal.

3.9 Ethical Consideration

While proceeding with the process of this study, all of the ethical values of research will be properly and strictly obeyed by the researcher. The moral responsibilities, which have to be followed while conducting every aspect of this research, have strictly obeyed. The quality of the dissertation has maintained basis of norms, values, rules, and criteria of the university, faculty, and department as well.

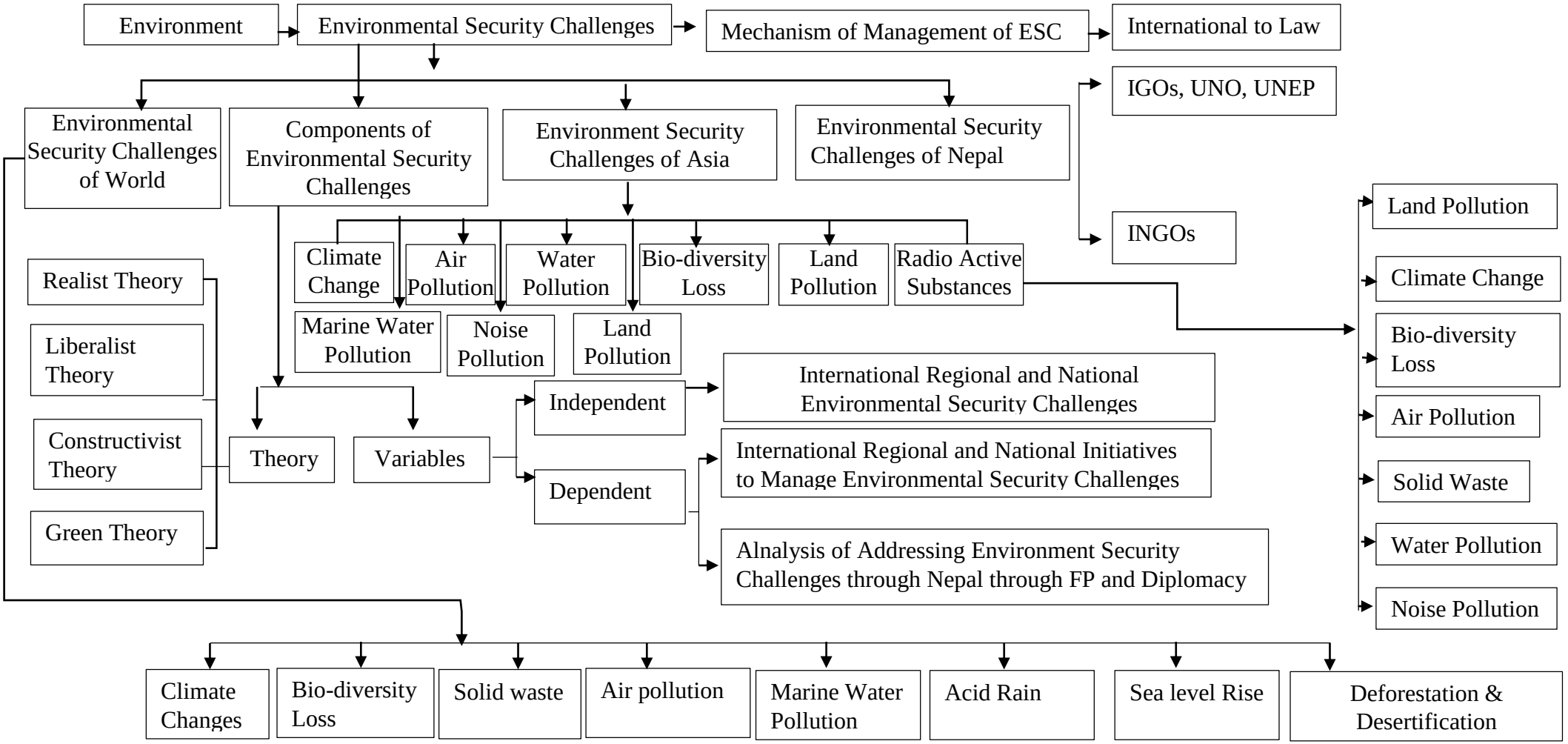
3.10 Conceptual Framework

This study aims to identify the international and national environmental security challenges, international, regional and national initiatives/efforts to manage the international, regional and national environmental security challenges, and analysis of Nepal's foreign policy and diplomacy to address the international, regional and national environmental security challenges of Nepal. The international environmental security challenge is an independent variable. The theories of international relations

especially realism, liberalism, constructivism and, green theory and have applied in this study.

Conceptual Framework

Figure 1: Conceptual Framework International Environmental Security Challenges and Nepal's Foreign Policy and Diplomacy.



Source: Self prepared based on Theoretical an Empirical Literature (Secondary data)

CHAPTER FOUR

INTERNATIONAL, REGIONAL AND NATIONAL ENVIRONMENTAL SECURITY CHALLENGES

4.1 International Environmental Security Challenges

4.1.1 Climate Change

This Earth planet is not only for us but also for future generation. The amount of carbon dioxide (CO_2) in atmosphere has been increasing due to overpopulations, imbalances use of energy etc. Similarly, the activities of organisms, the productions of carbon dioxide ($CO_{2)}$, methane ($CH_{4)}$, nitrogen oxide (Nox), chlorofluorocarbons (CFCs), water vapor (H_2O), and tropospheric ozone (O_3) are called greenhouse gases (GHGs). Among various gases in atmosphere only carbon dioxide, and Water vapors (H_2O vapors) absorbs infrared rays in surface of the earth. After absorbing of infrared rays, the water vapors are emitted in surface of Earth. Consequently, the surface of earth gets hotter which is termed as Greenhouse effect. According to Reveille, due to excessive use of natural energy, concentration of carbon dioxide has been increasing day per day. Due to incensement of carbon dioxide, the Earth becomes warmer day by day and ice-caps of Antarctica have been melting and sea level has been rising. Therefore, the sea level rise has become threat for all of the countries of the world (Karki, 2006, p. 63).

The main cause of greenhouse effect is the concentration of level of carbon dioxide (CO_2) in lower level of atmosphere. There is a defensive layer of ozone (O_3) which has blocked the ultra-violet rays of sun and protect the planets and other animals and plants including human beings. In lower region of earth, there is a level of carbon dioxide (CO_2). If there is the absence of carbon dioxide in earth, the temperature of earth surface decreases and there might not be any possibility of life and the earth

become as the moon. However, in atmosphere the excessive amount of carbon dioxide is also harmful because it also increases temperature of earth and causes global warming. The Sun emits various rays including ultra-violet rays and infra-red rays with various wave lengths. The carbon dioxide (CO_2) gas has characteristics of giving to infrared rays having short wave lengths and absorbs in that infra-red ray. Therefore, carbon dioxide level works as roof of glass and wall as in green house. It permits the entering of infra-red rays having short wave length to the surface of earth. The infrared rays have works as the heating rays and assist to heat surface of earth and other objects of the earths. The infrared rays having long wavelengths cannot exit from the level of carbon dioxide and it remains entrapped by atmosphere, it makes atmosphere very hot.The hot temperature created due to infrared rays which is termed as greenhouse effect (Wagle, 2007, p. 66). Due to global warming, the climate change has been increasing. Consequently, the sea level has been increasing and small island countries like Maldives are under risk (Kaphle & Kaphle, 2005, pp. 53-54).

Climate change refers to a change that occurs in climate due to the nature and human beings. As per the meeting of the United Nations Intergovernmental Taskforce (UNIGTF), 1998 was the hottest year. The temperature of Siberia of the Russian Federation has been increasing by 3 to 5 degrees centigrade for the last 100 years.Besides, the volume of the European polar glaciers has been decreasing by half since 1850 AD..

The climate of the earth has been changing due to natural warming and cooling cycles. The greenhouse gases (GHGs) which obstruct the conversion of earth as the lifeless ice ball by increasing capacity of trapping heat in biosphere has been increasing excessively. The GHGs has been increasing due to anthropogenic which increases the average temperatures of earth fast. The average temperature of earth increased by 0.8 degree Celsius in the past. The factors responsible for global

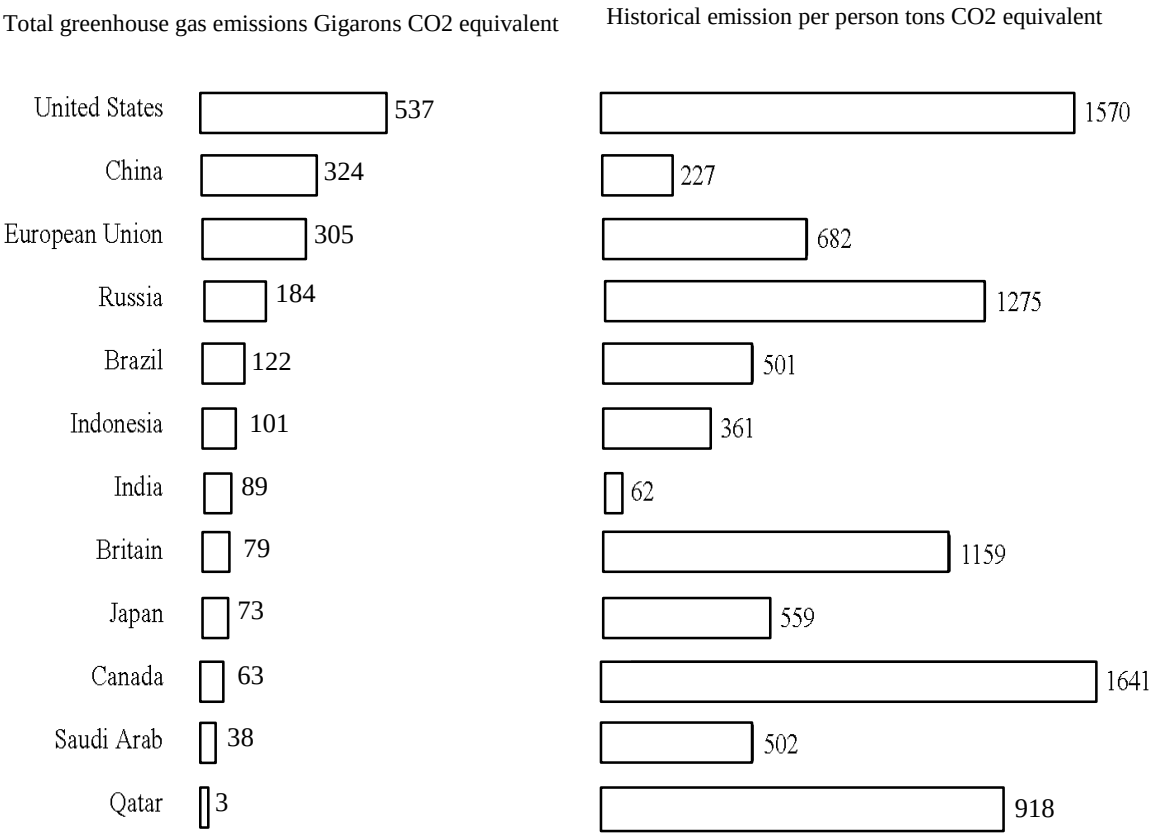
warming are also equally responsible for climate change. The Global warming affects both nature and human being. The main effect of global warming is melting of ice in glaciers which cause flood. The sea level has raised 10.2-22.3 centimeter in previous 100 years and it is predicted that it will raise 10.2 -89 centimeter in the end of this century. As per report of United States Environment Protection Agency (EPA), due to global warming 10,000 square miles land will be destroyed. Due to excessive increase in temperature, drought, flood etc. have occurred.

In June 2022, the 34 crore and 50 lakh peoples were insecure due to insuuficient food. The major causes of the food insecurity conflict in community, disaster and due to insufficient, insecure nutrition bearing food. It causes malnutrition and diseases. The food insecurity is more among small farmers compared to the people who are with non-agricultural background. It is a predicted that, there will be more than 3 crore peoples of agricultural countries would face the food insecurity up to 2020. The food insecurity in the agricultural countries has been increasing due to climate change, increase in population and changing lifestyles (Kandel, et al., 2024, pp. 1-15).

The greenhouse gas emissions and emissions per person for the USA are 537 million metric tons and 1,570 metric tons, respectively. For the People's Republic of China, the greenhouse gas emissions and emissions per person are 325 million metric tons and 227 metric tons, respectively. The greenhouse gas emissions and emissions per person for the Russian Federation are 305 million metric tons and 682 metric tons, respectively. For Indonesia, the greenhouse gas emissions and emissions per person are 122 million metric tons and 561 metric tons, respectively. The greenhouse gas emissions and emissions per person for India are 89 million metric tons and 62 metric tons, respectively. For Britain, the greenhouse gas emissions and emissions per person are 79 million metric tons and 1,159 metric tons, respectively. The greenhouse gas emissions and emissions per person for Japan are 73 million metric tons and 595

metric tons, respectively. For Canada, the greenhouse gas emissions and emissions per person are 63 million metric tons and 1,614 metric tons, respectively. Finally, for Saudi Arabia, the greenhouse gas emissions and emissions per person are 38 million metric tons and 502 metric tons, respectively (Plumer & Rojanasakul, 2024, p. 3).

Figure 2: Green House Gas Emissions and Emissions per Person of Different Countries of World



Source: The New York Times International Edition, November 23-24, 2024

4.1.2 Air Pollution

Loss of air quality is called air pollution. Air pollution is occurred due to presence of Participate Matter (PM10), Participate Matter (PM 2.5), aerosols, black carbon etc. particles etc. in air. Air pollution is one of the major causes of climate change. Air pollution affects weather and climate negatively. There is a negative effect of air

pollution on the Weather and climate. The polluted air obstructs the light of the Sun and its effects on the temperature of the earth there can be possibilities of converting earth into the island of heat and generate an ice era. Air pollution is one of the most serious environmental problems at present. Air is the most valuable and necessary thing for good health of human beings, animals and plants. If human being takes polluted air, then that causes different kinds of diseases and death as well (Kaphle & Kaphle, 2008, pp. 53-54).

4.1.3 Ozone Layer Depletion

Ozone gas has been found within the 17 Km to 50 Km of stratosphere of Earth. The layer of ozone layer is decreases and becomes thinner due to the increase of chlorofluorocarbon (CFCs) in atmosphere of Earth. The process of depleting ozone layer is called ozone layer depletion. The increased susceptibility in health hazards to human and plants etc. are the effect of the ozone depletion in National level. In 1985, British researchers published measurements that showed a large reduction in the ozone concentration over the Antarctic that created creating a hole. It is vital to life because it keeps damaging Ultra-violet light from reaching the surface of the earth. In every spring hole reappears on Antarctic sometimes it remains less than half (1987). The hole is because of artificial chlorine and bromine compounds, especially the CFCs and halogens. Destruction of ozone will lead to the increase in Ultra-violet (UV) radiation increasing infectious disease and skin cancer (Lodha, 1999, p. 318).

4.1.4 Water Pollution

The loss of quality of water i.e. Physical, chemical, and biological change of water is called water pollution. In other words, an increase in incidents of water born disease, loss of aquatic diversity, loss of agricultural productivity are considered effects of

water pollution. Water pollution is one of the major problems of the world. In urban areas the pipes of the sewer /drainage directly exit in the rivers. Due to water pollution, the diarrhea, cholera, hepatitis (Jun dice), malaria, encephalitis etc. diseases have been shown in general public (Kaphle & Kaphle, 2008, pp. 53-54).

4.1.5 Marine Water Pollution

The marine pollution is sea water polluted by raw or imperfectly treated sewage both from land and from ships and by rubbish from ships effluents etc. (Lodha, 1999, p. 263). The acid rain affects in aquatic ecology especially fish and loss of productivity etc.

4.1.6 Land Pollution

The major cause of land/soil pollution is management of all sorts of pollutions inappropriately, dumps it in land and use of chemical fertilizers and pesticides in agricultural sectors. The heavy metals, radio-active metals, radioisotopes etc. can pollute the soil. The vegetable and other food items produced in these areas are polluted due to several polluted substances that can cause different diseases.

4.1.7 Noise Pollution

Noise pollution is one of the most serious problems in urban areas. The unnecessary/unpleasant noises are produced from vehicles, industries, and generator, drilling and gridding machines. It badly affects listening capacity of human being, it intensifies mental tension and heart attack etc. (Kaphle & Kaphle, 2008, pp. 53-54).

4.1.8 Chemical and Radio-active Substance

In developed and industrial countries, the major sources of environmental degradation are chemical and radio-active substances (Kaphle & Kaphle, 2008, pp. 53-54).

4.1.9 Ozone Layer Depletion and Acid rain

In 1985, British researchers published assessments that showed a large reduction in the ozone concentration over the Antarctic that created a hole. It kepts damaging Ultra-violet light from reaching the surface of the earth. In every spring, hole reappears on Antarctic. Sometimes it remains less than half (1987). The hole is because of artificial chlorine and bromine compounds, especially the chlorofluorocarbons (CFCs) and halogens. Destruction of ozone will lead to the increase in Ultra-violet (UV) radiation that increases infectious disease and skin cancer (Lodha, 1999, p. 318). The peoples of the developed countries have been victimized by Ozone layer Depletion and acid rains (Kaphle & Kaphle, 2008, pp. 53-54). Rain with the PH value less than 7 is called acid that rain negatively impacts on human health and the plants.

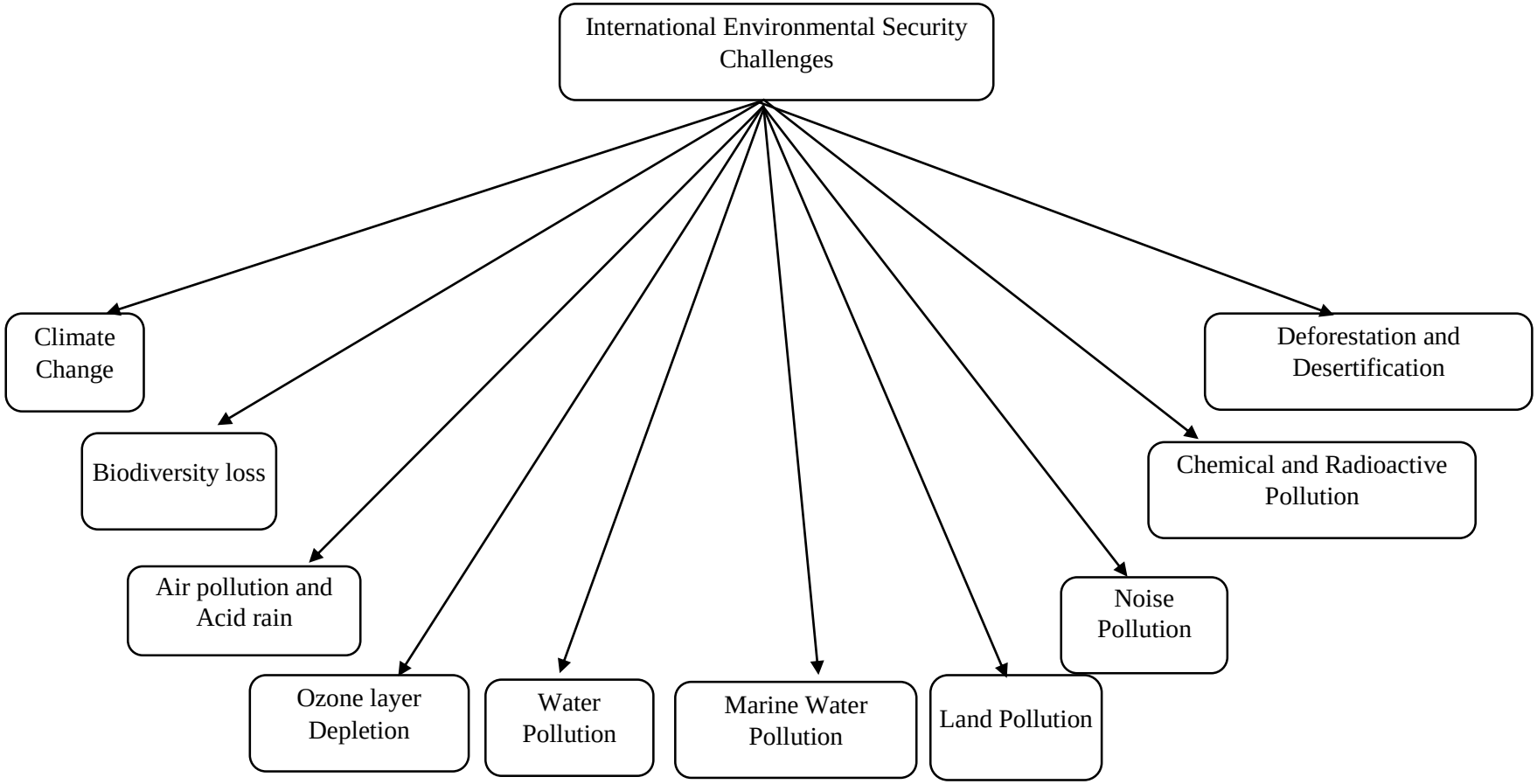
4.1.10 Deforestation and Desertification

Due to deforestation, the raw materials of construction materials and inappropriate use of land have been causing soils erosion and landslides. The soil takes from hill region to plain regions or flow from upper region can cause soil erosion and landslides. The soils and other materials flow towards plain regions. Then it destroys the heritages, infrastructure fertile land, lakes and rivers (Kaphle & Kaphle, 2008, pp. 53-54).

4.1.11 Biodiversity Loss

The loss in ecosystem, species and genetic resources are some examples of bio-diversity loss in international level. The numbers and relative abundances of different genes (genetic diversity), species and ecosystems (communities) in a particular area refers to is known as or the total diversity of all organisms and ecosystems at various spatial scales (from genes to entire biomes). The loss of bio-diversity has been becoming a serious problem of world. As per joint study report of Stanford University, Princeton University and Berkley University of USA published on 2016, the vertebrates have been disappearing 114 times faster. According that report, after 1990s the more than 400 vertebrates were lost from the nature. According to Science Advance Journal the major cause of disappearance of species of the earth are climate change, pollution and deforestation. According to International Union for Conservation of Nature (IUCN) more than 50 species has been disappearing annually. At present 41 percent amphibians and 25 percent mammals are endangered (International Forum, 2016, p. 90).

Figure 3: International Environmental Security Challenges



Source: Self prepared.

4.2 Regional Environmental Security Challenges (Special Reference to Asia, South East Asia and South Asia)

Hindukush Himalaya (HKH) is one of the mountainous ranges of Asia continent. It has covered 3500-kilometer area. The highest peaks of world including Mount Everest (Nepal), Mount K2 (Pakistan), Annapurna (Nepal) etc. has located within HKH region. The HKH is the youngest mountainous series of world. The origin of 10 largest river system is HKH. In HKH region the 25 billion people live. 1.9 crore people live below the HKH region. They have been depending on HKH for water resources. The third largest density of ice has found in HKH region, so that, that region also known as the "third Pole" of Earth (Sopan Monthly, 2019, p.13). Hindukush Himalayan (HKH) region is the one of the strategic regions of the world in terms of environmental security. The HKH includes the area of Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal and Pakistan. The major environmental problems of South Asia are overpopulation, explosive poverty, a threat to biodiversity, cross-border migration, natural and other dangerous desertification, deforestation, flood and drought, availability, and quality of water, land erosion, air pollution, weather change, etc. (Narklaria, 2015, pp. 100-111).

4.2.1 Climate Change

Scientists had been warning that, if the preened status of GHG emission continue, the two third portion ice of the HKH will melt up to 2100. If in the end of 21st century, the average temperature of world up to 1.5 degree Celsius the one third of ice will melt. The report entitled "The Hindu Kush Himalaya Assessment Mountain, Climate Change, Sustainability and People" of International Centre for Integrated Mountain development (ECIMOD) published on 4 February, 2019 (Sopan Monthly, 2019, p.13).

Intergovernmental Panel on Climate Change (IPC) suggested to maintain annual climate change to 1.5 degree Celsius up to end of this century. The largest emitters of GHG are USA, China and India etc. According that report, if the temperature of the world is 1.5 degree Celsius up to end of century, the 36% ice will melt. According to that, report, If emission of GHG will continue 2.1 degree Celsius the temperature of some places of mountainous region will reach to 5 degrees Celsius. The 15 % of ice has melted since 1960 (Sopan Monthly, 2019, p.13).

According to that report, the temperature of HKH was increased during, 1901 to 1904 and decreased during 1940 to 1970. In addition, that report mentioned that, the temperature of HKH region has been continuously increasing from 1970 to till now. The average annual temperature is 0.2-degree census in HKH area for 50 years. In addition, this report mentioned that, the water stream of the Sindhu, Ganga and Brahmaputra River will increase due to climate change. The main reason for increase water stream of Sindhu River will be melting of ice in HKH region, and the cause of increase in water stream in Ganga and Brahmaputra River will be heavy rain and other reason of man soon (Sopan Monthly, 2019, p.13).

4.2.2 Air Pollution

According to the report entitled “The Hindu Kush Himalaya Assessment Mountain, Climate Change, Sustainability and People” of International Centre for Integrated Mountain development (ECIMOD) published on 4 February, 2019, the major cause of melting of ice in HKH area is air pollution. Mainly the aerosol, Carbon and dust to get stuck with ice of the mountain and absorbs the temperature of ice. Then the temperature increases and the ice of maintains melt (Sopan Monthly, 2019, p.13).

The air pollution has been increasing in main cities of Asia, East Asia and South Asia. According to the report of IQ Air Visual of Switzerland, among 30 top polluted cities

of the world, the 22 cities are situated in India. The group has collected the statistics of the worldwide quality of the air. The additional 8 cities including Pakistan, Bangladesh and China have been polluted. While analyzing the pollutant cities of capital cities of Asian countries, the Asian countries are listed in front line. The top ten polluted capital cities of the world are New Delhi, India (First), Dhaka, Bangladesh (Second), Kabul, Afghanistan (Third), Naypyidaw, Myanmar(fourth), Ulaanbaatar, Mongolia (Fifth), Kuwait City, Kuwait (Sixth), Kathmandu Nepal (Seventh), Beijing China (Eight), Abu Dhawi, UAE **(**Ninth), and Jakarta, Indonesia (Tenth) respectively (Sopan Monthly, 2019, p.21).

4.2.3 Water Pollution

Due to human activities the harmful objects are mixed in the sources of water the physical and chemical quality of air has changed then the negative impact occur to the actual quality of water it is called water pollution. In other words, the chemical and biological pollutants are mixed with water then the water become unqualified to use for various purpose that status is also called water pollution (Paudel, 7016, pp.241-242). The Asian, East Asian and South Asian countries have been affected by water pollution over the years.

4.2.4 Hazardous Solid Wastes

While human beings lead their life, the various unnecessary matters are also created. Those matters which are not utilized in daily life and thrown these are called the solid wastes. The Solid Waste cab be further categorized in to organic wastes and inorganic wastes. Organic wastes are leaves of vegetables, rout, grass, rind of fruits, the inorganic wastes are difficult to decompose. For example plastics, pieces of metals,

rubber, pieces of lead and bottles etc. The Asian, East Asian and South Asian countries are suffer from hazardous solid wastes (Paudel, 2016, p.249).

4.2.5 Land Pollution

While the solid wastes are collected in the land then the physical and chemical quality of that object has changed which harms the land known as the land pollution. While the biological and non-biological sewages dump in land then land pollution occurs. The wastes generated from industry, factory, hospital, laboratory, and domestic pollutions helps to increase land pollution. In addition, the chemical fertilizer also helps to increase land pollution. The hazardous wastes thrown by tourists cause solid wastes as well. The acid rain also helps to increase land pollution (Paudel, 2016, p. 243). The Asian, South East Asian and South Asian countries have been facing the land pollution.

4.2.6 Glacial Lake Outburst Flood (GLOF)

Due to the global warming, the snow and ice of the mountainous region have been melting excessively. Due to excessive melting of ice in mountainous region the glacier lakes might outburst. Then it also generates flood in mountainous region. It known as Glacial Lake Outburst Flood (GlOF) (Paudel, 2016, p. 293).. The mountainous region of the Asian, East Asian and South Asian countries is under the risks of GLOF. According to the report entitled “The Hindu Kush Himalaya assessment Mountain, Climate Change, Sustainability and People” of International Centre for Integrated Mountain development (ECIMOD) published on 4 February, 2019, the ice of HKH has been melting due to climate change and the risk of GLOF also has been increasing in HKH region (Sopan Monthly, 2019, p.13).

4.2.7 Radio Active Substance

The pollution created by radioactive substances during human activities is called radiation pollution. During generating the nuclear energy, the Uranium, radium etc. elements generate the radiation pollution (Paudel, 2016, p.247). In addition, the ozone layer depletion is also responsible for radiation pollution. The Asian, East Asian, and South Asian countries are also affected by radiation pollution.

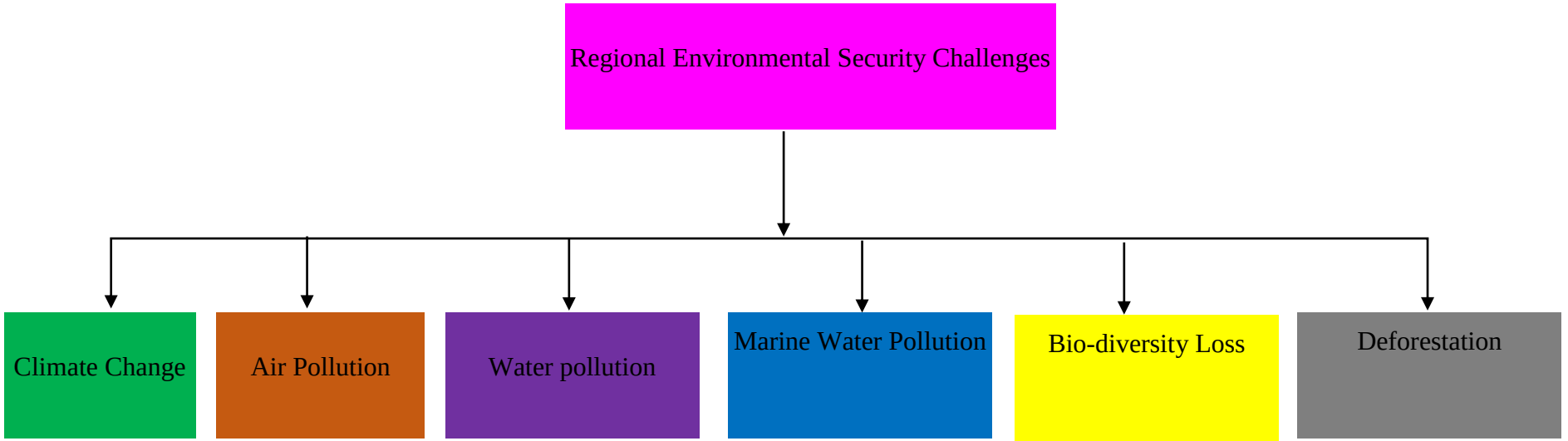
4.2.8 Noise Pollution

Unnecessary sound created in any place is called noise pollution. The noise pollution has created by sound due to over crowd, radio, mike, factories, transportation vehicles etc. The unit of measuring of noise is termed as Decibel. Generally, more than 65 Decibel sound is harmful to the human beings which known as noise pollution. (Paudel, 2016, p.244) The Asian countries has been affected by the noise pollution as evolved so far.

At the global level, China's rising contribution to global CO2 emissions from fossil fuel combustion has attracted significant attention due to the burning of coal in China.

The regional environmental security challenges of Asia, South East Asia and South Asia are given in the following figure 4:

Figure 4: Regional Environmental Security Challenges



Source: Self prepared.

4.3 National Environmental Security Challenges of Nepal

In context of Nepal, due to overpopulation in urban areas, unmanaged infrastructure development, unmanaged sewages of municipalities, inappropriate locality of industries, sewages of industries and hospitals, excessive use of chemical fertilizers and pesticides in agricultural; field, smokes produce from industries and old vehicles etc. These factors have been causing air, water, land, chemical and radioactive and noise pollutions Nepalese peoples migrate towards urban areas from rural areas including the Kathmandu Valley for quality education, health, employments, business etc.Therefore, there is over population in urban areas of Nepal including Kathmandu valley (Kaphle & Kaphle, 2008, pp. 53-54).

4.3.1 National Environmental Security Related Issues and Challenges of Nepal

Nepal is located between two industrialized countries: China and India. Due to the industrialization of the immediate neighboring countries, Nepal has also been facing atmospheric pollution. The gases, solid wastes, chemical elements like a discharge of electricity, carbon monoxide, sulfur oxide, nitrogen oxide, glass, copper, cadmium, and other biological materials, industrial sewage, etc. create atmospheric pollution in Nepal.

Climate change is one of the normal natural phenomena but excessive climate change affects the life of human beings. In the context of Nepal, the changing model of glaciers and drastic change in the occupation of people are seriously affected. Due to climate change, the glaciers of Nepal have been melting. Most of the population of Nepal lives in rural areas and the urban areas are more polluted than the rural areas. The urban areas suffer from air pollution, water pollution, and land pollution. Nepal

has been also facing land pollution and water pollution. Due to a lack of proper waste management, the major river systems of Kathmandu Valley are polluted. Most of the sources of water resources are not pure. A large portion of the total population of Nepal is at the risk of impure drinking water (Upreti, 2013, pp. 211-250).

In the context of Nepal, the effects of climate change are multi-dimensional and dangerous in the form of complexity. It affects biological and non-biological elements like food, water, energy, weather, land, soil, etc. In addition, climate change affects the environment, forest and bio-diversity, availability of water, physical infrastructure, market work, knowledge, tradition, policy affairs, and other social, and economic aspects of Nepal. Global warming not only makes uncertain rain during the monsoon season but also affect agriculture, health, human being, and national security (Pandey, 2018, pp. 17-28). The glacier and lakes of Nepal have been melting due to global warming. There is a huge risk of flood in Nepal. There are possibilities of natural calamities due to bursts of the glacier and glacier lakes (Chaudhari & Aryal, 2009, pp. 1-11).

The climate change risk rank (2010) ranked Nepal in the fourth position. Among 170 counties of the world, the Nepalese peoples are at risk of global warming. In the initial phase of 2000, Nepal emitted 0.025 % of greenhouse gas annually. Nepal became the party of the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 AD. From 1994 to 2006 AD, Nepal prepared a report on Initial Normal Communication (INC) and shared it with members of FNCCCC and emphasized renewable energy in 2008. Nepal had accessed the Least Developed Countries (LDC). The Government of Nepal established Climate Change Council in 2007. There are 28 members in this council including 8 independent species. The

high-level coordination committee was established in 2011 AD. In 2015 AD climate law policy was come promulgated (Upreti, 2013, pp. 185-210).

In the context of Nepal, if there is the destruction of Warmth provincial Moist jungle, different 10 species of trees, 6 species of fabric trees, 6 species of fruits, 4 species of herbals (Medicinal herbs), and 50 species of the bush will be disappeared forever. From that there will be created problems for 200 species of birds, 40 species of mammals, and 20 species of reptiles and amphibians (Sijapati, 2071, pp. 4-5).

In 2005, Nepal became a party to the Kyoto Protocol. In 2009, the government of Nepal established Climate Change Council, a regional conference on climate change (from Kathmandu to Copenhagen). A cabinet meeting was held at Kala Patthar Cop 2015 participation by the head of the government. In 2010, Nepal established Climate Change Management Division (MCCICC). [The LEG 18 meeting and NAPA endorsement. Check the details] In 2011, Nepal promulgated a climate change policy, National framework load adaptation plan for action, and CDM global workshop CDM DNA form and CDM Regional Workshop and, in 2012, Nepal participated in an international conference of mountainous countries on climate change approval for 401,245 ton of Carbon for trade annually (Uprety, 2013, pp. 185-210).

Nepal has unequal geography and region (i.e., Mountain, Hill, and Terai), and diverse and complex climate and weather systems. Due to different social, economic, physical, and political conditions, Nepal has been listed as a risky state as per vulnerability to climate change. In recent years the effect of climate change has been expressed as heavy rainfall. It results from floods, serious drought, and warm wind. Nepal has revisited its legal frameworks and policies regarding international climate change. Nepal has expressed strong determination to implement the Paris Agreement,

2015 AD (Government of Nepal, National Planning Commission, 2022, p. 1). Nepal has declared its own strong determination to fulfill the goal of carbon emissions during 2022-2045 AD, stopping deforestation, and to creating certainty for all peoples who are at the risk (Government of Nepal, National Planning Commission, 2022, p. 1).

Nepal has been affected by climate change mainly Nepal has been effectively by climate change due to the geographical region of Nepal. Nepal is located in a mountainous region. Due to that fact, climate change may be counterproductive for Nepal. There are possibilities of creating probable glaciers and Glacier Lake can burst. Approximately 3 thousand Glacier Lakes and 20 Glaciers are most the part of the world become riskier. The major cause of that risk is developed countries and Nepal has been facing the effects of climate change without doing any mistakes. So, there is no contribution or nominal contribution of Nepal and other small states to climate Change but Nepal and other small states are also victimized by climate change. According to the Department of Water and Metrology the temperature of Kathmandu valley has been increasing 0.05 degrees conscious annually (Sijapati, 2014, p. 7).

4.3.1.1 Climate Change

In Nepal, there are variations not only in geography but also in climate and monsoon. Terai, Siwalik, Mid-hills, High Himalayan, and Trans-Himalayan climate are some features of country. The altitudinal differences in Nepal’s geo-physical landscape have caused geographical differences. (Department of Information and broadcasting, 2019, pp. 1-2).

There are five physical regions in Nepal. These are high mountains, high hill, mid – hill, the Churiya range and Terai. There is variation in climate in these regions. There are more than 6000 rivers and the total 40 percent of land has occupied by forests. The climate of Nepal is affected by Mountains ranges and the South Asian monsoons. There are four kinds of monsoon found in Nepal are pre-monsoon (March-May), monsoon (June-September), post-monsoon (October November, and winter (December-February).

Due to increase in atmospheric temperature, calamities regarding climate like light rain, excessive rain occur in Nepal which affects the ecosystem. Due to melting of ice in mountainous region of Nepal, the level of glaciers has been raising. It has been facing risk of calamities. Due to impacts of climate change, forest and bio-diversity are affected badly. The climate change has been affecting energy, human health, tourism, human settlement, infrastructure development etc. sectors due to flood, landslides, whirlwind/storm, and wildfire etc. (Pandey et.al, 2020, p. 7).

In June 2022, the 34 crore and 50 lakh peoples were insecure due to insufficient food. The major causes of the food insecurity are conflict in community, disaster and due to insufficient, and insecure food. It causes malnutrition and diseases. The food insecurity is more among small farmer in comparison to the people who are with non-agricultural background. It is also predicted that, there would be more than 3 crore peoples of agricultural countries will face the food insecurity up to 2020. The food insecurity in the agricultural countries has been increasing due to climate change an about increase in population and change in lifestyles (Kandel, et al., 2024, pp. 1-15).

According to a report of government of Nepal, the temperature of Nepal has been increasing from 0.04 ^{0}C to 0.06 ^{0}C temperature annually and regularly. The average

annual increase in temperature between 1960 to 2015 is 0.12^0C. It causes to melting of glaciers and glacier lake outburst floods (GLOF). During the period of 2003-2009, the water of mountainous glaciers decreased by 175 Giga ton. The annual rainfall of east, west and far west region has been increasing and the annual pre-monsoon rainfall of far west and mid-west Nepal has been decreasing slightly in recent years (Pandey et.al, 2020, p. 7).

The less and heavy rainfall has been affecting in bio-diversity, agriculture and hydropower energy product of Nepal over the years. Due to climate change the production of rice and maize has been decreasing. The excessive rainfall has been destroying the crops of Nepal consequently; there has been an increase in soil erosion. The flood has been affecting habitats of beaches of the rivers due to possibilities of flood in new regions. The energy sector of Nepal mostly depends on hydropower. The uncontrolled rainfall and flood destroy physical infrastructure of hydropower sector. The temperature of northern region of Nepal has been increasing. That increases the melting of glaciers, effect in supply of water and effects in downstream villages and regions. The most of the fertile land is in Terai religion of Nepal. These are under risks of flood. The 75 percent agriculture of Nepal depend upon rainfall and the framework of rainfall effected by climate change. It is predicted that the production of rice will decrease 4.2 to 30 percentage up to end of twenty first century in Nepal. Rice is one of the major crops of Nepal. The half part of the crops production has covered by rice (Pandey et.al, 2020, p. 9-10).

The climate change has been increasing insecurity in livelihood. The changeable climate, flood, landslide and drought caused by climate change has intensified the risk of their livelihood. The two-third of the population directly depend upon agriculture directly in Nepal. Climate change has been creating food insecurity. Due to climate

change effect insecurity of livelihood assists to increases immigration and international migrations. In context of Nepal, the trend of long-term international migration has been increasing over the years. Youths are forced to migrate abroad for employment. The internal migration from rural area to urban area has been also increasing as well. They most affected groups from climate changes are marginalized minority communities (Pandey et.al, 2020, p. 12).

According to joint study report of ICIMOD and UNDP 2020, there are 47 possible risky glacial lakes in Koshi, Gandaki and Karnali near river basin of Nepal and Tibet. During the study there are 3,624 glaciers among them 2070 are in basin of Nepal, 1509 in basin of Tibet and 50 in border areas of Tibet (China) and India (Bhattarai, 2023, pp. 62-73).

4.3.1.1.1 Increasing Monsoon Events in Nepal

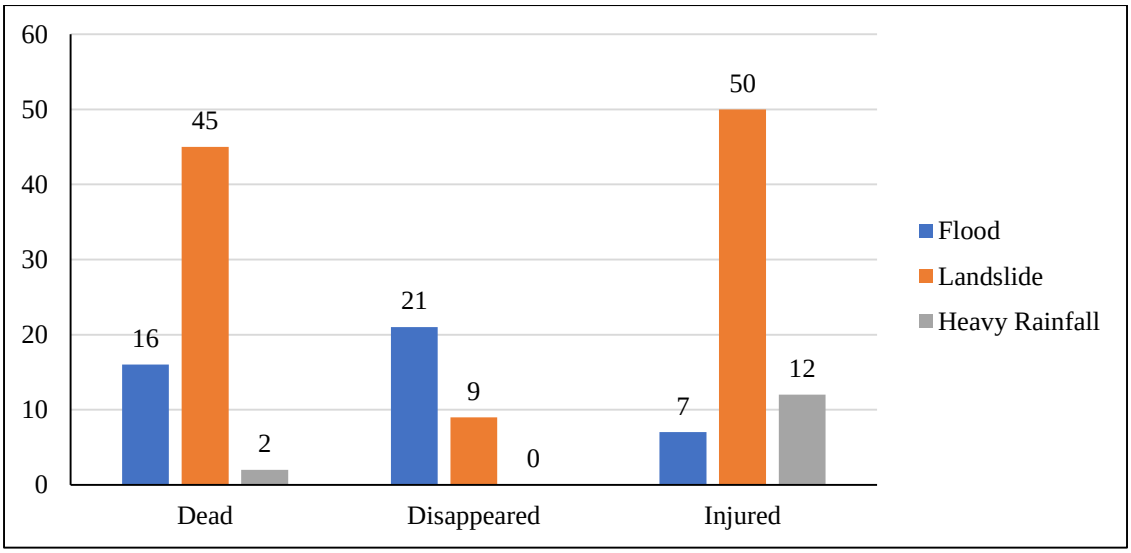
The monsoon events are increasing in Nepal due to climate change. The destruction of physical infrastructure by monsoon events in 2080 and details of loss of life by monsoon events, 2080 are given in table 1 and figure 5, Details of Destruction by Monsoon Events 2080 According to Province in table 2 and figure 6 respectively.

Table 1: Destruction of Physical Infrastructure by Monsoon Events in 2080

Destruction of home		Government office	Community building	Bridge		Hydropower
Partial	Full			Suspension bridge	Modern bridge	
711	242	9	6	26	15	27

Source: Reports with Monsoon Events, 2080, MoHA. , p. 11

Figure 5: Details of Loss of Life by Monsoon Events, 2080



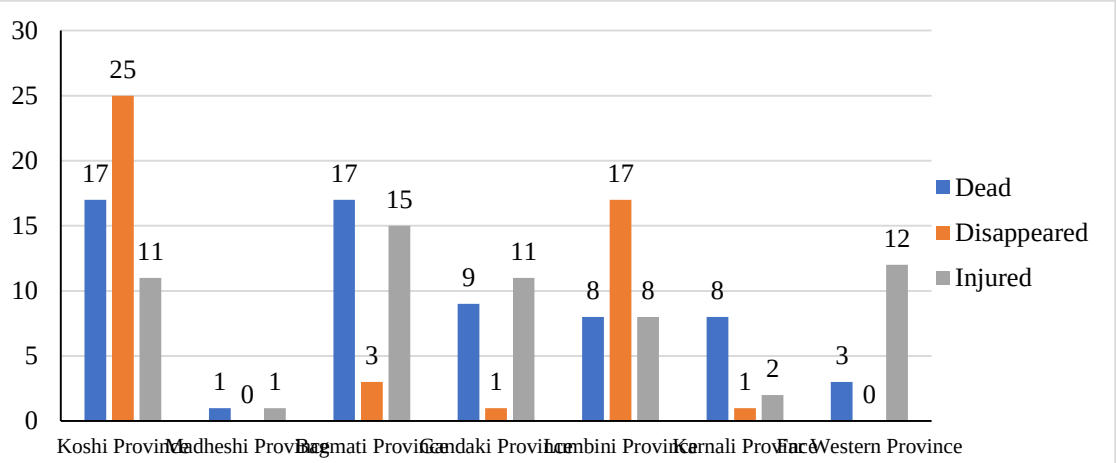
Source: Reports with Monsoon Events, 2080, MoHA p.10

Table 2: Details of Destruction by Monsoon Events 2080 According to Province

Province	No. of events	Dead	Disappeared	Injured	Effected family	Destruction in Home		Destruction in cottage	Destruction of domestic animals	Destruction amount (approx.)
						Partial	Full			
Koshi Province	213	17	25	11	2000	191	84	23	120	87338500
Madhesh Province	26	1	0	1	27	2	11	3	1	4805500
Bagmati	120	17	3	15	83	8	20	4	91	2821200
Gandaki province	127	9	1	11	140	20	66	17	14	209883500
Lumbini Province	146	8	0	17	139	7	15	15	49	14581000
Karnali Province	42	8	1	2	89	1	5	0	28	177000
Far Western Province	95	3	0	12	3459	482	41	6	25	1098000
Total	769	63	30	69	5937	711	242	68	328	332297700

Source: Reports with Monsoon Events 2080 B. S., MoHA , p. 14

Figure 6: Details of Destruction Loss of Life and Destruction by Monsoon Events 2080



Source: Report with Monsoon Events 2080 B.S., MoHA, p.10

4.3.2 Air Pollution

The air pollution is one of the serious problems of urban area of Nepal (Kaphle & Kaphle, 2008, pp. 53-54). The air pollution has been increasing in Kathmandu and other major cities of Nepal. Due to cause of Saucer like topography of Kathmandu valley, the entering of air has blocked. Due to fast urbanization, unmanaged urbanization, unplanned settlement and emissions of vehicles, emissions of industries, burring of types and other kinds of unmanaged management of solid wastes the air pollution has been increasing due to dusts, and other air polluters (Baniya, 2008, pp. 44-45). Due to Saucer sized topography the gases and smokes emitted from industries, Bricks industries, Stone crossing plants etc. takes time to exit from urban Vallie's including Kathmandu. The smokes emitted from industries and carbon dioxide (CO_2), carbon monoxide (CO), nitrogen oxide (NO) emitted from vehicles are fatal for human beings. The air pollution has invited respiratory diseases (Kaphle & Kaphle, 2008, pp. 53-54).

4.2.3 Biodiversity Loss

Biodiversity refers to variation of live among species of the organisms of that particular area and gene. In other words, the diversity is variation of life in the Earth. It consists of number of plant and animals and interaction of them with ecosystem. The E.O. Wilson on world biodiversity in 1988 first, and the Rio Summit 1992 on Sustainable Development, supported that agenda (Thakuri and Tamang, 2018, p. 203). According to Convention on Bio-diversity, 1992, bio-diversity refers to transformative change ability by means of all sources of and marines and other aquatic and terrestrial ecosystems. Nepal is the state party of convention on biological diversity, 1992.

Nepal is 25th and 11th rich country of the world and Asia respectively. The aim of Convention on Bio-diversity Conservation, 1992 is conservation of natural resources and their sustainable use of it. Within biodiversity conservation, diversity in ecosystem diversity in heredity, and diversity in species are enlisted. There are about 118 kinds of ecosystem. The species or group which are capable to reproduction with each other these are plants, germs, wild animals. Birds and other kinds of species the genetic diversity is variation with in certain characteristics the cause of deoxyribonucleic acid (DNA) variation is genetic variation. For illustration, Mongolian, Asian, African, Peoples and rice, maize. There are two kinds of method to conserve bio-diversity. These are in-situ-conservation and ex-situ conservation. The In-situ conservation environment i.e. National parks, protected area and wild life reserve etc. In ex-situ conservation the artificial environmental conservation is proceeded. (Thakuri and Tamang, 2018, p. 205)

In 1987, E.O. Wilson use the word bio-diversity. In 1972 United Nations summit on environment held on Stockholm City in 5-16, June 1972, that summit passed of point deceleration and 26 principles on the basis of that summit, the United Nations Environmental Program (UNEP) established in 1972. CITES promulgated on 1973 A.D. International Union for Conservation of Nature (ICUN) guided to enlist. The end endangered species of world (Thakuri and Tamang, 2018, p. 206). In the Earth summit 1992, 5-16, June the participants signed in convention on bio-diversity conservation. There are 27 principles in convention on bio-diversity conservation, 1972.

4.2.3.1 Biodiversity Conservation in Nepal

The development of bio-diversity conservation is given in table 3, status of biodiversity in Nepal has given in table 4 and table 5 and figures 7 and 8, distribution of ecosystem in Nepal as per geographical region has given in table 6 and figure 9, and wildlife animal listed in CITES annex are given in table 8, and figure 10.

Table 3: Evolution of Wildlife Conservation in Nepal

Date	Program
1946	Chitwan Declared as hunting conservation area by Jung Bahadur Rana
1869	The then king Surendra Bikram Shah established chronicle for security of forest and at present Shivpuri Nagarjun National Park
1972	Development of Worldwide concept about wildlife conservation and USA established Yell stone National Park
1961	Mahendra Moiga Kunja (Area 175 sq. km. established including (Barandabhar area base of Rapti river situated to Malaphara region
1970	The present eastern to region of present Chitwan National Park (204 sq. km.) declared as Nepal's first national park by the then king Mahendra
1971	Establishment of wildlife sector
1972	Establishment of office of wildlife
1972	Promulgation of national park and wildlife conservation act
1973	Promulgation of national park and wildlife conservation rules and establish of Chitwan National Park (932 sq. km.)
1974	Promulgation of Chitwan National Park Rule, 2030

1976	The three-conservation area added (Sagarmatha, Langtang and Rura) and Wildlife reserve established (Koshitapu, Bardiya and Shukla Phanta).
1984	Chitwan National Park listed as a World Heritage Side (WHS)
1984	The Bardiya Wildlife Reserve declared as a National Park
1986	An establishment of Annapurna Conservation Region and handed it to Mahendra Natural Conservation Trust (MNCT)
1987	Koshitappu Wildlife Conservation listed in the Ramsar Region.
1992	Establishment Makalu Barun National Park
1995	Starting Buffer Zone (According to National Park and Wildlife Conservation Act, 2029, fourth amendment).
1996	Promulgation of Buffer zone management rule
1997	Establishment of Kanchenjunga Conservation Area
2000	Establishment of Manaslu Conservation Area and Handed it to Mahendra Nature Conservation (MNCT) for Commodity based management.
2002	Establishment of Shivapuri National Park
2003	Additional Ramsar Areas were listed (Bishajari and other lakes, Jagadishpur water reservoir, Ghodaghodi lake etc.)

2006	Kanchenjunga conservation area handed to local community for its community-based management.
2007	Listing of additional conservation areas (Gokyo lake area, Gosainkunda lake area, Rara lake, Shey-Phoksundo lake)
2010	Establishment of Banke National Park, establishment of Apinappa and Krishnapur conservation area, establishment of Gaurishankar conservation area and Declarationof Mai Pokhari Ramsar region
2016	List of lakes of Pokhara municipality to Ramsar region
2017	Declaration of Shuklaphanta Wildlife reserve false national park
2018	Declaration of Parsa Wildlife reserve as national park.

Source: Biodiversity Conservation Wildlife Care Control Resource Book, 2020, p. 11

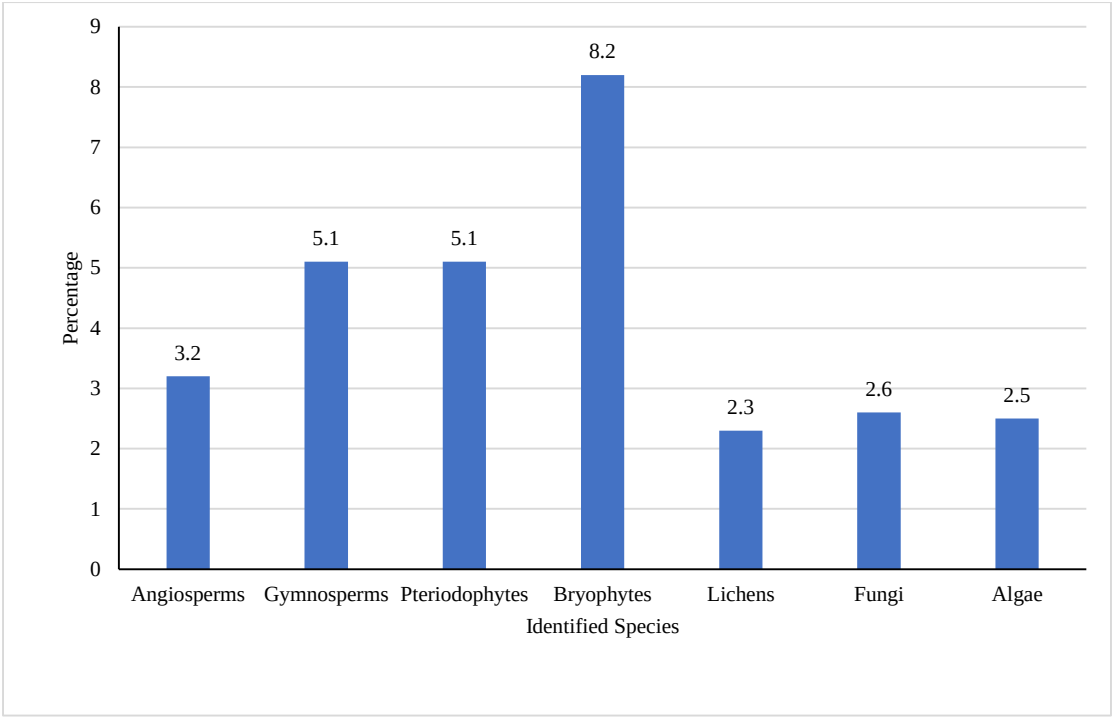
Nepal is a mountainous country. Nepal is rich in biodiversity. According to variations in altitude and variations in monsoon, Nepal is divided into four regions: Terai and Shiwalik Region (Less than 1000 meter) Medium Hill (1000-meter -3000 meter), High Hill (3000 meter-5000 meter) and High Mountain (above 5000 meter) geographically (Oli, 2024, pp. 244-258). There are variations in ecosystems. According to variations in ecosystem, there are forest ecosystem, Rangeland ecosystem, agro-ecosystem, and wetland ecosystem, etc. There are 118 ecologies, 75 vegetations, and 35 forests in Nepal. Besides, there are 6973 species of angiosperms, 26 species of gymnosperms, 534 species of pteridophytes, 1150 species of bryophytes, 465 species of lichens, 1822 species of fungi, 1001 species of algae, 208 species of mammals, 867 species of birds, 23 species of reptiles, 117 species of amphibians, 230 species of fishes, 192 species of mollusks, 3958 species of moths, 651 species of butterflies, 175 species of spiders, 61 species rotifers, 59 species of crustaceans, 5052 species of other insects and, 168 species of Platyhelminthes are in Nepal (Oli, 2024, pp. 244-258).

Table 4: Status of Biodiversity in Nepal (Plants)

S.N.	Group	Identified species	Percentage of Identified Species
1	Angiosperms	6973	3.2
2	Gymnosperms	26	5.1
3	Pteridophytes	934	5.1
4	Bryophytes	1150	8.2
5	Lichens	465	2.3
6	Fungi	822	2.6
7	Algae	2004	2.5

Source: Biodiversity Conservation Wildlife Crime Control Resource Book, 2020, p. 5

Figure 7: Status of Biodiversity in Nepal (Plants)



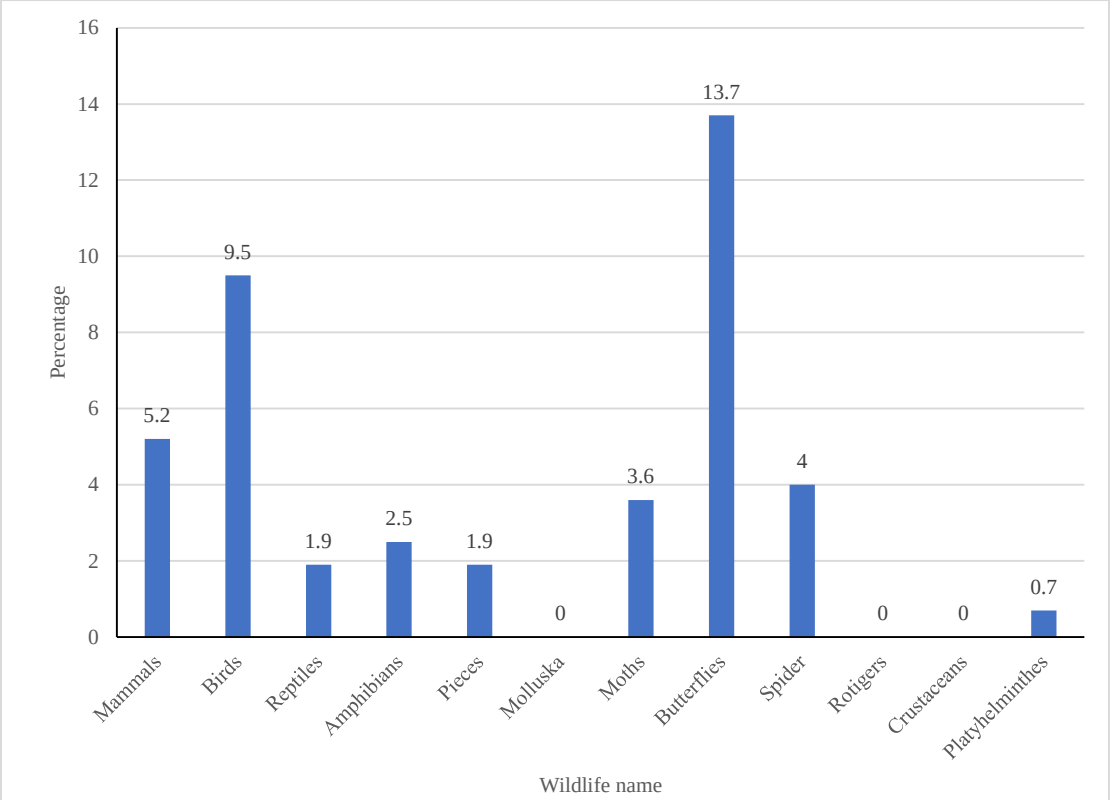
Source: Self Prepared Based on Biodiversity Conservation Wildlife Crime Control Resource Book, 2020, p. 5

Table 5: Status of Biodiversity in Nepal (Animals)

S.N.	Wildlife name	Identified species	Percentage of species
1	Mammals	208	5.2
2	Birds	886	9.5
3	Reptiles	123	1.9
4	Amphibians	117	2.5
5	Pieces	230	1.9
6	Mollusks	192	N/A
7	Moths	3958	3.6
8	Butterflies	561	13.7
9	Spider	175	4.0
10	Rotifers	61	N/A
11	Crustaceans	59	N/A
12	Platyhelminthes	168	0.7
	Total	861	1.1

Source: Biodiversity Conservation Wildlife Crime Control Resource Book, 2020, p. 5,

Figure 8: Status of Biodiversity in Nepal (Animals)



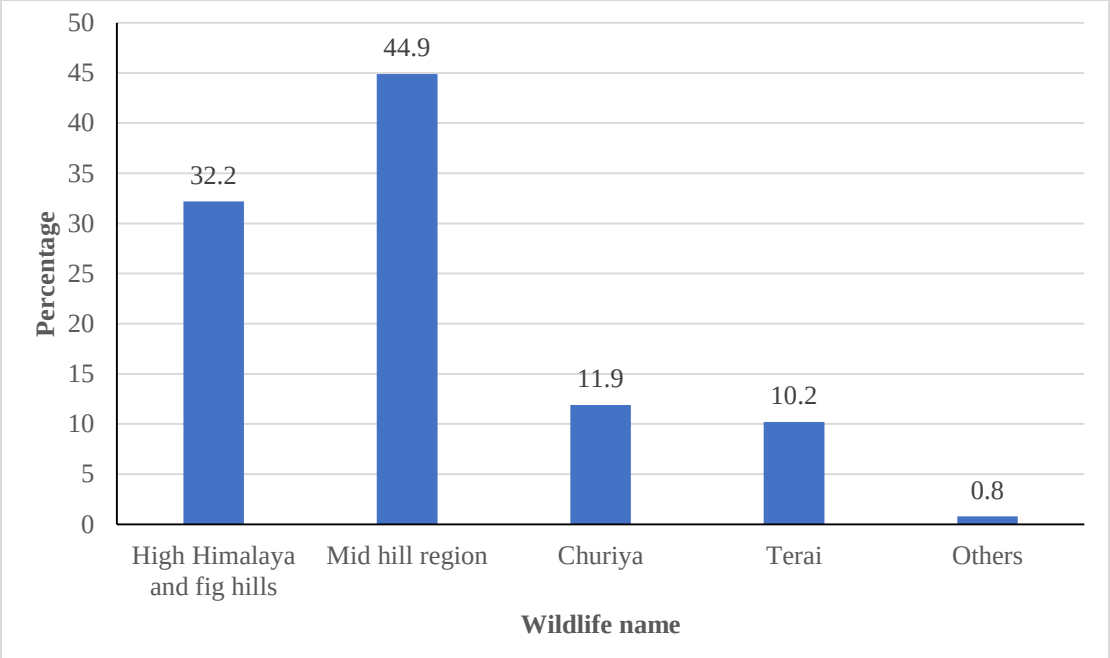
Source: Self Prepared Based on Biodiversity Conservation Wildlife Crime Control Resource Book, 2020, p. 5,

Table 6: Distribution of Ecosystem in Nepal on the Pass of Geographical Region

S.N.	Wildlife name	Identified Species	Percentage of Species	Types
1	High Himalaya and High Hills	38	32.2	37 forest and 16 hectors
2	Mid Hill Region	53	44.9	52 forest and 1 agricultural land
3	Churiya	14	11.9	13 forest and 1 agricultural land
4	Terai	12	10.2	10 forest and 2 agricultural lands
5	Others	1	0.8	Wetlands of all region
	Total	118	100	

Source: Biodiversity Conservation Wildlife Crime Control Resource Book, 2020, p. 6

Figure 9: Distribution of Ecosystem in Nepal on the Pass of Geographical Region



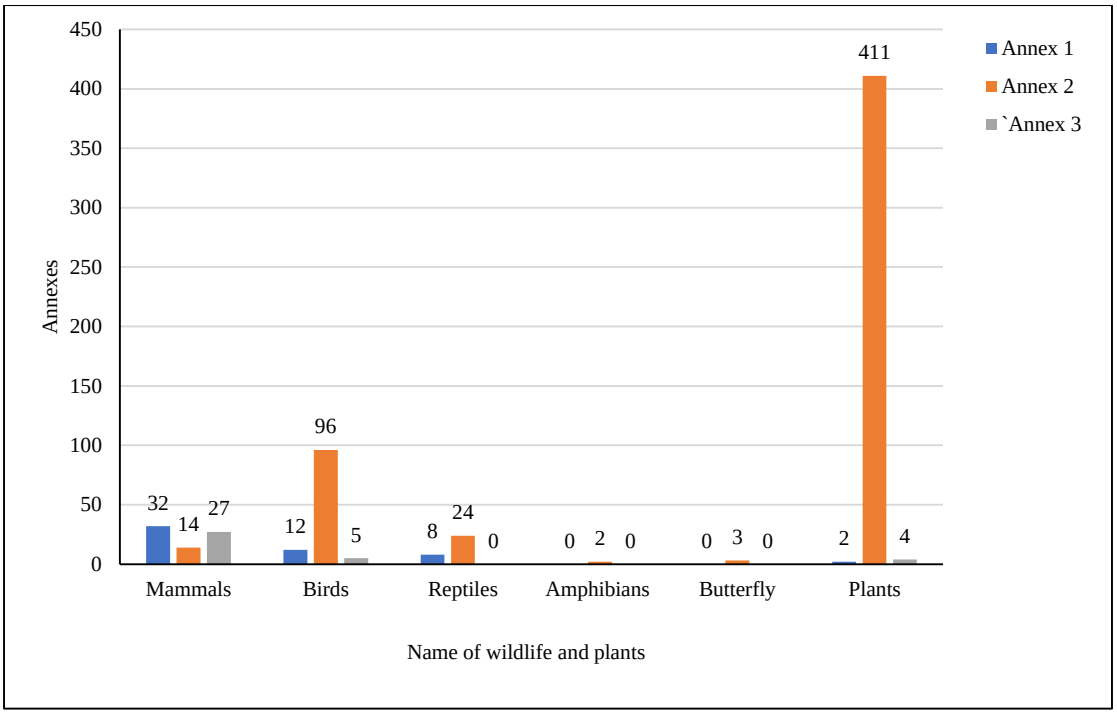
Source: Self Prepared based on Biodiversity Conservation Wildlife Crime Control Resource Book, 2020, p. 5

Table 7: Wildlife Animals and Plants Listed in CITES Annex

S.N.	Name of wildlife and plants	Annex 1	Annex 2	`Annex 3
1	Mammals	32	14	27
2	Birds	12	96	5
3	Reptiles	8	24	0
4	Amphibians	0	2	0
5	Butterfly	0	3	0
6	Plants	2	411	4

Source: Biodiversity Conservation and Wild Life Crime Control Resource Book, 2020, p. 51

Figure 10: Number of Wild Life and Plants listed in annex of Cites



Source: Self Prepared based on Biodiversity Conservation and Wild Life Crime Control Resource Book, 2020, p. 51

In Nepal, National Conservation Policy promulgated in 1989 AD. The Chitwan National Park established on the basis of National Park and Wild Life Conservation Act, 2029 B.S. The other legal instruments regarding bio-diversity conservation are Forest Act 2045, Environmental Protection Act, 2053, Wetland Conservation, Act, 2059, Agricultural Policy, 2062 B. S., Agricultural Policy, 2069 B.S. Bio-diversity Action Plan, 2003 and Nepal National Water Policy, 2059 B. S. etc. Nepal is state of party of convention on bio-diversity. (Thakuri and Tamang 2018, p. 207).

The ministry of forest and environment, ministry of science and technology, ministry of population, national nature conservation fund etc. are established for improvement policy and plans regarding bio-diversity. Nepal has been raising voices in various international forums about climate change, and depletion of Ozone layer, environment

degradation and sustainable development issues (Thakuri and Tamang, 2018, p. 207). The 16th fifth year periodic national plan (2019-2024) of Nepal has prioritized the conservation of natural resources and environmental prevention for sustainable development. The government of Nepal declared decade of 2071-80 B. S. as a decade of forest. The major causes of harming in biodiversity are excessive use of natural resources, increase in population, deforestation, excessive use of fire wood, degradation of forest, lack of consciousness etc. (Thankuri and Tamang, 2018, p. 208)

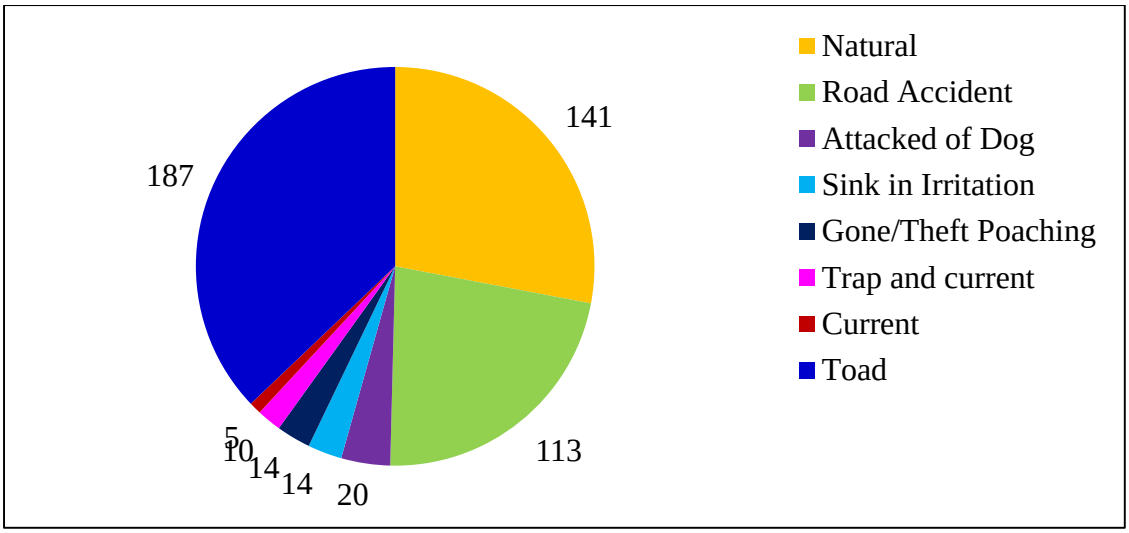
4.2.3.1.1 Wildlife Conservation Policies and Practices in Nepal

4.2.3.1.1.1 Biodiversity Loss Due to Death of Wildlife Animals in Nepal

During the fiscal year 2079/80, a total of 558 wildlife animals died in 20 conservation areas of Nepal. The number of wildlife deaths in the Terai region has been increasing, while the number of deaths in the hill and mountain regions is comparatively low. The highest number of wildlife deaths occurred in Chitwan National Park, whereas the lowest number was recorded in Makalu Barun National Park and Khaptad National Park. The major causes of wildlife deaths include natural causes, road accidents, poaching, drowning in canals, trapping, and attacks by dogs. Details of the deceased wildlife animals are provided in figures 11 and 12 from the Annual Report of the Department of National Parks and Wildlife Conservation (2079/80).

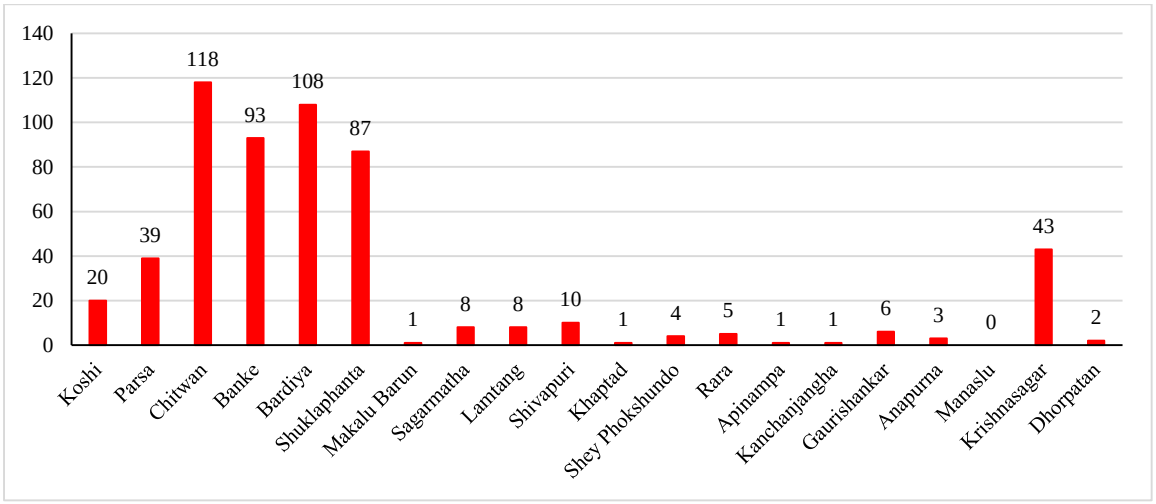
The cause of death of wildlife and the details of wildlife death in conservation area of Nepal in 2079/80 has given in figure 11 and 12.

Figure 11: Causes of Death of Wildlife in 2079/80 B.S.



Source: National Park and Wildlife Conservation, 2079/80, p. 43.

Figure 12: Details of Death of Wildlife in Conservation Area of Nepal in 2079/80 B.S.



Source: National Park and Wildlife Conservation, 2079/80, p. 43.

4.2.3.1.2 Impacts of Arms Conflict in Bio-diversity

In the global and national context, the impact of armed conflict in Nepal has been terrible in terms of natural environment. The 10 years armed conflict impacted on biodiversity and natural resources. During the period of armed conflict, the concerned

authority unable to promulgates laws and rules regarding environmental and natural resources (Upreti, 2014, p. 185). There was also negative impact in wildlife. The armed conflict also negatively affects to the genetic resources. Due to conflict there was affect in agriculture. The several organizations which were active to conserve the genetic resources. There were not active because of armed conflict. During the periods of armed conflict, the illegal trades of wildlife increased. The Rhino Elephant, tigers were killed. The use of the commodities. A biodiversity decreases. At that period the habitat of wildlife was distrusted and the peoples of the national park and conservation area were visualized (Upreti, 2014, pp. 200-201).

The UN celebrated the "Stopping of environmental degradation during war and arms conflict day" on 6th November, 2002. So, the impact of armed conflict on environment and natural resources become most important. There are more than 30 occurred in Africa. Among them most of the wars are intra-state in nature. In 1966 among 53 African states 14 states are affected by armed conflicts. The major causes of the wars of Africa are illegal exploitation of natural resources. In conflictual states oil, mines, copper, wood and diamond are captured by regional political parties. Then that become major cause of war in Africa (Upreti, 2016, p. 182). There are several studies performed for evaluating the interrelations between armed conflict, environmental protection and natural resources of world. These studies concluded that the armed conflicts affected in to environment and natural resources worsly (Upreti, 2016, p. 183). For illustration, the arm conflicted destructed the biological diversity of Mozambique. The national parks of democratic republic of Kango affected worsly. In addition, the conservation area of Ethiopia also destructed by the arm conflict. The excessive increase in population impacts in natural resources. It creates the environment to the insecurity and violence. The study and experiences of the Sera

Leon and Rwanda also show that the internal war affect in bio-diversity Worsley. The international institutions like world wildlife fund (WWF), Biological diversity Conservation program (BDCP) etc. also kept detain information regarding impacts of arms conflict in environment and biodiversity (Upreti, 2016, pp. 183-185).

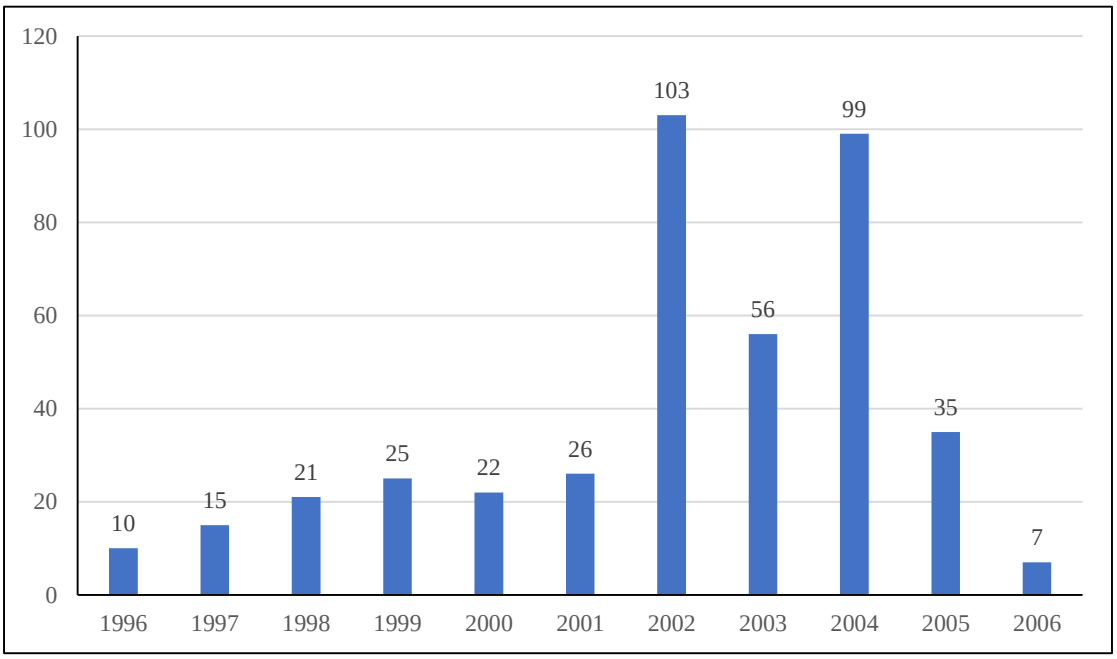
The number of attacks in biodiversity related infrastructure, park related physical infrastructure damage during the period of Armed Conflict, wildlife causalities during the war time (1996-2006) are given in table 8, 19, 10, 11 and figure 13 respectively.

Table 8: Number of Attacks in Biodiversity Related Infrastructure

S.N.	Year	Frequency of attack
1	1996	10
2	1997	15
3	1998	21
4	1999	25
5	2000	22
6	2001	26
7	2002	103
8	2003	56
9	2004	99
10	2005	35
11	2006	7

Source: Upreti, 2012, pp.15-18

Figure 13: Number of Attacks in Biodiversity Related Infrastructure



Source: Self Prepared Based on Upreti, 2012, pp.15-18 (Table 1)

Table 9: Park-related Physical Infrastructure Damaged during the Period of Armed Conflict

S.N.	Name of the parks	Number of damages	Estimate values	Damaged infrastructures
1	Chitwan National Park	8	4.00	Range posts, staff quarters and offices
2	Bardiya National Park	9	3.65	Range posts and offices
3	Shey-Pokhsundo National Park	9	3.70	Visitors center, stores, head office staff quarters
4	Rata National Park	5	1.70	Vistors Centre, Stores, head office, staff quarters

5	Khaptad National Park	1	0.40	Range post
6	Langtang National Park	3	1.45	Guard Post and range posts
7	Makalu Barun National Park	4	0.90	Head office and sector office
8	Shivapuri National Park	4	1.51	Ticket Centers, range posts guard posts
9	Shuklaphanta Wildlife Reserves	9	2.775	Offices and range posts
10	Koshi Tappu Wildlife Reserve	2	0.60	Range posts and Guard posts
11	Parsa Wild Life Reserve	1	0.40	Pratappur pot
12	Dhorpatan Hunting Reserve	2	0.86	Dhorpatan Office Building and Maikot Post
13	Kanchenjunga Conservation Area	-	NA	Seized Communication Sets, Computers and other equipment from Lelep project office
14	Annapurna Conservation Area	15	12.30	Office Buildings and other properties of main office and area office
	Total	57	20.195	

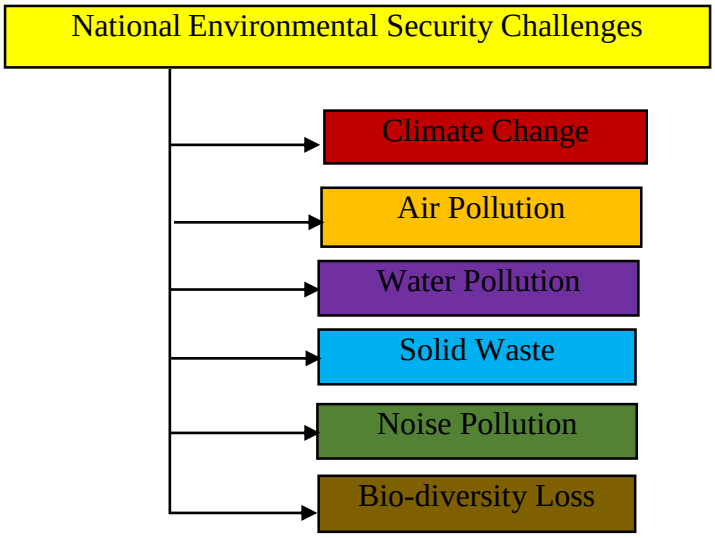
Source: Upreti, 2012, pp. 15-28 (Table 2)

Table 10: Wildlife Causalities during the War Time (1996-2006)

S.N.	Species	Total killed 1996-2006		
1	Rhino	128	128	256
2	Tiger	7	33	40
3	Hog Deer	1	13	14
4	Wild Buffalo	1	10	11
5	Red Panda	0	3	3
6	Monitor Lizards	2	0	2
7	Musk Dear	5	15	20
8	Swamp Deer	1	1	2
9	Chhetal	21	25	46
10	Elephant	4	17	21
11	Samber	0	7	7
12	Leopard	1	27	28
13	Leopard Cat	0	4	4
14	Jharal	0	13	13
15	Tortle	0	2	2
16	Python	0	6	6
17	Wild Boar	0	3	4
18	G. Corcodile	1	3	4
19	Black Park	0	7	7
20	Peacock	0	2	2

Source: Upreti, 2012, pp. 15-28 (Table 3)

Figure 14: National Environmental Security Challenges



Source: Self prepared.

CHAPTER FIVE

GLOBAL, REGIONAL AND NATIONAL INITIATIVES/EFFORTS TO MANAGE ENVIRONMENTAL SECURITY CHALLENGES

5.1 Global Initiatives/Efforts to Manage International Environmental Challenges

The various countries of the world have been cooperating to fight against the environmental degradations and problems. The international intergovernmental organizations including UN also has been giving emphasis to manage international environmental security challenges. The member states of United Nations also organized dozens of international conferences, summits, conventions, covenants, declarations, treaties, agreements, accords regarding environmental security issues. During official visit of Chinese President Xi Jinping in United States 24 September 2018, there was an agreement concluded between China and USA to fight jointly against climate change. The China and USA are larger economic power of the world. Due to the development activities the climate change has becoming problem in the world day per day (International Forum, 2016, p. 79).

The developments of international environmental policies and laws to address environmental security challenges can be categorized in to six distinct periods. Which are as follows:

5.1.1 Before/Pre-Stockholm Period

The necessary of international cooperation regarding environmental issues identified in 19th century which were reflected in preliminary agreements including specific concern clearly. Up to mid phase of the 20th century the international discussion and

actions motivated regarding environmental degradation, pollution and loss of resources, after Second World War. There was assumption that environmental challenges cross the national boundaries of any states. In 1989, the USA promulgated River and Harbors Act. Similarly, the British parliament promulgated the Salmon and Freshwater Fisheries Act, 1923 which highlight first comprehensive law. The Acts promulgated by Britain in 1936, 1937, 1951 and 1961 additionally transformed and matured the ways of water pollution control in England. After promulgation of Rivers and Harbors Act, 1989, the Acts regarding quality of water amended and promulgated in 1948, 1952, 1956, 1965, and 1970 respectively.

Except these, during the conference of the International Law Association the Helsinki rules on Users of waters of international rivers, and utility and management of trans boundary rivers prosecuted. The major theories included in Helsinki rules are equitable and appropriate use of international rivers, do not harm top other states while using international watercourses, to provide pre information and counselling about plans which effect the international rivers, cooperation regarding management of watercourses, give emphasize to sustainable development etc. These theories aimed to use and management of trans boundary watercourses, give emphasis to cooperation, to minimize the conflict regarding water resources etc. Rachel Carson published her book “silent spring” in 1962 AD related with threats of pesticides specially DDT.

The other important international environmental instruments promulgated during Pre-Stockholm period are Antarctica treaty, 1961, Wildness Act, 1962(USA), Clean Air Act (1970, USA), national environment Policy Act, 1970(USA), and Ramsar convention 1971 etc.

5.1.2 Stockholm Declaration Period

The Stockholm Declaration announced in 1972 in Stockholm, Sweden. The major points of Stockholm Declaration are identification of environmental issues, environmental responsibility, Sustainable development, international cooperation, and guidelines theories for environmental policies etc.

5.1.3 Period of Stockholm Declaration to Rio-Summit Period

During that period, international institutions actively addressed the environmental issues as the consequences of it, the regional and global legal instruments regarding environmental security started to internalize by states. During between the period of Stockholm Declaration and Rio-summit period, Comprehensive environmental Response, Compensation and Liability Act, (CERCLA) Superfund (1980 USA), Vienna Convention for the protection of Ozone layer (1985), Montreal Protocol (1987), Basel Convention on the Control of Trans boundary movement of hazardous Wastes and their disposal (1989) were promulgated. During that period, Brunt land Report (1989) was published.

5.1.4 The Earth Summit in Reo De Jenerio Period

Rio Summit / United Nations Conference on Environment and Development (UNCED) was historical events on global environmental governance. The key points of that convention are Agenda. 21, Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate change (UNFCCC) etc. Except these points that convention also emphasized on the sustainable development.

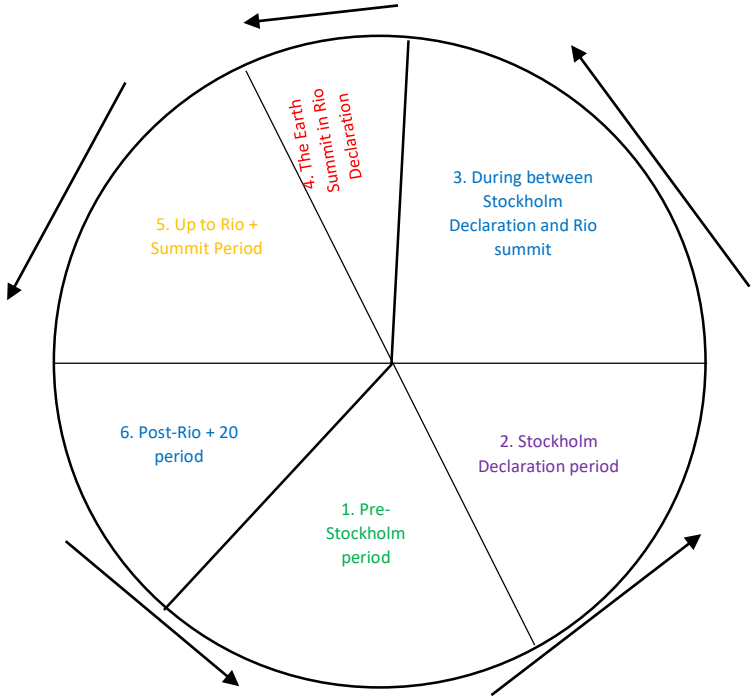
5.1.5 The Period of Rio Summit to Rio+20 Summit

Between the Rio Summit 1992 to Rio+ 2 summit 2012, several important international environmental instruments were promulgated. The major international environmental instrument promulgated during this period are Kyoto Protocol (1997), Cartagena Protocol on Bio-safety (2000), Stockholm Convention on Persistent Organic Pollutants (POPs), 2001, International Treaty on Plant genetic Resource for Food and Agriculture (2001), The World Summit on Sustainable Development etc. were promulgated during this period. The UN REDD+ (Reducing emissions from Deforestation and Forest Degradation with Plus program also launched in this period.

5.1.6 Post Rio+20 Period to till Date

During that period, Plastic Pollution initiative (2014), Paris Agreement (2015), Kigali Amendment to the Montreal Protocol (2016), Sustainable Development Goals, 2015, Post-20 global Biodiversity framework etc. were promulgated.

Figure 15: Development of International Legal Instrument to Manage International Environment Security Issues



Source: Self prepared.

5.2. Some Important International Legal Instruments Regarding Global Environmental Issues

5.2.1 Convention on Wetlands of International Importance Especially as Waterflow Habit, 1971

The word "wetland" refers to land with moisture. Wetlands are the habitats of fish, crocodiles, bears, frogs, crabs, and other organisms and birds. An international conference was organized for protecting wetlands in Ramsar, Iran, on February 2, 1971, which is called the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat. That is also known as the Ramsar Convention of 1971. There are 12 articles in this convention, which has been in effect since 1975 (Shrestha, 2010, p. 27).

5.2.2 Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972

The natural and cultural heritage has been dismantled in various places around the world. The 17th General Assembly of the United Nations Economic, Social, and Cultural Organization (UNESCO) passed the Convention pertaining to the Protection of the World Cultural and Natural Heritage in 1972, and which was promulgated on December 17, 1973 (Shrestha, 2010, p. 30).

5.2.3 Convention on International Trade in Endangered Species of World Fauna and Flora (CITES), 1973

Some species of wildlife and birds have become endangered due to their illegal trade. Besides, human intervention in their habitats also contributes to the endangerment of certain species. The United Nations Conference on the Human Environment in 1972,

June 5-16, recognized wildlife as the common heritage. The Convention on International Trade in Endangered Species of Wild Fauna and Flora was organized in Washington, D.C., United States om 3 March, 1973. It came into effect on July 1, 1975. The convention categorized endangered species into those threatened with extinction and those that would get extinct in the future (Shrestha, 2010, pp. 31-32)

5.2.4 Basel Convention on the Control of Trans boundary Movement of Hazardous Waste and their Disposal, 1989

The production of hazardous waste has become one of the serious problems in the development of industries all over the world. According to the World Development Report, 1992, of the total 400 million tons of hazardous waste, the United States produced 275 million tons, and Europe produced 25–35 million tons of hazardous waste. Due to limited environmental literacy and high management costs, the management of hazardous waste in developed countries is challenging. As a result, developed countries have been using underdeveloped countries as dumping sites for hazardous waste. The Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal was concluded on March 20, 1989, and promulgated on May 5, 1992. The convention contains 29 articles so far (Shrestha, 2010, p. 34).

5.2.5 Rio-convention/Declaration, 1992

The main objectives of the declaration were to construct well-defined interrelationships between peoples and states regarding the environment and development. There are 29 principles within the Rio Declaration. The major principles include poverty alleviation (Principal No. 5), issues of special concern to underdeveloped states (Principal No. 6), conserve, protect, and restore the health and

integrity of the ecosystems (Principal No. 7), determination regarding environmental law (Principal No. 11), the precautionary principle (Principal No. 15), the polluter pays principle (Principal No. 16), and mobilizations of youths for sustainable development (Principal No. 21), among many (Shrestha, 2010, pp. 21-22).

5.2.6 Agenda-21, 1992

This document was prepared on 1992, June 14. The aim of this document is to control environmental degradation and prevent further loss of the environment. Within Agenda 21, the programs are categorized into the subheadings: the quality of life on Earth, protection of global commons, the management of human settlements, waste management, sustainable economic growth, and the implementation of Agenda-21 (Shrestha, 2010, p. 23).

5.3 International Climate Change Conferences

Table 11: International Climate Change Conferences

S.N.	Year	Name	Hoste City	Cop presidency regional group
1	1995	Cop_1	Berlin, Germany	Western European Others Group (WEOG)
2	1996	Cop_2	Geneva Switzerland	Africa Group
3	1997	Cop_3	Kyoto Japan	Asia and Pacific Group
4	1998	Cop_4	Beunos Aires Argentina	Group of Latin America and the Caribbean (GRVLAC)
5	1999	Cop_5	Bonn Germany	Eastern Europe Group
6_1	2000	Cop_6	The Hague Netherlands	WEDG

6_2	2001	Cop_{62}	Bonn Germany	WERG
7	2002	Cop_7	Marrakar Morocca	Africa Group
8	2001	Cop_8	New Delhi India	Asia and Pacific Group
9	2003	Cop_9	Milan Itally	Eastern Europe Group
10	2004	Cop_{10}	Buenos Aires Argentina	GruLAC
11	2005	Cop_{11} CMP_1	Montreal Canada	WEOG
12	2006	Cop_{12} CMP_2	Nairopi Kenya	Africa Group
13	2007	Cop_{13} CMP_3	Bali Indonesia	Asia and Pacific
14	2008	Cop_{14} CMP_4	Poznan Poland	Eastern Europe Group
15	2009	Cop_{15} CMP_5	Copenhagen Denmark	WeoCq
16	2010	Cop_{16} CMP_6	Consun Mexico	GRULAC
17	2011	Cop_{17} CMP_7	Durban South Africa	Africa Group
18	2012	Cop_{18} CMP_8	Doha Qatar	Asia and Pacific Group
19	2013	Cop_{19} CMP_9	Worsaw Poland	Easter Europe Group

20	2014	Cop_{20} CMP_{10}	Lama/Peru	GRULAC
21	2015	Cop_{21} CMP_{11}	Paris France	WEOG
22	2016	Cop_{22} CMP_{12}	Morraked Morrocca	Africa Group
23	2017	Cop_{23} CMP_{13}	Bonn Germany	Asia and Pacific Group
24	2018	Cop_{24} CMP_{14}	Katowise Plland	Eastern Europe Group
25	2019	Cop_{25} CMP_{15}	Madrid Spain, GRULAC	GRULAC
26	2020	Cop_{26} CMP_{6}	Glassgod UK	WEOLG
27	2022	Cop_{27} CMP_{17}	Sharmel Shekh/Egypt	Africa Group
28	2023	Cop_{27} CMP_{17}	Dubai, UAE	Asia and Pacific Group
29	2024	Cop_{29} CMP_{19}	Baku Zzerbaizan	Eastern Europe Group
30	2025	Cop_{30} CMP_{20}	Belem Brazil	GRULAC
31	2026	Cop_{31} CMP_{21}	Note determined	WEOL

32	2027	Cop_{32} CMP_{22}	Note determined	Africa Group

Source: Self prepared.

5.3.1 United Nations Framework Convention on Climate Change (UNFCCC), 1992

The Intergovernmental Panel on Climate Change was formed to study strategies regarding the rate of temperature increase on Earth and its impacts after disseminating the scientific facts about the rise in atmospheric temperature during the 1980s. The Panel suggested that the temperature might increase by 1-3.5°C by 2100 AD, which could lead to serious health problems, ecological instability, and a rise in sea levels of 15 to 95 centimeters. To address this issue, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted on March 21, 1994. This convention was opened for signature during the Rio Conference in 1992. The conventions consist of 25 articles (Shrestha, 2010, p. 43).

5.3. 2 Conferences on Parties (CoP) 29, Azerbaijan

The 29th International Conference of United Nations Conference on Climate Change (Cop 29) commenced on 11th November, 2024 in Baku City of Azerbaijan (The Rising Nepal Daily, 2024). The delegates of 200 countries were participated in that conference. In that conference the major focal point was the climate which is termed as Finance Cop. In that conference the negotiations between delegates of various states took place which allowed members to share their concepts, to dialogue about their terms and conditions. The organizers provided opportunities to them to address the high-level sessions (Grimire, 2024, Para 2).

The climate finance was focal point of that conference. The 80 states including the members of the African groups, least developed countries (LDCs), small island countries demanded to provide more than $1.3 trn climate finance. According to specialists the annual $1.3 trn climate finance is necessary to compensate the victim countries of climate change. In last day of Cop 29 the head of states/governments signed in the agreements. The goal of that agreement is to mobilize 300 billion to the least developed countries. Furthermore, that agreement aimed to allocate $ 1.3 trillion of total climate finance. The developed countries were unable to pay previous $100 billion annual climate finance. That inability of developed countries made anger to the countries victimized climate crisis (Ghimire, Para, 5).

5.4 Regional Policies to Manage Environmental Security Challenges

The regional policies and laws to manage environmental security challenges are given in following table 12.

Table 12: Regional Policies to manage regional Environmental Security Challenges

S. N.	Name of Regional Instruments	Promulgated date
1	The major regional environmental security related instruments are Convention for the Protection and Development of the Marine Environment and Coastal Region of Mediterranean Sea Barcelona Convention, Barcelona, 1976	1976
2	Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution, Kuwait, 1978	1978
3	Convention for the Protection of the Marine Environment and Coastal Area of the South-east Pacific, Lima, 1981	1981
4	Convention for Co-operation in the Protection and Development of the marine and Coastal Environment of the West and Central African Region, Abidjan, 1981	1981
5	Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, Cartagena de Indias, 1983	1983
6	Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African region (Nairobi Convention), Nairobi, 1985	1985

7	Convention for the Protection of Natural resources and Environment of the South pacific Region, Noumena, 1986,	1986,
8	Convention for the Protection of marine Environment of the North-east Atlantic OSPAR Convention Paris, 1992	
9	and Convention on the Protection of Black Sea, against Pollution, Bucharest, 1992	
10	Convention on the Protection of the Marine Environment of the Baltic Sea Area Helsinki	1974, 1992

Source: Self Prepared

5.5 Some Important National Initiatives/Efforts to Manage National Environmental Security Challenges of Nepal

The contribution of Nepal to emission of the greenhouse gases is negligible in compared to industrialized nations. However, the emissions of greenhouse gases (GHGs) have been excessive in Nepal and in other South Asian countries due to industry, brick factories, transportation of diesel, fire of straw, and wildfires. The multi sectorial effects generated by climate change, the development, management of livelihood of the citizens are becoming more complex day by day (Sixteenth National Periodic Plan (2019-2024), p. 235). According to Constitution of Nepal, the right to environment has mentioned the fundamental right of citizens. According to article (30), sub article (1) of Constitution of Nepal, 2015, 2015 all citizens of Nepal have right to live in clean environment (The Constitution of Nepal, 2015, p. 19).

The negative impact can be seen in mountains as glaciers and ecosystems are dependent upon them due to experiencing in forest and biodiversity, energy. Human health, tourism, habitat, infrastructure development and, livelihood sectors are badly as well. Due to climate calamities including flood, landslides, storm, wildfire etc., the wealth and lives of Nepalese peoples are lost annually (National Environment Policy, 2019, p. 35).

The protection of environment is a multidimensional and international issue. Therefore, Nepal has been expressing its strong determination to dozens of international treaties and agreements over the years. The state has a responsibility to guarantee the justifiable access and wise full activity upon environmental resources for present generational and intergenerational equity (The National Climate Change Policy, 2019, p. 17).

Although, Nepal emits negligible amount of greenhouse gases i.e. 0.025%. However, Nepal is one of the vulnerable countries in terms of climate change. Both immediate neighbors China and India are industrialized countries and they are major carbon emitters. China is a major carbon emitter. According to report of 2018, China emitted 27 percent of the carbon of the world. On other hand, India was the third largest carbon emitters of the year 2017 AD. So, Nepal should have prioritized the issue of environmental security and climate change (Shrestha, 2021, pp. 32-33). According to Policy no. 7 of Nepal's foreign Policy to play an effective role for minimize an emission of greenhouse gases and adaptation to face the challenges and negative impact of climate change (Nepal's Foreign Policy, 2020, p. 14). According to part 2, 2.4.8 of National Security Policy, 2016, of Nepal, Ministry of Defense, have policy regarding national resources and environment (National Security Policy, 2016, 2016, p. 18).

The environmental problems have been becoming subject matter of concern and interest at the international level. The climate change in the world has been changing due to environmental degradation due to the imbalanced industrial and infrastructure development and uses of huge amount of energy, that increasing emissions of the Chloro Fluoro carbon (CFCs), and carbon respectively. The emissions of the CFC and carbon dioxide (CO_2) have been causing climate change, greenhouse effect, and production of black carbon. According to some scientists of climate change has not been controlled and managed properly. Therefore, the environmental degradation will continue then the earth won't be suitable for living. According to world report of climate change, published in 2007, if the environmental degradation is not control immediately, then the climate change cannot be controlled (Shiwakoti, 2016, p. 332).

The interest and concern regarding environment have been increasing in mid-phase of the 20th century. The aim of the international community is oriented towards prosperous, justifiable and secured in context of intergenerational and intergenerational equity. The conference regarding human environment on Stockholm the capital city of Sweden on June 5-16, 1972 AD. The concrete steps started to be taken regarding environmental protection after Stockholm conference (Report of National Interest Protection Committee, Constituent Assembly, 2009, pp. 57-58).

According to report of committee of National interest protection, 2009, the ecological degradation is one of the serious threats of national security of citizens and economy of the country. Due to encroachment in forest, and wetlands worldwide climate change and depletion of ozone layer have caused ecological problems including soil erosion, drought, and excessive flood and landslides. In addition, the chemical waste and pesticides use uncontrolled in agriculture and industrial sectors also harms ecology negatively (Report of National Interest Protection Committee, Constituent Assembly, 2009, p. 116).

During agrarian and industrial revolution in 1960s in developing countries, environmental problems including deforestation caused by population growth, acid rain, climate change, loss of biodiversity, production of chemical wastes, etc. emerged. All of the people and, flora and fauna have affected by the environmental problem. Most of the environmental problems are local in nature and some of them are international, regional and Nepalese context (Uprety, 2001, p. 184).

Initially, the concern regarding environmental protection in national level and then the attempts of international level organized and it became international in nature. In decade of 1950, world community promulgated the conventions regarding oil

protection. In initial phase of 1970, there were increasing in destruction of animal and plants. In mid of the 1980 the serious environmental issues, depletion of ozone layer, climate change and biodiversity loss etc. proved by scientific technologies then the environmental threat become agenda of international community (Belbase & Poudel, 1999, pp-26-37),

Due to worldwide climate change, Nepal is in high risks. Due to effect of climate change, the melting of ice and, GLOF in mountain region, landslides, flood and drought in hill region and non-seasonable flood, flash floods, and landslides in Terai regions due to climate change. The major effect has been seen in agriculture, water resources tourism, food security, health, water supply, livelihood and security. Due to problem of health sector and food security caused by climate change, the economic and social sector have been falling down (Acharya, 2024).

5.5.1 National Policies and Laws to Manage Environmental Security Challenges

The major Nepalese environmental security policies and laws are given in table 15.

Table 13: Major Environmental Security Related Policies and Laws of Nepal

S. N.	Name of Policies and laws	Date of Promulgation
1	Manab Nyaya Shastra	14th Century
2	Muluki Ain	1910 B.S.
3	Government of Nepal Act, 2004 B. S.	2004 B. S.
4	Interim Constitution of Nepal, 2007 B. S.	2007 B. S.
5	Civil Aviation Act, 1958	1958
6	The Constitution of Nepal, 1959	1959

7	Aquatic Animal; Protection Act, 1960,	1960
8	Explosive Act, 1961	1961
9	The Constitution of Nepal, 1962,	1962
10	Plant Protection Act, 1972,	1972
11	National Parks and Wildlife Conservation Act, 1973,	1973
12	Tourism Act, 1978,	1973
13	Mines and Mineral Act, 1985,	1978
14	Seed Act, 1988	1988
15	Town Development Act, 1988	1988
16	The Constitution of Kingdom of Nepal, 1990	1990
17	Water resources Act, 1992	1992
18	Forest Act, 1993	1993
19	Environment Protection Act, 1997	1997
20	Local Self Government Act, 1998	
21	Environment Protection Rules, 2054 BS	2054 BS
22	Interim Constitution of Nepal, 2007	2007
23	Constitution of Nepal, 2015	2015
24	The Penal Code, 2017	2017
25	Local Government Operation Act, 2017	2017
26	The Environment Protection Act, 2019	2019
27	The Environment Protection Rule, 2020	2020

Source: Self Prepared

5.5.1.1 Some Important Legal National Legal Instruments and Their provisions regarding Environmental Securities

Some Important Legal National Legal Instruments and their provisions regarding Environmental Securities are as follows

5.5.1.1.1 Constitution of Nepal

According to article 30 (1) of constitution of Nepal, the eat citizen have right to clean and healthy environment. According to article 30 (2) of constitution of Nepal. These is right to Compensation to victim of environmental pollution and degradation based on law as per article 30 (3) of constitution of Nepal, this article has not obstructed for necessary balance between environment and development (Ministry of Law, Justice and Parliamentary Affairs, p. 19).

5.5.1.1.2 National Laws

5.5.1.1.2.1 Environmental Protection Act, 2076 BS

In the preamble of this Act, this Act has been promulgated to protect the fundamental right of citizens, i.e. the right to live in a clean and healthy environment, to provide compensation for those who are victimized by pollution from polluters, to maintain a balance between the environment and development, to minimize the negative environmental impact on the nature, environment and bi-diversity and to face the challenges of climate change etc. Within this Act, the provisions regarding the formulation of plan related to environmental protection, preparing an environmental study report for comprehensive analysis of alternatives, area allocation and list of works, maintaining of standards and quality, accepting environmental study reports, not to implement proposals, additional impact assessment (EIA) Environmental

management plans, testing of environment, restriction, study of environment by government, controlling of pollutions, export and import of risky objects, establishment of laboratory, collection of samples, pollution control certificate, environment superintendent, functions, duties and rights of environment superintendent, providing information, making the adaptation plan, about minimization program, management of effect and threats of environment, determination of technical standard, participating in carbon trade, protection of national heritages, special provisions regarding environment conservation areas, formation of council, meetings of council, functions, duties and rights of council, fines and compensation, monitoring and superintendent etc. provisions have included (International Forum, 2020, pp.37-40).

5.5.1.1.2.2 Ancient Monument Conservation Act, 1956

This Act was published on 12 November 1956. It was promulgated with the aim of conserving ancient monuments, regulating the trade of archaeological objects, and preserving archaeological, historical, and artistic artifacts. The Act includes provisions for the government to declare ancient conservation areas, classify ancient monuments, determine ownership, and ensure the conservation and maintenance of privately owned monuments, as well as the conservation of ancient monuments and archaeological sites, among other measures (Nepal Law Commission, 2075).

5.5.1.1.3 National Policies

5.5.1.1.3.1 National Wetland Policy, 2003

Wetlands provide habitats to plants and animals. They play a significant role in the biodiversity of plants and animals. Nepal signed the Ramsar Convention on Wetlands

in 1987. In accordance with Article 3 (1) of the convention, Nepal promulgated the Wetland Conservation Act in 2003. Wetlands refer to rivers, lakes, water reservoirs, forests, and cultivated areas with water and its sources. In the context of Nepal, wetlands include land with a perennial source of water, swampy rice fields, waterlogged areas, and ponds. The goal of the Wetland Conservation Policy is to conserve and manage wetlands within the region for environmental management (Informal Sector Research and Study Centre, 2010, pp. 19-24)

5.5.1.1.3.2 National Environment Policy, 2019

There are dozens of achievements pertaining to environmental protection and management. The increase in population growth, unmanaged urbanization, the imbalance between development and the environment, weaknesses in unified and planned development, the inability to manage waste and pollution produced by hospitals, urban areas, and industrial regions, and environmental degradation due to the use of pesticides in agricultural fields are the serious environmental problems in Nepal (Ministry of Forest and Environment, 2019, p. 19)

5.5.1.1.3.4 National Climate Change Policy, 2019

National climate change policy was promulgated and accepted on 21 August 2019 AD. Nepal has been actively engaged in actions pertaining to management of climate change since, Nepal became state party of UNFCC. The government of Nepal prepared National Adaptation Program of Action (NAPA) and conducted climate change projects. The coordination Committee regarding Climate Change formed to cooperate between Climate Change Council and plan related to Climate Change in 2009 AD (Ministry of Forest and environment, 2019, pp. 35-36).

5.5.1.1.4 National Plan

5.5.1.1.4.1 Sixteenth National Plan (2024-2029)

According to the Sixteenth National Plan, changes in temperature, rainfall, and other climatic indicators have led to an increase in the melting of glaciers, a rise in the size and number of glacier lake outbursts, and an escalating threat in Nepal. In winter, droughts have been increasing, and rainfall has shifted to higher altitudes, coinciding with snowfall. Rainfall occurs in shorter periods, leads to terrible increase in landslides, floods, and other calamities. The source of water is diminishing, which affects food security, water availability, irrigation, energy sectors, and biological ecosystems.

Nepal is located between two large economic powers, China and India. The country's geological and ecological variations, natural beauty, abundant forests, biodiversity, water resources, historical and cultural heritage, as well as social norms, values, and practices, form the basis for a green, progressive, and inclusive economy.

The trans boundary strategy of the Sixteenth Plan has underscored on the upliftment of climate action and inclusiveness, internationalization of climate change issues, pollution control for a healthy society, sustainable environmental services and green development, biodiversity conservation for ecosystems, promotion of green economy for comparative advantages, mobilization of climate finance for green upliftment and inclusive development, mainstreaming and localization of environmental and climate change issues, prioritization of study and expansion of reforms in policy and institutional capacity.

The major programs of the Sixteenth Plan have incorporate promoting green economics, sustainable forest and biodiversity conservation programs, pollution

control for a healthy society, climate threat and disaster management, local adaptation programs, increasing access to international climate finance, and strengthening monitoring and evaluation systems. Programs to expand policy and institutional capacity are key components of this plan (Sixteenth National Plan, 2024, pp. 235-246).

5.5.1.1.5 Budget

5.5.1.1.5.1 Budget of 2024

The major programs pertaining to the environment in the 2024 budget include maintaining forest resources, balancing the environment through forest, biodiversity, and water management, and implementing the master plan for the protection of the Shiwalik (Chure) region with the participation of federal, provincial, and local levels. The President's Shiwalik (Chure) Program has been a part of this initiative. Wetland and pond conservation programs have been conducted in the Koshi, Gandaki, Karnali, and Mahakali regions as part of a comprehensive water resource management plan for sustainable soil and water management. In barren and unplanted forest areas, herbal plants and grass crops would be planted, and programs for agricultural forest development would be initiated to link forests with wildlife.

A biological corridor has been constructed in parks, forests, and buffer zones. Grassland and wetland management, wildlife habitat management, and measures to reduce the effects of wild animals have been undertaken as well. There has been cooperation with the provincial government to control wildfires, and forest management programs will be carried out in collaboration with federal, provincial, and local levels. The expansion of air quality measurement centers has been prioritized. Activities focused on environmental protection, climate change

adaptation, and mitigation have been mainstreamed. The national goal is to minimize and adapt to climate change through cooperation between the federal, provincial, and local levels, with a highlighting the improvement of meteorological and hydrological prediction systems for greater reliability. Scientific programs to address the impacts of climate change have been also be pursued as well (Sixteenth Plan, 2024, pp. 69-70).

Due to the change in trend of temperature, the agricultural productivity has been decreasing. The monsoon patterns, critical seasonable events, and inability of farmers to the adaptation of climate change are more responsible to agricultural productivity. The decrease in agricultural productivity increases the food insecurity and poverty. The effective implementation of climate change adaptation strategy is beneficial for increasing food security. The temporary migration and non-agricultural activities might assist to additional income of people which assist to decrease food insecurity as well (Kandel, et al., 2024, pp. 1-15).

The agricultural sector of Nepal has been facing more challenges in hill region of Nepal due to environmental degradation and climate change. The major problems are soil erosion, landslide, water scarcity, and loss of production of crops. There is decreasing productivity of soil due to use of chemical fertilizer and pesticides and increasing non-cultivated lands. The excessive use of chemical fertilizer also harms in water which is important to food security human health (Li et al, 2024, pp. 1-8). Nepal and other developing countries have been giving emphasis to making the climate change adaptation strategies to secure the agricultural productivity and food security (Kandel, et al., 2024, pp. 1-15).

Emergency Monsoon events have been increasing in Nepal year per year. In 21st June 2021, due to excessive heavy rainfall the human lives and property destructed in

Sindhupalchok and Manang district. More than 40 peoples were lost due to flood of Melamchi river of Sindhupalchok district (International Forum, 2021, p. 9).

Government of Nepal expressed committed to decrease water, land and air pollutions on the occasion of world environment day 2021 with action plans. Government of Nepal started to proceed environmental protection program with the slogan of "New thinking and creation, re-establishment of natural system". According to that concept there is prohibition of plastics bag less than weight of 40 microns, direct monitoring of water pollution, and give emphasis to use electric vehicles. To achieve the goal of sustainable development 2030 Nepal and other member countries of UN has been committed to protect environment (International Forum, 2021, p. 18).

Nepal remains in 10^{th} most risky country in global climate change risk index. From recent disaster of glacier of Solu Khumbu and the incidents of flood and landslides of 27 highways it is clear that Nepal have been facing serious climate change risks. Nepal approves Paris Agreement of Climate change and expressed commitment to limit global warming including pure-zero emission within 2045 AD (My Republica, 2024).

CHAPTER SIX

DATA ANALYSIS, INTERPRETATION AND RESEARCH FINDINGS

6.1 Analysis of Effectiveness of Nepal's Foreign Policy and Diplomacy to Address International, Regional and National Environmental Security Challenges

Nepal's foreign Policy has been guiding by charter of United Nations and international Law (The Constitution of Nepal). As per Article 30 sub article (1) of Constitution of Nepal every citizen has right to live in clean environment. The Article 30(2) guaranteed the compensation for the victim of environmental pollution. Furthermore, the Article 31(3) gave emphasis to balance between environment and development (Constitution of Nepal, 2015).

The main basis of foreign policy of Nepal is the constitutional provisions. Nepal has been emitting negligible amount of greenhouse gases (GHG), But Nepal is one of the most vulnerable countries of climate change. The immediate neighbors of Nepal i.e. China and India are highest emitters of Carbon. So, Nepal's geographical position with its Himalayas has been facing a critical impact of the Climate Change. The Nepal's foreign policy 2019 oriented towards to play effective role for controlling the negative impacts of climate change in Nepal. To achieve the goals of controlling and minimizing the harmful impacts of climate change, the Nepal's foreign policy 2019 aim to play influential role in the policy making level of United Nations and other international organizations.

The Nepal's foreign policy also give emphasis to achieve financial and technical assistance dealing with climate change. The Nepal's foreign policy also oriented to establish Nepal as a leading position regarding the issues of climate change among mountainous and other countries. Nepal's foreign policy aims to promote cooperative

approach to fulfill the sustainable development goals and minimize impacts of environmental destruction. Nepal's foreign policy also emphasized to promulgate the principles of environmental degradations including polluters pay principles and common but differentiated responsibilities principles. Nepal's foreign policy also oriented to strengthen sustainable mountainous economy. In addition, Nepal's foreign Policy oriented to accelerate towards a zero-carbon economy (Shrestha, 2021, pp. 33-34).

Sustainable development is one of the challenges of present era. United Nations have been leading major diplomatic initiatives to address the issues of sustainable development with the theme of "Think Globally, Act Locally". For sustainable development the developing and least developed countries need that development aid from the developed countries. To success the development diplomacy properly the cooperation between developed and developing countries have required (Shrestha, 2023, pp. 126-131). The foreign policy of Nepal guided by charter of United Nations and non-alignment policy. The main objectives of the foreign policies of Nepal are to maintain national integrity and independence and to increase prestige of Nepal in internationally. The one of the major objectives of Nepal's foreign policy is to play significant role in United Nations and other international organizations regarding security and development (Shrestha, 2023, pp. 126-131).

The Nepal's foreign policy also oriented to play active role in UN specialized organizations and programs. So, the UN's programs regarding environmental protection. Conservation and sustainable development also prioritized by Nepal. So, also has been actively engaged and participating in United Nations environmental programs, World Wildlife Forum, Climate Change related organizations and

programs, organizations regarding ecological protection, organizations and programs regarding bio-diversity conservation, etc.

In present context, the foreign policy of world has been changing day per day and it has been consisting communal and geo-political security and stability. The interrelationship and mutual relationships of the sovereign states are based on economic interdependence and win win outputs. The Nepal's foreign policy has grabbed the broad concepts of the development diplomacy which consists of policy dialogues and negotiations. To promote and protect these nations al interests Ministry of Foreign Affairs (MOFA) of Nepal has been committed (Shrestha, 2023, pp. 126-131). In present days MOFA expended its working region for policy and plan, development diplomacy, Overseas Nepalese affairs division and foreign missions as well. Furthermore, MOFA also has been focusing towards environmental security friendly i.e. green increasing oriented development economics (Shrestha, 2023, pp. 126-131).

For cooperation and coordination, the well managed concepts and clear framework should require. The management of foreign policy and diplomacy regarding issues should have established multilaterally, regionally and bilaterally. There are various multilateral international organizations including World Trade Organization, United Nations and theses institutions made hundreds of accords regarding environmental security i.e. United Nations Convention on Law of the Sea (UNCLOS) Paris Convention on Climate Change (PACC), etc. (Shrestha, 2023, pp. 126-131).

Nepal have been given emphasis on minimize the effect of climate change. Nepal have included 17 points policy strategy and foreign policy document. These policies include, policies, strategies, goals and programs to decrease the effects of protection,

promotion, and utilize the of natural resources, to achieve the goals of sustainable development, to control the environmental degradation and to control the effects of climate changes and to attract economic and technical support (Shrestha, 2023, pp. 126-131).

Nepal has to collect international assistance to manage the environmental degradation. According to some specialists Nepal needs national adaptation plans to control environmental security challenges. The development diplomacy has related with SDG launched by United Nations. The concepts of SDG put forward by UN. The 17 goals of the SDG were promulgated by involving developed countries and international organizations G20, UN, World Bank, ASIAN Development Bank, Organization for Economic Cooperation and Development (OECD), International Monetary Fund (IMF), International Finance Cooperation (IFC), World Trade Organizations (WTO).

According to recent study, the temperature of mountainous region of Nepal has been increasing by 1.8^0C. It is problematic issue for Nepal. The emissions of greenhouse gases also responsible for increasing of average annual temperature in Nepal. In present context Nepal can work regarding environmental security issues by cooperating with immediate neighbors, regional partners and global instructions and actors (Basnyat, 2023, pp. 133-136).

Furthermore, MOFA have to focus on in emphasizing multilateralism, involvement in the regional forum and regionalism, increase strategies of technology transfer, seeking of foreign aid, give priority to the private sector, networking, monitoring, and observation etc. (Shrestha, 2023, pp. 126-131). Nepal has to prepare capable actors to address the contextual issues regarding environmental security-, climate change and

economic diplomacy along with development diplomacy (Basnayat, 2023, pp. 133, 136).

6.1.1 Analysis of Effectiveness of Foreign Policy to Address International Environmental Security Challenges (With Special Reference to Climate Change)

Climate change is a dangerous threat to human civilization as nuclear war. The scientific research has explored that due to emission of GHG, the global warming has been occurring in the world. Global warming, uncertainty of monsoon, sea level rise etc. are the seen effects of the climate change. These impacts remain as the hindrance for the Sustainable development goals of the UN (Such as prosperity for all, termination of poverty and inequality, environmental protection and secure the health and justice until 2030). It is a state of emergency period, because the deadline for achievement of sustainable development goals keeps worldwide temperature in status with exception of continuing war, energy crisis and food insecurity (Malla, 2023, p.323).

During the 27th United Nations Climate Change Convention, the state parties of the UNFCCC, 1992 were committed to pay fines and established a compensation fund. But no state party has allocated compensation money for that fund. In other words, there are not fixed criteria for the compensation money of state parties. The most prosperous countries mentioned that they have a lack of money to pay compensation, but they do not have lack money for wars (For example, Afghanistan, Iraq, Syria, Libya and Ukraine, etc.). The annual conference, organized per year, is broadcast as a “make” or “break” meeting but the decision regarding demarcation of decreasing of the GHG emissions, establishment of a climate fund and technology transfer from

developed countries from developed countries to developing countries (Malla, 2023, p.323).

Politics play a vital role in decision-making. Especially for not taking seriously the conclusion of the IPCC, the subject matter of the political leadership has to be responsible. The greenhouse gases included by scientists as human activities (anthropogenic) are carbon dioxide, methane, Nitrous oxide, HCFC, HFC and CFC. The scientists found that the excessive increase in temperature is due to the cause of anthropogenic GHG. The IPCC suggested that to limit global warming within 1.5 Degree Celsius in pre-industrial level (Malla, 2023, p.323).

The IPCC warned that, if the present amount of average climate change continues, the average temperature of the world up to 2030 will become 1.5 degrees Celsius. The effect of climate change has shown all over the world, and it can be believed that political leadership who sits at a decisive level will perform well worth. It is necessary for critical understanding regarding what is done and what is not done by decision makers. For illustration, the plan of green fund and compensation is the “cutoff date “for the historical emission and context of climate crisis etc. (Malla, 2023, p.324).

At the 16th meeting of state parties of UNFCC organized in Cancun, Mexico, the permanent economic committee was established. After that, the climate fund, special climate change fund, the least developed countries course and adaptation fund etc. were declared. It is expected that rich countries contribute to these funds voluntarily. The climate fund aims to assist with clean energy, coastal conservation, flood management and climate change-friendly lifestyles of the risky communities of the world. The logo of “where is money?” is related to this fund (Malla, 2023, p.324-325).

The prosperous states have not fulfilled their promise to donate money to the climate fund voluntarily. For illustration, the rich countries promised that they would provide 100 billion US$ in a climate fund by 2020. Furthermore, the records of the World Bank (WB) show that it provided 31.7 billion US$ for climate action goals, but it was provided as debt for weak states, which were already facing a crisis to pay for their debt. In addition, the “burden of debt” has not become the serious agenda of state parties. In these meetings, the rich countries mentioned that they have a scarcity of resources to donate to the climate fund, but for them, there is no scarcity of money for war (Malla, 2023, p.324-325).

During the 19th meeting organized in Warshaw, Poland, of state parties of UNFCCC to resolve challenges of climate change by weak states, to address their demand, “Mechanism for Climate Profit and Loss and Compensation.” During the 27th meeting of the state parties of UNFCCC, the agreement to establish the “Climate profit and loss and compensation fund”, but additionally, within it, there was also an indirect agreement made not to proceed with any action against the failure of states to control over the carbon emissions. According to sources, there were some petitions filed against the failed states to control carbon emissions. Therefore, rich countries indirectly made that agreement to not take any action against the states who are unable to control carbon emissions (Malla, 2023, p.324-325). It means that the developing countries have left their legal claims against industrial states about historical emissions increasing.

UNFCCC is a practical agreement between industrial and developing countries like Nepal. The cut of date is not mentioned in the UNFCCC. If the cut of date is mentioned in it, the emitter's states become legally responsible. The cut of date has

not been determined yet, but it is mentioned that the cut for the annual meeting of UNFCC discussed it. The issue has not become north -South agenda (Malla, 2023, p.324-325).

The third meeting of state parties organized in Kyoto (Japan), adopted the Kyoto Protocol as the binding agreement. During that protocol, the state parties agreed to limit carbon emissions and decrease them. During the first determination period (2008-2012) of the Kyoto Protocol, the state parties decreased 12.5 % emissions through complex mechanisms including trade and clean development. And joint mechanism. The world leaders except member states of the European Union (EU) are unable to expand the second determination (2012-2020). The unclear face of the world leader was opened during the 15th meeting, organized in Copenhagen, Denmark. During that meeting, the unclear character of world leaders was disseminated. The Copenhagen conference was no binding political agreement. Therefore, no one was talking about the Copenhagen Conference (Malla, 2023, p.324-326).

After failure to keep continuous the Kyoto Protocol, the Paris Agreement was promulgated in 2015. The emission trade based on the Kyoto Protocol is replaced by the Nationally Determined Contributions (NDGs). However, NDGs are able to keep the temperature of Earth below 1.5 degrees Celsius or not, it is not predictable. According to a report of 130 countries (2020), the NDGs decrease emissions by only 7 percent (Malla, 2023, p. 326).

Based on anthropogenic emissions and climate change, and the precautionary principle of the environment, if the emissions of state parties of UNFCC are authentic, it is immoral. The harmlessness of historical emissions is a source of north-south

debate as well. The north-south debate is not a geographical debate, but it is an outcome of inequality of development of rich industrial states and poor developing states. The emissions after 1992 are made knowingly or with recklessness, which create strict liability against humanity and biological diversity. Providing the recognition to the “Climate profit-loss and compensation fund” is also an attempt to cause related to climate outside the courts. In the past, negotiations were conducted 17 times, there have been negotiations conducted 17 times negotiations conducted about climate change, but the world is still close to a crisis which is a threat to biological security. The political leaderships of the world are responsible for the failure of climate negotiations, and they have to be responsible for climate hazards (Malla, 2023, p. 326). The 26th meeting of state parties of UNFCCC, organized in Glasgow, Scotland, passed the “Glasgow Climate Declaration”, including a commitment to the termination of the methane emissions and the termination of deforestation up to 2050 (Malla, 2023, p. 326).

During the 27th meeting of state parties of UNFCCC, organized in Cairo, Egypt, the participants' states explained that the USA was close to war with Russia and China. Besides, the war between Russia and Ukraine transformed into the war between the USA and Russia. China has been continuing harmful military practices near the region of Taiwan. The North and South Koreas test their missiles on their borders of the Sea. Therefore, the crisis of climate change is equally dangerous as nuclear war (Malla, 2023, p. 327).

The environmental theories developed from the perspectives of environmental conservation and human rights are binding sources for the international, regional and national environmental laws. On the basis of relevant theories of environmental law,

the legal practitioners, judges, teachers of law and students have to study, teach, discuss and decide about cases regarding environmental security issues. The decision of environmental issues related to cases is more sensitive than other cases (Malla, 2023, p. 311).

The Stockholm Conference of Environment organized by the UN has verified as a historical 50+ years of its declaration. The good environmental practices developed after that conference. International, regional and national policies and laws regarding air, water, land, atmosphere, climate and biological diversity were promulgated, and some judicial decisions were also held after the Stockholm conference 1972. There are historical stages: Stockholm (1972) to the Rio Conference (1992) to the Johannesburg Conference (2002). Nevertheless, the proper outcomes matching with consciousness and concern have not developed yet (Malla, 2023, p. 320).

The Scot Holm 50 + Ceremony was organized from May 30 to June 2-2, 2022 in Sweden. During that program, The Stockholm and Lund University organized a one-day workshop program regarding security and sustainable development laws on May 30. However, the subject matter of facing of attacking of Russia by Ukraine was not explained in that program (Malla, 2023, p. 320).

The judiciary of Nepal, i.e. the Supreme Court, has to collect legal advice from the citizens. Besides, a permanent environmental bench has to be established in the supreme court of Nepal. There has developed a mentality in Nepal and other countries that the people who are involved in environmental conservation are anti-development. That mentality has to change. The current century is the time of the best environmental practice which controls the eco-environmental ways of controlling and appropriate coordination of strategies (Malla, 2023, p. 320).

6.2 Discussion of Research Findings

6.2.1 Nepal's Involvement in International Legal Instruments Regarding Environmental Security Issues

Nepal has ratified and become party of dozen international environmental security related policies and laws. By implementing these international environmental instruments Nepal can uplift its environmental security issues. Nepal have been actively participating in climate conferences and other environmental related international conference. The secretary general of United Nations Organization Antonio Guterres visited Nepal from 29 October to 1 November 2023 AD. During his visit addressed joint meeting of National Assembly and House of representative of Nepal. He spoke about climate change issues. He hailed Nepal's effort towards sustainable development and climate action (MOFA Bulletin Current Affairs, 2023, pp. 10-11).

6.2.2 Nepal's National Legal Provisions Regarding Environmental Security Issues

Nepal have categorized the right to clean environment as the fundamental law in Constitution of Nepal. The Environment Protection Act, 2076, Local Government Conduction Act, 2074, Environment Protection Act, 2053, Municipality Act, 2048, Local Autonomous Governance Act, 2055, Municipality Development Fund Act, 2053, Kathmandu Valley Development Corporation Act, 2045, Solid Waste (Management and Source Mobilization Act, 2044, national park and Wild Life Conservation Act, 2029, Water Act Resources Act, 2049, Forest Act, 2049, Electricity Act, 2049, Industrial Business Act, 2049, Vehicle Transportation Management Act, 2049, Public Road Act 2031, Aquatic Animal Protection Act, 2017, Ancient Monument Protection Act, 2013, Forest Act, 2019, Land and water Resources

Protection Act, 2039, are major Acts regarding environmental security issue of Nepal. There are dozens of rules and regulations including Environment Protection Act, 2054.

There are some policies regarding environmental security including National Environment Policy, 2019 and National Climate Change Policy, 2019, National Wetland Policy 2003, Solid Waste Management Policy. Five years plans of Nepal also mentioned about environmental security issues. Especially the provisions of environmental protection included after 9th five-year national plans (2054/055 B. S. to 2058/59 B. S.).

6.2.3 Nepal's Participation in International Summits/Conferences

6.2.3.1 Nepal's Participation in Climate Change Conferences

Nepal have been regularly participating in international conferences on climate change. Recently Nepal participated in Cop 29 under the leadership of President of Nepal, Ramchandra Poudel. The major agendum of Nepal in Cop 29 are Climate Finance, Special risk for mountains, Compensation to the environmental degradation, technology transfer and development and capacity development. Nepal presented its climate change related issues from the perspective of least developed countries (LDCs). The participation of Nepal at Cop 29 assist to prepare Nepal to make climate change adaptation plans. Nepal have been sharing its issues regarding climate change with world community and developed industrial states. Nepal also tried to attract world community about melting of glaciers and biodiversity loss during Cop 29. Nepal also have been facing challenges by greenhouse gases emissions and global warming. So, the main agenda of Nepal and other LDCs states was also "polluter

pays". Nepal also gave emphasis to control the extreme climatic events like flood, landslides (The Raising Nepal, 2024).

6.2.3.1.1 Conference on Parties (CoP) 29, Azerbaijan and Nepal

The Carbon trade, climate finance, decrease climate change, climate change adaptation, impacts of climate change in mountainous regions, gender equality, transparency and good governance are main agendas of Nepal for CoP 29 (My Republica Daily, 2024). The Nepal participated in Cop 29 under the leadership of Rt. Honorable President Ramchandra Poudel. Nepal tried to raise voice as a member of least developed countries. The participation and role of Nepal pave the way to make national policies and agendum regarding Carbon trade. But Nepal is comparatively new in the sector of Carbon trade and it have not sufficient knowledge and experiences. Nepal has to give emphasis to decrease emissions of fossil fuels by large emitters and providing climate finance through climate change adaptation program (Ghimire, 2024).

6.2.4 Role of Concern Ministries of Nepal Manage Environmental Security Issues

6.2.4.1 Role of Ministry of Foreign Affairs

The Ministry of Foreign Affairs might not be sufficient to address the environmental security related issues i. e. problems regarding sustainable development and development economics related functions. Especially MOFA have to focus on involve concerned ministries and non-state actors, concerned parties including foreign diplomatic missions to manage the various issues including environmental security issues as well (Shrestha, 2023, pp. 126-131). In context of Nepal, the interrelationship regarding geo-political and geo-economic aspects is very important while addressing the any issues. Due to specific geo-political location, Nepal has to keep a balance

relationship with its immediate neighbors as well. To maintain the interrelationship with the immediate neighbors and other geo-politically important powers, MOFA and other foreign diplomatic missions of Nepal have clear understanding pertaining to interrelationship and interdependence between economic, political, social, and environmental issues and functional relationship system between state and non-state actors (Shrestha, 2023, pp. 126-131). To achieve these tasks and play influential role the institutional capability and preparation should be strengthened.

The maximization of managerial capacity, new innovations, and practice of arts of negotiation are pre-conditions of development diplomacy. For development diplomacy the institutional efforts and preparation of MOFA are not sufficient. However, it has to be prioritized by other institutions and organizations i.e. Ministry of Forest and Environment, Ministry of Finance, Ministry of Industry, Ministry of Commerce and Supply, Office of Council of Minister, Nepal Tourism Board and other concern authorities. To achieve the goal of development diplomacy, the unified and effective coordination is required regarding research and development (Shrestha, 2023, pp. 126-131).

The characteristics of the national diplomacy rely on regional and global dynamism, which mostly changes due to the world affairs. For example, Sustainable Development Goal (SDG), Climate change and COVID-19, etc. (Shrestha, 2023, pp. 126-131).

6.2.4.2 Role of Ministry of Forest and Environment

The Ministry of Foreign Affairs should co-operate with Ministry of Finance, Ministry of Industry and Ministry of Forest and Environment to address the environmental security issues. The diplomats of MOFA and Ministry of Finance must become active

to address the problems of concerned issues. The sufficient economic fund and support of international community have also required to implement environmental security related instruments and its provisions (Basnyat, 2023, pp. 133-136).

6.2.5 Nepal's National Security Policy and Environmental Security

The National Security Policy, 2016 of Nepal has included the forest degradation and pollution under the sub topic challenge and threat related to disasters and natural resources. Furthermore, that document includes unmanaged and irregular exploitation of natural resources under the same sub-topic. In addition, this document includes climate change and environmental loss under challenge and threat pertaining to disasters and natural resources (National Defense Policy, 2016, pp. 13-14).

6.2.6 International and National Intergovernmental, Governmental and Non-Governmental Organizations Regarding Environmental Security Issues

Dozens of governmental and non-governmental organizations are active to protect the natural environment internationally and nationally. The United Nations Environment program was established in 1972 with the aims of to broadcast about natural environment, to develop agreement about environment internationally, to cooperate and coordinate environmental program with other institutions, to assist least developed countries for improve level of environment, and to research and study about environmental problems, etc. (Shrestha, 2010, p. 46).

There are other dozens of international and national organizations establish with the aim of working in environmental security issues including global environmental Facility, World Wildlife Fund (WWF), etc.

The international, regional and national environmental security related issues have been addressing by the global, regional and national environmental related organizations. The most of the environmental security related challenges has been addressing by the UN and its specialized organizations. The Some important global, regional and national environmental organizations which are active to resolve the global, regional and national environmental problems are as follow.

6.2.6.1 United Nations Organization (UNO)

UN become active for the environmental security issues after 1968. UN created a special subsidiary organ United Nations Environmental Program (UNED). UNEP adopted the world challenges for nature, set up the Brundtland commission on sustainable development. In 1997, the UN general Assembly adopted a special session to implement agenda 21.

6.2.6.2 United Nations Environmental Program (UNEP)

UNEP is the subsidiary organ of the UN which establish during Stockholm conference. UNEP studies environmental problems, elaborate program but the implementation is undertaken by united UN a s a whole. UNEP has a governing council composed of the representatives of 58 states selected geographically and elected by UN general assembly. UN Secretary General appoints the executive director of the UNEP.

UNEP has a global dimension and includes the large range of tasks regarding environmental security issues. UNEP's working method has mainly three stages. These are gathering information of existing problems and effort to solve them, chose a specific subject matter and present a report on governing council, defining objectives,

and strategies to achieve through undertaking particular action. And activities are chosen to receive support from environment fund; priority is given to that activities which can be coordinated with other activities etc.

The six major areas of UNEP are, human establishment, human and environmental health, terrestrial ecosystem, oceans, environment and development and natural disasters. UNEP's most important function can be seen on Stockholm Action Plan. There are two major areas of the UNEP. These are Environmental assessment and management supporting measures. UNEP also created an international information system (INFOTERA) in 1977. It contracts with the experts and cooperating with institution.

UNEP's mandate on management of the environment includes the regulation of the human activities that have measurable impact on environment, that lead to environmental law. UNEP developed a regional program and action plan on Sea. UNEP developed a Montevideo program for the development of the international environmental law.

UNEP has been active also in the development of non-binding instruments in the field of the environment. For, e.g. Cairo guidelines and principles for environmentally sound management of the hazardous wastes, London guidelines etc. Following and implementation of United Nations Convention on Environment and Development (UNCED), Agenda 21 etc. a new dimension to UNEP's lead role in the progressive development of international environmental law. With the expiration of Montevideo II, UNEP's governing council adopted a program for the development periodic review of environmental law for the first time on 21st century.

UNEP assist the developing countries like Nepal, to adopt to draft the national environmental laws with training judges. UNEP has marked influence or the protection of environmental law throughout the world.

6.2.6.3 Commission on Sustainable Development (CSD)

United nations General Assembly created the commission on Sustainable Development (CSD) as a functional commission of the economic and Social Council (ECOSOC) which follow the UNCED. CSD composes three members serving three years terms. The funds for CSD are provided by the UN's regular budget. CSSD examines the progress in implementing the agenda-21 at the international, regional and national level, explicitly guided by the principle of the Rio-Declaration. The commission monitors the integration of development and environment throughout the United Nations, coordination and decision making etc. CSD recommends the new arrangements for sustainable development. CSD receives reports from organs, organizations, programs and institutions. CSD reviews the commitment of financial implementation of agenda -21.

The United Nations Commission on Sustainable Development was established during Rio-Conference 1992. There are 53 members in this commission. They are elected from members of UN and UN specialized agencies. Within 53 members, 13 are from African countries, 11 from Asian countries, 10 from Latin America and Caribbean countries, 6 from east Europe, and 13 from another region. This commission mainly establish with the aim of implementation of Agenda -21 (Shrestha, 2010, pp. 47-48). CSD adopted a framework program for nine areas. these are, poverty and changing consumption pattern, financial resources and mechanism, education, science, transfer of environmentally sound technologies, decision making structures, health, human

settlement and fresh water, toxic chemicals and hazardous wastes. Land desertification, forest and bio-diversity, and atmosphere, ocean and all, kinds of seas. Presently, CSD sought to create a general dialogue between the governmental and non-government group on concerning sectors such as agriculture, industry, that contribute sustainable development.

6.2.6.4 Centre for Integrated Mountain development (ECIMOD)

Centre for Integrated Mountain development (ECIMOD) established with the aim of to promote the program regarding conservation of HKH region and to assist the development program with environmental adaptation in 1983, December 5 (Sopan Monthly, 2019, p.13).

CHAPTER SEVEN

SUMMARY AND CONCLUSION

7.1 Summary

The environmental security challenges are the challenges to the human beings and nature. Every country has is their own foreign policy and diplomacy. As it is an international common problem, the environmental problems can be resolved only through collective initiatives or by effort rather than efforts of individual countries. Therefore, there have to be proper, cooperation and coordination between all of the countries of the world to resolve the environmental security problems of the world. Whether the states are powerful or weak, all of them have to be serious about present environmental security challenges of the world.

The Second chapter outlined various theoretical and empirical literatures and identifies gap in the literatures which pertaining to the research topic and research gaps and re. As a theoretical prospective of the various theoretical aspects of the international relations i.e. realist, liberalist, constructivist, green lenses of international relations theories have been used to analyze the international and national environmental security challenges of Nepal.

The empirically various international and national issues regarding environmental security issue have been studied. the concepts of the foreign policy and diplomacy have studied so far.

The third chapter of the dissertation included research methods and methodology. In the chapter, the outlines of the research design, philosophical position in the research, ontology, epistemology, axiology in the research, nature and sources of data, data

collection tools and techniques, study area, data analysis procedure and ethical consideration. It also consists of the conceptual framework of the research work.

In the same way, the fourth chapter presented the dimensions of international and national environmental security challenges have described so far. In this chapter, the international and national environmental security challenges of Nepal have been accessed. As the international environmental security challenges, the global warning, greenhouse effects, climate change, air pollution, ozone layer depletion, water pollution, marine water pollution, land/soil pollution, chemical radioactive substance, acid rain, deforestation and desertification etc. have explained. As the national environmental issues. The climate change air pollution, biodiversity loss, noise pollution, carbon trade etc. have been explained in relation to the impact of climate chan.

In the fifth chapter, the research shows the international, regional and national initiatives to manage international and national environmental security challenges as analyzed critically. This chapter describes the international, regional and national instruments regarding environmental, regional and national issues. As the international legal instruments, international conventions, conferences, declarations, covenant, protocol, declarations, accord, agreement and summits, regarding international environmental security issues has been included. As the regional legal instruments, regional conventions, conferences, declarations, covenant, protocol, declarations, accord, agreement and summits, regarding international environmental security issues has been included. In addition, the regional as the national initiatives efforts to manage environmental security challenges, constitution, national laws, national policies, national plan, and national budget has been included. This chapter

also include importance of the Nepal's foreign policy and diplomacy to manage environmental security challenges of Nepal. Within it, Nepal's participation in international summits and conferences, regarding environmental securities issues has included. The conflict and environmental security of Nepal also have included in this chapter.

The Sixth chapter presents the data analysis, interpretation and discussion regarding international and national environmental security. This chapter analyze the international and international environmental security challenges of Nepal. It also discusses the management of international and national environmental security challenges. Nepal's involvement and status of enforcement of international legal instruments are some of the key aspects of the Nepal's national legal provisions regarding international environmental securities issues, its participation in international environmental summits and conferences, role of concerned ministries to manage environmental security challenges of Nepal i.e. role of Ministry of Foreign Affair and role of Ministry of Forest and Environment, Nepal's National Security and environmental policy and role of international and national governmental and non-organizations regarding environment security issues have been thoroughly interpreted

7.2 Conclusion

The conclusion is divided in to three parts the ***First Part*** embodies with international and national environmental security challenges and shortly explore the similarities and differences between international and national environmental challenges at global, regional, and national levels.

The major international environmental security issues including climate change, air pollution, ozone layer depletion, marine water pollution, land, soil, pollution, noise

pollution, deforestation and desertification, etc. have been explored so far. The United Nations and other international intergovernmental organizations and individual countries have been taking initiatives/efforts to control over the international environmental challenges. Nepal's major environmental security problems are climate change, melting of ice of mountainous region, deforestation, drought, water pollution, loss of biodiversity, soil erosion and pollution etc. Nepal has been affected by climate change. The country has been affected by climate change due to geographical complexities. Nepal is located in mountainous region. consequently, due to that fact the climate change may/might be counterproductive for Nepal. A number of problems are also created by glaciers and glacier lake outburst. There are hundreds of glacial lakes and 20 of them are riskiest. The major cause of these risks in the industrializations of developed countries.

The second Part of the conclusion examines how the international, regional and national initiatives/efforts contribute to manage international, regional and national environmental security challenges.

The hundreds of international legal instruments promulgated top control the environmental issues of the world. The major international legal instruments are Convention relating to the protection of the World Cultural and Natural Heritage, 1972 AD, Convention on International Trade in Endangered Species of World Fauna and Flora (CITES) 1973**,** Basel convention on the Control of trans boundary Movement of Hazardous Waste and their Disposal 1989, Convention on Biological Diversity, 1992**,** United Nations Framework Convention on Climate Change (UNFCCC) 1992 etc. Most of the international legal instruments regarding international environmental security are not ratified or approved by the great powers.

Therefore, the least developed countries have been facing most of the challenges due to climate change and other problems of environmental degradation Nepal has promulgated hundreds of Acts, rules/regulations, plans, policies to control the environmental security challenges. The environmental protection Act, Environmental Protection Policy, national climate Change policy, ancient monument conservation Act, etc., are major Acts and policies of Nepal. The emission of carbon should be decreased. Climate-related policies should target poor communities and maintain a balance between economic growth and environmental degradation. The government should focus on promulgating the polluter pays principle. The import of toxic substances and electronic waste should be reduced in Nepal. Local environmental committees should work to raise awareness among the public. The government have to manage and monitor the climate change adaptation strategy carefully. There have to proper coordination between government, non-government organizations and concerned authorities for food security.

The third Part of the conclusion explains the Why the Nepal's foreign policy and diplomacy have to effective to address international, regional and national environmental security challenges.

Nepal has been one of the members of UN since 1955. The foreign policy of Nepal has been guided by the charter of UN and international law. The environmental security risks facing by Nepal are global warming, climate change including monsoon events, melting of ice in the mountainous region, air pollution, water pollution, solid waste hazards, land pollution, noise pollution, GLOF etc. are internationally recognized. So, solve these environmental problems, it is better to share those

problems in international forums like United Nations and other regional organizations as well.

Nepal has been approved hundreds of International legal conventions, covenants, protocol, declarations, Accords, agreements, regarding environmental security. To implement and enforce these international legal instruments Nepal has to cooperate and coordinate with the international community through the tools of its foreign policy and diplomacy. Being a least developed country and victimized by the excessive emission of GHG of developed countries, Nepal have to cooperate and lobby internationally to get compensation by means of foreign policy and diplomacy. So, it is important to address, international and national environmental security challenges of Nepal through its foreign policy and diplomacy.

The MOFA of Nepal have to expand its institutional capacity and develop influential interactive and negotiation skills with state and non-state actors to play effective role for the international and national environmental security issues. The success of any institution depends upon new arts and capacity, skills and multi-dimensional latency and diplomacy of bureaucrats. To strengthen the environmental security through development diplomacy MOFA should institutional preparation and coordination.

Being a mountainous small states located between two excessive GHG emitters immediate neighbors China and India Nepal have to make its foreign policy and diplomacy more effective by making long term perspective and strategy for environmental security and climate change, developing of the evidence based information system, proper utilization of international facilities and funds on climate change, strengthening the capacity to implement international commitment on climate change, developing powerful negotiation and bargaining capacity, proper

management of natural resources, develop ability to address conventional environmental problems, to practice sustainable agricultural practices, proper implementation of international, regional and national environmental security related policies and laws, and strengthening stakeholder participation, developing sustainable technology transfer policy, enhancing environmental foreign policy, environmental diplomacy and climate diplomacy etc.

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