



Addis Ababa University
College of Law and Governance Studies



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COLLEGE OF LAW AND GOVERNANCE STUDIES
SCHOOL OF LAW GRADUATE PROGRAM

Master of Laws (LL, M) in Public International Law

**THE NORMATIVE STATUS OF THE PRECAUTIONARY PRINCIPLE
UNDER INTERNATIONAL LAW**

A thesis submitted in partial fulfillment of the requirements for the Award of
Master of Laws (LL, M) in Public International Law at School of Law, College of
Law and Governance Studies, Addis Ababa University

By
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Supervisor: Dr. Dereje Zeleke (Associate Professor of International Law)

June, 2018
Addis Ababa, Ethiopia

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DECLARATION

I, **DEJEN YEMANE MESSELE**, hereby declare that the thesis entitled as '*The Normative Status of the Precautionary Principle under International Law*' is my original work and that it has not been submitted for any degree or examination in any other university. Whenever other sources are used or quoted, they have been duly acknowledged.

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Dedicated To:

1. **Engocha Yemane Messele**, my lovely late sister
2. **Prime Minister Akililu Habtewold**
3. **Yosef Eshetu**, A 14 year teen who has been killed by the gunshot of the Agazi special security force of EPRDF in Woldia, on Tir 12, 2010 E.C

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ACRONYMS

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CIL	Customary International Law
CSD	Commission on Sustainable Development
EU	European Union
EEC	European Economic Community
FAO	United Nations Food and Agricultural Organization
fn	Foot Note Number
GATT	General Agreements on Trade and Tariff
GEF	Global Environmental Facility
GHGs	Greenhouse Gases
GMO	Genetically Modified Organism
HAN	Heidelberg Appeal Nederland Foundation
IAEA	International Atomic Energy Agency
Ibid	Ibidem (in the same place)
ICJ	International Court of Justice
IEG	International Environmental Governance
IEL	International Environmental Law
ILC	International Law Commission
IMO	International Maritime Organization
IOs	International Organizations
IPCC	Intergovernmental Panel on Climate Change
ITLOS	International Tribunal for the Law of the Sea
IUCN	International Union for the Conservation of Nature
MEAs	Multilateral Environmental Agreements
No.	Number
p.	Page
para.	Paragraph
PCIJ	Permanent Court of International Justice
POPs	Persistent Organic Pollutants
UN	United Nations
UNDP	United Nations Development Program

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNGA	United Nations General Assembly
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climate Change
UNECE	United Nation Economic Commission for Europe
UNEP	United Nations Environment Program
UNCLOS	United Nations Convention on the Law of the Sea
Vol.	Volume
VCLT	Vienna Convention on the Law of Treaty
WB	World Bank
WMO	World Meteorological Organization
WTO	World Trade Organization

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ABSTRACT

The Precautionary Principle, an anticipatory model of environmental protection, requires states to take proactive measures when there is a threat of environmental harm without waiting for scientific evidence to prove the causal link between activities, as causes, and environmental harms, as effects. The Principle which has first emerged in the domestic legal systems transferred into the international system and now it has acquired wider recognition in international environmental law. This research finds out the normative status of the Principle under international environmental law. To that end, it examines various international instruments in light with article 38 of the ICJ statute. Many environmental treaties which address global environmental problems, like ozone depletion, climate change, marine environment pollution and loss of bio-diversity, have recognized the Principle. Collective state practices as expressed in the resolutions and declarations of the UN and other international soft instruments establish the customary international law status of the Principle. States, in their litigations before international adjudications, supported their legal arguments on the basis of the Precautionary Principle and they have avowed the binding nature of the Principle. Accordingly, some international adjudication bodies confirmed the normative status of the Principle under international environmental law. Finally, the research has ascertained the normative status of the Precautionary Principle as a treaty norm due to its incorporation in many environmental treaties. It has also ascertained the Principle's normative status as a principle of customary international environmental law.

CHAPTER ONE

1. INTRODUCTION

1.1. Background

As a response for myriads of anthropogenic environmental problems the regime of international environmental governance has designed tools.¹ These tools are planned to protect the environment from the adverse impacts of ongoing human activities and to save humankind from the calamities of environmental problems.²

The international environmental law contains principles which guide the collective actions of states in the protection of the global environment.³ Permanent sovereignty over natural resources; prevention of trans-boundary environmental harms, polluter pays and precautionary principle are the most notable substantive principles developed under international environmental law.⁴ These principles are general and they would be applicable in the protection of all aspects of the environment.⁵ Their formation and development has been expedited through multilateral environmental treaties, custom, and other soft international instruments.⁶ The Precautionary Principle aims to avoid environmental harms before their materialization as it authorizes decision makers to take action against activities which may cause such harms. Compared to other principles, the normative status of the Principle, however, is most disputed.⁷

¹ The Rio-Declaration on Environment and Development, UNCED, 1992, Principle 12

² Thomas Gehring, "Treaty-Making and Treaty Evolution," in Daniel Bodansky, Jutta Brunnee and Ellen Hey (eds.), The Oxford Handbook of International Environmental Law (Oxford University Press, 2007) p.469-495

³ Elli Louka, International Environmental Law: Fairness, Effectiveness, and World Order (Cambridge University Press, New York, 2006), p.20

⁴ Philippe Sands, Principles Of International Environmental Law (Cambridge University Press, New York, 2nd ed., 2003) p.231

⁵ Ibid

⁶ Winfried Lang, "UN Principles and International Environmental Law", Max Plank Encyclopedia of Public International Law (Oxford University Press, 1999), vol.3, p.158-172; Scott La Franchi, "Surveying the Precautionary Principle's Ongoing Global Development: The Evolution of an Emergent Environmental Management Tool", Boston College Environmental Affairs Law Review (2005), vol. 32, no. 3, p.679

⁷ Malgosia Fitzmaurice, Contemporary issues in international environmental law (Edward Elgar Cheltenham, UK, 1999) p. 1; Nicolas de Sadeleer, The principles of prevention and precaution in international law: two heads of the same coin?, in Fitzmaurice, Ong, and Merkouris (ed.), Research Handbook on International Environmental law (Edward Elgar, 2010), p. 184

The doubt mostly attributed for the principles flourishing existence in soft laws and its appearance with different elements in various instruments.⁸

This research, therefore, examines the normative status of the Precautionary Principle in light of the sources of international law. To that end, the research explores environmental treaties, customary international law, general principles of law, judicial decisions and scholastic works to determine the normative status of the Precautionary Principle.

1.2. Statement of the Problem

The normative status of the Precautionary Principle in the realm of international environmental law is doubtful.⁹ This doubt creates an uneven application of proactive measures by states to save the environment from a possible, but uncertain harm ensued from economic activities. States which accept the normative status of the Precautionary Principle took proactive measures to protect the environment while others which contested the normative status of the principle procrastinated from taking measures.

The interconnected nature of the environment, in which territory cannot limit the harms from being transferred from one state to another state does not allow such uneven application of environmental principles.¹⁰ As the Precautionary Principle is created to rectify the business as usual trend of global environmental protection its uniform application by states is desirable. Such desire, however, works only when the normative status of the Principle is fully ascertained. Hence, the research responds to the uncertainty surrounding the normative status of the Precautionary Principle through exploring environmental treaties, CIL, general principles of law, judicial decisions and works of publicists.

⁸ Cárdenas Castañeda, "Call for Rethinking the Sources of International Law: Soft Law and the Other Side of the Coin", *Anuario Mexicano de Derecho Internacional* (2013), vol. 13, p.368,fn.53; Chu Xiaolin, "The Evolution of the Precautionary Principle", *China Oceans Law Review*(2007), vol.2007,no.1,p.346-47

⁹ Daniel Kazhdan, "Precautionary Pulp: "Pulp Mills" and the Evolving Dispute between International Tribunalsover the Reach of the Precautionary Principle", *University of California Ecology Law Quarterly*(2011),vol.38,no.1,p.527; Robert Percival, "Who's Afraid of the Precautionary Principle?", *Pace Environmental Law Review*(2005),vol.23,no.21,p.22-23

¹⁰ David Ong and Robert Wight, Maurice Sunkin (eds), *Source Book on Environmental Law*(Cavendish Publishing, London, 2nd ed., 2002),p.1

1.3. Objective of the Study

Ascertainment of the normative status of the Precautionary Principle under international environmental law is the objective of the thesis. To this end, the research:

1. Explores international soft laws incorporating the Precautionary Principle
2. Explores and examines environmental treaties incorporating the Precautionary Principle
3. Explores evidence on the customary international law status of the Principle
4. Examines the Principle's status as a general principle of law
5. Reviews the judicial decisions addressing the Principle

1.4. Research Questions

The research tries to respond to the following questions:

1. What Role is played by international soft laws in the development of the Precautionary Principle?
2. To what extent do environmental treaties incorporate the Precautionary Principle?
3. Is there evidence supporting the status of the Precautionary Principle as a principle of customary international law?
4. Could the Precautionary Principle be taken as a general principle of environmental law?
5. What status is the Precautionary Principle accorded by international judicial bodies?

1.5. Significance of the Study

The thesis may serve as an academic reference for students and instructors within the field of international environmental law to comprehend the evolution, development and normative status of the Precautionary Principle. It may also serve as a point of reference for further research undertakings on the area.

1.6. Research Methodology

The research is doctrinal legal research and primary and secondary sources of international law are explored in light of Article 38 of the ICJ statute.

1.7. Scope of the Study

The study is limited to the identification of the legal force [normative status] of the precautionary principle under international environmental law. It does not address the compliance and enforcement of the Principle by states.

1.8. Organization of the Thesis

The thesis is organized in five chapters. Chapter one discusses introductory and background information; chapter two is devoted for discussing an overview of global environmental problems and international environmental governance; chapter three discusses definition, origin and development, *raison detre*, and constituent elements of the Precautionary Principle. Chapter four examines the normative status of the precautionary principle in light of sources of international laws and, finally chapter five summarizes the findings of the research.

CHAPTER TWO

2. GLOBAL ENVIRONMENTAL PROBLEMS AND INTERNATIONAL ENVIRONMENTAL GOVERNANCE: AN OVERVIEW

2.1. Global Environmental Problems

Environmental problems are serious global issues in the 21st century and they resulted from compound of causes.¹¹ Identification of causes in their order of contribution for the problems thus constitutes an important step in the finding of solutions to these problems.¹² Though natural causes contribute for the environmental problems, human activities are the significant causes for the widespread environmental problems.¹³ Population, rate of consumption, technology, and behaviour could be taken as factors for human induced environmental problems.¹⁴

The complexity of the environment; scientific uncertainty; lack of political willingness and the economic costs of compliance are the major challenges towards addressing environmental problems at the global level.¹⁵ Sovereignty, territorial integrity, and non-intervention, consensual nature of treaties and exclusiveness of national jurisdiction to implement international obligations are the challenges associated with the legal regime.¹⁶ These challenges added with other problems hinder the global actors to take effective legal solution for the environmental problems.¹⁷ Ozone depletion, climate change, loss of bio-diversity, freshwater scarcity and marine environment pollution are some of the notable and pressing environmental problems.¹⁸ Three of them are discussed in the following sections, although global environmental problems are by no means limited only to these problems. It is just to show the magnitude of the problems.

¹¹ Daniel Bodansky, The Art and Craft of International Environmental Law(Harvard University Press, 2010), p.37

¹² Ibid

¹³ Ibid

¹⁴ Id, p.39

¹⁵ Philippe Sands, cited above at note 4,p.7-11; Daniel Bodansky, cited above at note 11, p.139-143

¹⁶ Phillippe Sands cited above at note 4, p.12-13

¹⁷ Id, p.7-13

¹⁸ Elli Louka, cited above at note 3, p.141-376; Philippe Sands, cited above at note 4, p.317-709;

2.1.1. Climate Change

Climate change is connected to the concentration of greenhouse gases in the atmosphere.¹⁹ Their natural effect is disrupted by human activity due to rising emissions of GHGs from the “consumption of fossil fuels (coal, oil and gas) along with intensive agriculture.”²⁰ Deforestation aggravates the concentration in reducing abstraction of carbon through carbon sinks.²¹ “Man-made chemicals (such as hydro-fluorocarbons, per-fluorocarbons, sulphur-hexafluoride and other fluorocarbon gases) are additional contributors to the growing concentration of GHGs.”²² The “greater concentration of these gases in the atmosphere generates an enhanced greenhouse effect, trapping more heat and raising temperatures at the earth’s surface.”²³ However, the climate naturally is subject to natural variability which worsens the problem coupled with the anthropogenic factors.²⁴

Variable and unstable weather changes across the regions; increasing stresses of vulnerable countries that are unable to adapt the change; destruction of coral reefs; water shortages in arid and semi-arid regions; sea level rise affecting islands and coastal areas and decrease in agricultural productions are the adverse impacts of climate change.²⁵ Abrupt, large-scale and catastrophic events associated with the uncertain threshold of temperature increase are also other anticipated harms.²⁶

Despite the disagreements in the scientific world towards the causes of climate change and even the existence of the problem itself, the international community has taken measures to address the climate change problem.²⁷ International response to climate change has begun in 1988 when the UNGA issued a resolution which made climate change as “a common concern of mankind.”²⁸ Subsequently the 1992 UNFCCC came into place with the very objective of

¹⁹ United Nations Framework Convention on Climate Change(hereafter the UNFCCC), 1992, Art 1(2)

²⁰ Farhana Yamin and Joanna Depledge, The International Climate Change Regime: A Guide to Rules, Institutions and Procedures(Cambridge University Press, 2004), p.20

²¹ Ibid

²² Ibid

²³ Ibid

²⁴ Ibid

²⁵ Id, p.21-22

²⁶ Id,p.22

²⁷ Id,p.23

²⁸ UNGA Resolution 43/53,1988; Farhana Yamin and Joanna Depledge, cited above at note 20,p.23-24

“stabilization of greenhouse gases concentrations in the atmosphere.”²⁹ The Kyoto Protocol subsequently adopted with specific commitments of emission reductions and flexibility mechanisms.³⁰ The recent global legislative measure on climate change is the 2015 Paris Climate Change Agreement and it devised nationally determined contributions of states to achieve the objective of “Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels.”³¹

2.1.2. Loss of Bio-Diversity

Bio-Diversity which comprises genetic, species and ecosystem diversities is highly threatened through human activities.³² “Land-use changes (such as agricultural expansion for growing food production, infrastructure development and deforestation); Pollution (air, water and marine); Unsustainable natural resource use (fisheries, mining, commercial wood extraction); climate change and invasive alien species are the man-made causes for the loss of bio-diversity.”³³

Conserving this diversity is a must “since Bio-diversity provides an actual and potential source of biological resources; contributes to the maintenance of the biosphere in a condition which supports human and other life and worth maintaining for non-scientific reasons of ethical and aesthetic value.”³⁴ The 1971 Ramsar Convention on Wetlands; the 1972 World Heritage; the 1973 CITES Convention ; the 1979 Convention on Migratory Species; the 1992 Convention on Biological Diversity and the 2000 Cartagena Protocol are among the basic global instruments adopted to address problems associated with Bio-Diversity. These instruments designs various regulatory mechanisms to protect the three categories of Bio-diversity.

For instance, the CITES Convention regulate trade in species to save endangered species from extinction.³⁵ It creates appendixes which includes species threatened with extinction whose trading is totally prohibited;³⁶ all species which are not necessarily threatened with extinction which might in the future become endangered unless strict regulation is done on their trading and

²⁹ UNFCCC, cited above at note 19, Art 2

³⁰ Kyoto Protocol to the United Nations Framework Convention on Climate Change, 1998, Arts. 3, 12 & 17

³¹ The Paris Agreement to the UNFCCC, 2015, Art 2(1(a))

³² Philippe Sands, cited above at note 4, p.499; Kevin J. Gaston, Biodiversity: An Introduction (Blackwell Publishing, 2nd ed. 2004), p.116

³³ Allister Slingenberg and Leon Braat, ‘Study on understanding the causes of biodiversity loss and the policy assessment framework’, ECORYS Research and Consulting (2009), p.33-34

³⁴ Philippe Sands, cited above at note 4, p.499-500

³⁵ Convention on International Trade in Endangered Species of Wild Fauna and Flora(hereafter CITES), 1973, Art 3

³⁶ CITES Convention, cited above at note 35, Art 4

categories of species through domestic legislations.³⁷ Marking, ranching and quotas are also techniques of the regulatory mechanisms created through the Convention.³⁸

2.1.3. Marine Environment Pollution

Human induced pollutions are the significant threats to the marine environment. The introduction of polluting substances into the marine environment affects the living resources including fish stocks.³⁹ Coastal sources, atmospheric deposition and offshore inputs are the sources for pollution of the marine environment.⁴⁰ “Direct outfall through pipes discharging contaminated water (from coastal industry, sewage discharges and development sites) and sources result from broad-scale activities (agriculture and forestry) which transported into the sea are the coastal sources of pollution.”⁴¹ Air emissions from planes and land-based pollutants are atmospheric sources of marine pollution.⁴² “Offshore marine pollution mainly emanates from vessel-source pollution.”⁴³

Marine environment pollution due to plastic waste inputs from land into the ocean became a contemporary global issue which threatens the marine environment.⁴⁴ “If nothing changes in our plastic consumption habits, by 2050 there will be more plastic in the oceans than there are fish”⁴⁵ This shows how serious the plastic accumulation in the oceans is. Marine life is so disproportionately impacted by plastic pollution. “Marine organisms due to their incapacity to distinguish plastic items from food eat plastics and they cannot digest the plastic and it fills their stomachs, preventing them from eating real food.”⁴⁶ “Birds and other larger animals often become trapped or ensnared in plastic bags, fishing line, and other debris.”⁴⁷ “When fishes who ate the plastic are caught, then the plastics will be passed on to human who consumes it.”⁴⁸

³⁷ Id, Art 5

³⁸ Id, Art 6

³⁹ UNCLOS, 1982, Art 194; GESAMP, Impact of Oil and Related Chemicals and Wastes on the Marine Environment, GESAMP Report and Studies No. 50 (London: IMO Publication 1993),p.3

⁴⁰ Philippe Sands, cited above at note 4, p.392; GESAMP, cited above note 39, p. 17

⁴¹ GESAMP, cited above note 39, p. 17.

⁴² Ibid

⁴³ Ibid

⁴⁴ Plastic Pollution Primer and Action Toolkit End Plastic Pollution, Earth Day, 2018, p.9-10

⁴⁵ Ibid

⁴⁶ Ibid

⁴⁷ Plastic Pollution Primer and Action Toolkit End Plastic Pollution, cited above at note 44,p.14

⁴⁸ Ibid

So far the IEG has devised legislative measures to avert the problem associated with the marine environment. The 1954 International Convention for the Prevention of Pollution of the Sea by Oil; the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter ; the 1972 Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft ; the 1973 Convention for the prevention of pollution from ships; the 1974 Convention for the Prevention of Marine Pollution from Land-based Sources; the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic and the 1982 UNCLOS are some of the international instruments adopted to respond for the marine environment pollution. All of these legal instruments developed norms to be followed by states while interacting with the marine environment. UNCLOS for example requires states to “prevent, reduce and control marine pollution; and to conserve and manage marine living resources.”⁴⁹ “The duty not to cause damage to other states”,⁵⁰ and the “duty to prevent sources of marine environment pollution”⁵¹ are substantive principles enshrined in the convention. “Notifying imminent or actual damage”,⁵² “developing pollution contingency plans and scientific research”,⁵³ “providing technical assistance”,⁵⁴ and “monitoring and carrying out of environmental assessments of certain activities”⁵⁵ are techniques to implement the substantive principles and standards.

2.2. International Environmental Governance

The global environmental problems discussed in the preceding parts surpassed the level where individual states would be able to respond in their own efforts and measures.⁵⁶ The interconnectedness of the global environment and its associated challenges needed a coherent system of international environmental governance.⁵⁷ For such claims strong environmental laws and institutions are important. Within IEG there are different sector based regimes which

⁴⁹ UNCLOS, cited above at note 39, Art 194

⁵⁰ Id, Art 194(2)

⁵¹ Id, Art 194(3)

⁵² Id, 198-200

⁵³ Ibid

⁵⁴ Id, 202-203

⁵⁵ Id, 204-206

⁵⁶ David Ong and Robert Wight, cited above at note 10, p.1; Elli Louka, cited above at note 3, p.10-13; Philippe Sands, cited above at note 4, p.71-73

⁵⁷ David Ong and Robert Wight, cited above at note 10, p.1; Elli Louka, cited above at note 3, p.10-13; Philippe Sands, cited above at note 4, p.71-73

regulate specific environmental problems. Climate change, marine environment, Biological diversity, Ozone, chemicals and wastes are some of the regimes which constitute IEG. These specific regimes do have institutions assigned for administration and follow up purposes. They do have laws which regulate the activities of states in their relation with the specific environmental regime. The institutional, legislative and judicial frameworks, as briefly stated in the following sub sections, are the vital components of IEG.

2.2.1. Institutional Aspect

International organizations and intergovernmental organizations represent the institutional aspect of the IEG.⁵⁸ These bodies may be established at global, regional and sub-regional levels.⁵⁹ These bodies do have “competencies or responsibility for the development, application or enforcement of international environmental obligations, including functions related to standard-setting.”⁶⁰ Global organisations associated with the UN and its specialized agencies; regional organisations outside the UN system; and organisations established by environmental and other treaties are the general categories of these institutions.⁶¹ The proliferation of institutions tasked with environmental issues has increased since 1945 which was not the case in earlier periods.⁶²

Among other things, these institutions play functions such as: forum for cooperation and coordination among states on environmental issues; provision of information; contribute to the development of international legal obligations, including soft laws; ensuring implementation and compliance with international environmental laws and serving as venues for settlement of disputes.⁶³

The account of the development of IEL depicts the significant and unmatched role played by the United Nations.⁶⁴ It is since 1945 that IEL has begun its formal foundation.⁶⁵ UN has convened

⁵⁸ Philippe Sands, cited above at note 4, p.73

⁵⁹ Ibid

⁶⁰ Id, p.76-78

⁶¹ Id, p.73

⁶² Id, p.74

⁶³ Philippe Sands, cited above at note 4, p.76-78

⁶⁴ Philippe Sands, cited above at note 4, p.31; Luis Barrionuevo, “The Work of the International Law Commission in the Field of International Environmental Law”, Boston College Environmental Affairs Law Review (2005) vol. 32, no.2, p.494

⁶⁵ Edith Brown Weiss, ‘the evolution of international environmental law’, Japanese Yearbook of International Law (2011), vl. 54, p.5-7

international conferences which heralded the global attention to environment.⁶⁶ The landmarking conference in this regard was the 1972 UN Conference on Human Environment which for the first time dealt the relationship between Human and the environment.⁶⁷ The Stockholm declaration, the outcome document of the conference, has produced fundamental environmental principles which still have relevance in the protection of the environment.⁶⁸ The second but the most significant conference organized by the UN was the 1992 UN Conference on environment and development. Beyond its role in the convening of the two global conferences on the environment UN establish UNEP, permanent intergovernmental organization vested with global environmental facilitation.⁶⁹ It has been delegated by governments “to promote and coordinate environmental activities within the UN system.”⁷⁰

The UNEP has played follow-up role to the Stockholm conference outcomes having relevance to the environment.⁷¹ It has initiated a number of international agreements aiming to address emerging environmental issues.⁷² It has also brought global environmental problems to the discussion table of international plane along with NGOs and scientific communities.⁷³ It convened the 1977 international conference on desertification, and promoted international agreements on the protection of migratory species and the World Climate Program.⁷⁴ It has also developed the Montreal Protocol, the Convention on Biological Diversity, and the Convention to Combat Desertification.⁷⁵ At the national level, it has helped states to develop environmental legislation and institutions.⁷⁶ Besides there are countless institutions within and outside the UN System tasked with different environmental functions.⁷⁷

⁶⁶ Philippe Sands, cited above at note 4, p.31

⁶⁷ Stockholm Conference on Human Environment, UN, 1972

⁶⁸ Ibid

⁶⁹ The UN General Assembly Resolution No. 2398 (XXIII), 3rd December 1968

⁷⁰ Carol Annette Petsonk, “The Role of the United Nations Environment Programme in the Development of International Environmental Law”, American University International Law Review(1990), vol. 5, no 2, p.355

⁷¹ Ivar Baste, Maria Ivanova and Bernice Lee, Global Responses, Chapter 17,p. 461

⁷² Id, p. 356

⁷³ James Gustave Speth , The Global Environmental Agenda: Origins and Prospects,p.355-370

⁷⁴ Carol Annette Petsonk, cited above at note 70, p.355

⁷⁴ Ivar Baste, Maria Ivanova and Bernice Lee, cited above at note 71,p. 461

⁷⁵ Id,357

⁷⁶ Ivar Baste, Maria Ivanova and Bernice Lee, cited above at note 71,p. 365

⁷⁷ To name few: UNDP (1965), CSD (1992) , FAO (1945), WMO, WHO (1948) IPCC(1988), UNESCO(1945), IAEA(1957), IMO(1948),WB, GEF(1991)

2.2.2 Legislative Aspects

The legislative aspect of IEG provides the creation of principles which impose binding obligations over actors to conform to certain norms of behaviour towards the environment.⁷⁸ Creation of such principles in international environmental law has gradually developed in different historical periods.⁷⁹ The pre 1945, 1945 to 1972, 1972 to 1992 and post 1992 periods have contributed for the creation of various bilateral and multilateral environmental treaties covering a varieties of environmental issues.⁸⁰ International environmental treaties have changed their form throughout the passage of these different epochs.⁸¹ At the outset agreements were in the form of treaties designed for specific environmental problems, addressing a single issue.⁸² Later on, environmental agreements emerged in the form of framework conventions which cover broader environmental issues in a clustered way.⁸³ Subsequent agreements or protocols have been adopted for a detail determination based on the broader framework conventions.⁸⁴

Despite the earliest legislative undertakings taken to address various environmental problems, collective legal responses have started in the 1972 when UN convened the United Nations Conference on Human Environment.⁸⁵ This conference has produced the Stockholm declaration on Human Environment.⁸⁶ It is this declaration which recognize humans' right to have quality environment;⁸⁷ rights of future generations;⁸⁸ sovereign rights of states to exploit their natural resources⁸⁹ and states responsibility not to cause damage to the environment of other states or to areas beyond their national jurisdiction.⁹⁰ 1972 London dumping convention, the 1973 CITES convention, the MARPOL convention with regard to pollution by ships, and the LRTAP

⁷⁸ Philippe Sands, cited above at note 4, p.12

⁷⁹ Id, p. 27

⁸⁰ Id, p. 27-69

⁸¹ Ibid

⁸² Ibid

⁸³ Thomas Ghering, cited above at note 2, p.470-75

⁸⁴ Ibid

⁸⁵ Eli Louka, cited above at note 3, p. 30, fn.136

⁸⁶ The Stockholm Declaration, cited above at note 67

⁸⁷ Id, Principle 1

⁸⁸ Id, Principle 2

⁸⁹ Id, Principle 21

⁹⁰ Ibid

convention on transboundary air pollution were environmental instruments produced subsequent to the Stockholm declaration.⁹¹

The 1982 World Charter for Nature, as drafted by IUCN, adopted by UNGA just a decade after the Stockholm declaration.⁹² It incorporates general principles which dictate that “nature must be respected and that the habitat and life forms must be safeguarded to ensure their survival.”⁹³ Then another important report, Our Common Future, has been produced by the World Commission in 1987.⁹⁴ Among other things, the report has gave the birth of the principle of sustainable development which was later developed through subsequent instruments.⁹⁵

Another milestone in the regime of IEG is the 1992 UNCED which produced important instruments which shaped the development of IEL.⁹⁶ The Rio-Declaration on environment and development, Agenda 21, the non-binding principles on the sustainable development of all types of forest, the treaty on Biological Diversity, and the treaty on Climate Change are the outcomes of the Rio conference.⁹⁷ The Rio-Declaration reaffirms the centrality of human to the environment⁹⁸, invents common but differentiated responsibilities of states⁹⁹, articulates the precautionary principle¹⁰⁰, recognizes the polluter pays principle¹⁰¹, and reaffirms “sovereignty of states over natural resources and their responsibility not to cause damage to the environment of other states or areas beyond their national jurisdictions.”¹⁰² In general, the Rio conference acclaimed as a significant step in IEG due to its attempt in finding a common ground between developed and developing nations and through its attempt to balance environment and development using the principle of sustainable development.¹⁰³ Since the Rio-conference, patchworks of environmental treaties and other soft instruments have been adopted.¹⁰⁴

⁹¹ Eli Louka, cited above at note 3, p. 31

⁹² World Charter for Nature, UNGA Resolution 37/7, Oct. 28, 1982,

⁹³ Ibid

⁹⁴ World Commission on Environment and Development, Our Common Future (Brundtland Report), 1987

⁹⁵ Elli Louka, cited above at note 3,p. 32

⁹⁶ Ibid

⁹⁷ Id, p.32, fns.143-147

⁹⁸ Rio-Declaration, cited above at note 1, Principle 2

⁹⁹ Id, Principle 7

¹⁰⁰ Id, Principle 15

¹⁰¹ Id, Principle 13

¹⁰² Id, Principle 2

¹⁰³ Elli Louka, cited above at note 3, p.38

¹⁰⁴ Edith Brown, cited above at note 65,p.12

2.2.3. Judicial Aspects

International adjudication as one of the peaceful dispute settlement forum has been utilized for settlement of environmental disputes since earlier periods.¹⁰⁵ States mostly disputed over the utilization of shared natural resources and through the transboundary effect of pollutions arisen from the territory of a polluting state.¹⁰⁶ The adjudicative function has assumed increasing importance in interpreting and applying and even developing the principles of international environmental law since earlier periods.¹⁰⁷ Adjudication of environmental disputes have been started through Arbitration.¹⁰⁸ History of environmental disputes in the context of international arbitration starts in 1893, with *Pacific Fur Seal Arbitration*¹⁰⁹, a dispute between USA and UK, as to fishing of seals and delimitation of territorial waters. US has argued that “protection of seals was an international duty, and killing of seals in water, is destroying the ecosystem of the water.”¹¹⁰ Tribunal decided in favor of UK.¹¹¹ The case has brought the idea of protection of high seas, fishing stocks and species living in the water to the attention of states.¹¹²

*Trail-Smelter Arbitration*¹¹³ (US vs Canada) was another most important earlier case which has shaped international environmental law.¹¹⁴ Two principles originated from the award, namely, state’s duty to prevent transboundary environmental harm and the polluter pays principle. This case is thus a precursor to Principle 21 of Stockholm Declaration which states that “sovereign states may not allow their territory to be used to cause harm to the environment of other states or the global commons.”¹¹⁵ ICJ reaffirmed the principle laid down in the *Trial Smelter case* while dispensing its judgment in the *Corfu Channel Case (UK v. Albania)* in 1949 and it held that

¹⁰⁵ Philippe Sands, cited above at note 4,p. 173

¹⁰⁶ Ibid

¹⁰⁷ Id, p.13

¹⁰⁸ Id,p.173

¹⁰⁹ Fur Seals Arbitration (Great Britain v. United States), 1893; Philippe Sands, cited above at note 4,p. 173

¹¹⁰ Ibid; Philippe Sands, cited above at note 4 ,p. 173

¹¹¹ Ibid

¹¹² Ibid

¹¹³ Trail-Smelter Arbitration (US vs Canada), Ad Hoc International Tribunal, UN Reports of Arbitral Award, March 11,1941,

¹¹⁴ Philippe Sands, cited above at note 4,p. 173

¹¹⁵ Stockholm Declaration cited above at note 67, principle 21

“every state has the obligation not to allow its territory to be used for acts contrary to the rights of other states.”¹¹⁶ This concept has been subscribed by subsequent environmental legislations.¹¹⁷

*Lake Lanoux case*¹¹⁸ (*Spain vs France*) was another earlier environmental dispute brought to tribunal for adjudication. This case contributed to the inception of the concept of prior notifications of activities among states who shared natural resources.¹¹⁹

In its advisory opinion on the *legality of Nuclear weapons case*¹²⁰, ICJ has reaffirmed the arbitral award given in the *Trial Smelter and Corfu Channel* cases and it has stated that “The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control are part of the corpus of international environmental law”¹²¹ Despite these earlier adjudications there are other environmental disputes adjudicated before ICJ, ITLOS and WTO.¹²²

¹¹⁶ *Corfu Channel Case*, (UK v. Albania), ICJ Reports , 1949, para 22; Elli Louka, cited above at note 3, p. 39,fn.194

¹¹⁷ Elli Louka, cited above at note 3, p.39,fn.195; Principle 21 of the Stockholm declaration

¹¹⁸ *Lac Lanoux Arbitration*, (France v. Spain), UN Reports of International Arbitral awards 281, 1957

¹¹⁹ Elli Louka, cited above at note 3, p. 42, fn. 2010

¹²⁰ *Legality of the Threat or Use of Nuclear Weapons*, (Advisory Opinion), ICJ Reports, 1996

¹²¹ *Legality of the Threat or Use of Nuclear Weapons*, (Advisory Opinion), ICJ Reports, 1996, para 29; Elli Louka, p.45,fn.226

¹²² See the discussions under 4.4 below

CHAPTER THREE

3. THE PRECAUTIONARY PRINCIPLE

3.1. Definition

There is no single unanimous definition given to the Precautionary Principle.¹²³ Construction of definition to the Principle is possible only through the contextual and conceptual understandings of the Principle as appeared in various instruments.¹²⁴ This strategy is known by the name ‘syntactical’ approach.¹²⁵ The approach involves examination of various textual formulations of the precautionary principle in order to extract common elements of the Principle.¹²⁶ It thus requires explorations of instruments which adopt the Principle and views of scholars who have constructed definition thereof.

Sands, for instance, defines the Precautionary Principle as “rather than awaiting certainty, decision makers should act in anticipation of environmental harm to ensure that this harm does not occur.”¹²⁷ Taking action in anticipation of environmental harm without waiting certainty of harms is at the center of Sands’s definition. Others define the Principle as “a substance or activity imposing a threat to the environment is prevented from adversely affecting the environment, even if there is no conclusive scientific proof linking that particular substance or activity to environmental damage.”¹²⁸ This definition comprises imposition of threat to environment, and absence of conclusive scientific evidence as to the causal relationship between the activity and the environmental harm as elements of the Precautionary Principle. Others also define the Principle as “the idea that inaction is preferable to action in circumstances where

¹²³Per Sandin, “Dimensions of the Precautionary Principle”, Human and Ecological Risk Assessment Journal(1999), vol.5, no.5, p.890; Jon Van Dyke During, the evolution and international acceptance of the Precautionary Principle, D. Caron and H.Scheiber (eds.), Bringing New Law to Ocean Waters(Koninklijke Brill N.V., the Netherlands, 2004),p.358,

¹²⁴ Nicolas de Sadeleer, cited above at note 7, p.186

¹²⁵Pereira Di Salvo & Leigh Raymond, “Defining the precautionary principle: an empirical analysis of elite discourse”, Environmental Politics(2010), vol.19,no.1,p.89

¹²⁶ Ibid

¹²⁷ Philippe Sands, cited above at note 4, p.211-213

¹²⁸ James Cameron and Juli Abouchar, The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment, Boston College International and Comparative Law Review(1991),vol.14, no.1,p.2

taking action could result in serious or irreversible harm.”¹²⁹ From this definition rather than allowing activities which might cause irreversible harm pausing its proceeding is taken as inaction and preferable option. Sandin defines the Principle in this way “If there is a threat, which is uncertain, then some kind of action is mandatory.”¹³⁰ Uncertain threats and mandatory action to avoid such threats are the central points in Sandin’s definition.

The Rio-Declaration, the most cited reference in the study of the Precautionary Principle, states that “where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”¹³¹ This statement comprises a qualified threat of environmental damage; prohibition of postponement of measures in the absence of full scientific certainty and cost effectiveness of measures (balancing costs of action and inaction). The Wingspread statement states that “when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. The proponent of the activity should bear the burden of proof.”¹³² The statement comprises threats to environment; lack of casual relationship between the causes and the anticipated harm and the need for proofing of harmlessness of activities as defining elements of the Principle.

Therefore, Precautionary Principle can be defined as an environmental law principle applicable in conditions of uncertainties that authorizes decision makers to decide in favor of the environment without waiting for scientific evidence proving casual linkage between activities and effects. So its central point is decision making in the face of scientific uncertainty as to the possible environmental harms to be caused by economic activities. Differently speaking, it dictates that if “an activity or innovation presents a threat of harm to the environment measures

¹²⁹ Scott La Franchi, “Surveying the Precautionary Principle's Ongoing Global Development: The Evolution of an Emergent Environmental Management Tool”, Boston College Environmental Affairs Law Review(2005), vol.32,no.3, p. 679

¹³⁰ Per Sandin, “Dimensions of the Precautionary Principle”, Human and Ecological Risk Assessment Journal(1999), vol.5, no.5, p.898

¹³¹ Rio-Declaration, cited above at note 1 ,principle 15

¹³² Wingspread Statement, 1998

such as delaying or impeding the introduction of a new action or steps to avoid harm should be taken, even if cause and effect have not been firmly established.”¹³³

There are also terminological debates as to whether labelling precaution as a ‘principle’ or as ‘an approach’ has significant difference towards its normative status.¹³⁴ The arguments on the terminological usages thus are directed to the normative implications of the terms. Those who argue that precaution is not a legal norm favor the term ‘precautionary approach’ while those who accept the legal force of the precaution favor to the ‘precautionary Principle’.¹³⁵ However, such attempts to give a different normative status on the basis of terminological difference remain a semantic squabble since the normative status of the Precautionary principle or approach is dependent, not on the terminology, on the fulfillment of components or criteria’s developed in IEL.¹³⁶ Thus, this paper uses the terms precautionary principle and precautionary approach interchangeably.

3.2. Origin and Development

Literature in the area of environmental protection and human health maintains that Precautionary Principle has its origin in West Germany by the name “*Vorsorgeprinzip*”, translated as ‘foresight principle’.¹³⁷ The principle was one of the five underlying principles ingrained onto the West German environmental policy¹³⁸ and it has been placed to justify the implementation of policies to avert acid rain, global warming and pollution of the North Sea.¹³⁹

¹³³ Tee Guidotti, “Applying the Precautionary Principle”, Archives of Environmental & Occupational Health(2012), vol. 67, no. 2 , p. 63

¹³⁴ Nicolas de Sadeleer, cited above at note 7, p.186- 87

¹³⁵ Ibid

¹³⁶ See the discussion under 3.4 below

¹³⁷ Pereira Di Salvo & Leigh Raymond, “Defining the precautionary principle: an empirical analysis of elite discourse”, *Environmental Politics*(2010), vol.19,no.1,p.86; Warwick Gullett, “Environmental protection and the precautionary principle: a response to scientific uncertainty in environmental management”, Environmental and Planning Law Journal (University of Wollongong, 1997), vol.14, no.1, p.25; Agne Sirinskiene, “The status of precautionary principle: moving towards a rule of customary”, Jurisprudence(2009) vol.4,no.118,p.349–364; Peter H. Sand, “the Precautionary Principle: A European Perspective”, *Human and Ecological Risk Assessment: An International Journal* (2000), vol.6, no.3, p. 448

¹³⁸ Others were the Polluter Pays Principle (*Verursacherprinzip*) Consensus (*Kooperation*), the Principle of Proportionality in cost and gain (*Wirtschaftliche prinzip*) and the Common Burden Principle (*Gemeinlast Prinzip*). Adams listed out these principles quoted Boehmer-Christiansen. Mags Adams , “The precautionary principle and the rhetoric behind it”, Journal of Risk Research(2002),vol.5, no.4,p. 301-316,

¹³⁹ Andrew Jordan & Timothy O’Riordan ,“The precautionary principle: a legal and policy history,” in Marco Martuzzi and Joel A. Tickner(ed.) ,The precautionary principle: protecting public health, the environment and the future of our children, (World Health Organization, 2004) p.33

Nonetheless the early use of the principle goes back to 1854 when Dr. John Snow recommended removing the handle of a London water pump in order to stop a cholera epidemic.¹⁴⁰

The West German environmental policy which provides the *Vorsorgeprinzip* reads as “Environmental policy is not fully accomplished by warning off imminent hazards and the elimination of damage which occurred. Precautionary environmental policy requires that natural resources are protected and demands on them are made with care.”¹⁴¹

The principle’s foundation in the realm of international law date back to the Stockholm declaration. The declaration has been taken as a pioneer in the precautionary thinking and ¹⁴² its recognition of “the need to safeguard natural resources through careful planning and management for the benefit of future generations”¹⁴³ has prompted such claims.¹⁴⁴ It is, however, the 1982 World Charter for Nature which, for the first time, espoused the precautionary principle, at least implicitly at the international plane. The part of the charter dealing with this concept speaks of “activities likely to pose a significant risk to nature should not proceed where potential adverse effects are not fully understood.”¹⁴⁵ The explicit mentioning of the precautionary principle has been taking place in the 1985 Vienna Convention for the protection of Ozone Layer and the 1987 and subsequent ministerial declarations for the protection of the North Sea.¹⁴⁶

The 1985 Vienna Convention for the protection of the Ozone Layer mentioned the precautionary principle in its preamble.¹⁴⁷ Subsequent to the Vienna Convention for the protection of the Ozone Layer, the successive ministerial declarations on the protection of the North Sea have broadly accepted the precautionary principle as a measure to protect the North Sea from damaging effects of the most dangerous substances. For reasons of their incorporation of the

¹⁴⁰ Axel Luttenbergerger, “The Role of Precautionary Principle in Environmental Protection of Coastal Area”, Tourism and Hospitality Industry, Congress Proceedings Trends in Tourism and Hospitality Industry, Scientific paper (2014), p.71.

¹⁴¹ Ibid.

¹⁴² Warwick Gullett, “Environmental protection and the precautionary principle: a response to scientific uncertainty in environmental management”, Environmental and Planning Law Journal (University of Wollongong, 1997), vol.14, no.1, p.55

¹⁴³ Stockholm Declaration, cited above at note 67, preamble

¹⁴⁴ Warwick Gullett, cited above at note 142, p. 55.

¹⁴⁵ World Charter for Nature, cited above at note 92, Art 1

¹⁴⁶ Didier Bourguignon, “The precautionary principle: Definitions, applications and governance”, European Parliamentary Research Service(2016), p.4-5

¹⁴⁷ Vienna Convention for the protection of the Ozone Layer, 1985, preamble

principle into their conference outcomes, the then ministerial declarations for the protection of the North Sea are claimed as origins for wider recognition and rise of the principle to the international plane. Due to such historical accounts, the fields of marine pollutions along with ozone depletion were the first environmental problems to be protected by the precautionary principle compared to other environmental problems.

To that end, the 1987 Ministerial Declaration of the second international conference on the protection of the North Sea notes that “in order to protect the North Sea from possibly damaging effects of the most dangerous substances, a precautionary approach is necessary which may require action to control inputs of such substances even before a causal link has been established by absolutely clear scientific evidence”¹⁴⁸ The 1990 Ministerial Declaration of the third international conference on the protection of the North Sea expands the concept and it states that “the contracting governments will continue to apply the precautionary principle, which is to take action to avoid potentially damaging impacts of substances that are persistent, toxic and liable to bioaccumulate even where there is no scientific evidence to prove a causal link between emissions and effects”¹⁴⁹

The principle’s global reception, next to the North Sea Ministerial Declarations, found in the conference outcomes of the 1992 UNCED. The principle was recognized as a legal principle of general applicability in international environmental law.¹⁵⁰ It was recognized in four out of the five instruments adopted in the United Nations Conference on Environment and Development, namely: the Rio Declaration, Agenda 21, the UNFCCC, and the Bio-Diversity Convention.¹⁵¹ Since then, it has been observed that the precautionary principle has been included in various environmental treaties and soft instruments.¹⁵²

¹⁴⁸ Ministerial Declaration of the Second International Conference on the Protection of the North Sea, 1987, Art 3

¹⁴⁹ Ministerial Declaration of the Third International Conference on the Protection of the North Sea, 1990, preamble

¹⁵⁰ James Cameron & Juli Abouchar, cited above at note 128, p.27

¹⁵¹ Rio-Declaration, principle 15; Agenda 21, section 17; UNFCCC, Art 3.3; Bio-Diversity Convention, preamble

¹⁵² Thomas Ebben, “The Implementation of the Precautionary Principle into International Fishery Law: A Move towards Green Fisheries”, *New Zealand Journal of Environmental Law*(2011), vol.15,no.113, p.114-116; Nicolas, cited above at note 124,p.186-87

3.3. *Raison Detre*

There are two opposing arguments on the usefulness of the Precautionary Principle as a guiding principle for environmental protection in the face of uncertainties, the very *raison detre* of the principle. Those who criticize the Principle argue that the Principle is “ill-defined, paralyzing, inflexible, and extreme.”¹⁵³ Others who support the Principle argue that erring to the side of the environment in the face of uncertainty is decisive to avoid serious or irreversible harm.¹⁵⁴

A strong opposition against the precautionary principle came from the scientists’ world. The Heidelberg Appeal Netherlands (HAN), an independent non-profit making alliance of scientist, has produced a report on the precautionary principle.¹⁵⁵ According to this report, the precautionary principle is blamed on its “appeal on science and technology to be utopian; lack of exact meaning and suspicion to science.”¹⁵⁶ The report advocates full omniscience of science towards production of certain and conclusive evidence on the impacts of proposed economic activities either to the environment or to human health. This however is untrue since inconclusiveness of science becomes an obvious fact.¹⁵⁷

Furthermore, the Principle received strong criticism from the proponents of trade liberalization and they perceived the Principle as a shield of protectionism.¹⁵⁸ Others in support of the principle argued as the “Principle sends a clear message that firms must research the health and environmental risks of their products, before harm occurs.”¹⁵⁹ “Erring to environmental

¹⁵³ Sunstein, C.R. “Beyond the Precautionary Principle”, University of Pennsylvania Law Review(2003), vol. 151, no.3, p. 1011-25

¹⁵⁴ Evan Seamone “The Precautionary Principle as the Law of Planetary Defense: Achieving the Mandate to Defend the Earth Against Asteroid and Comet Impacts While There is Still Time,” The Georgetown international environmental law review(2004), vol.17,no.1,p.11-12

¹⁵⁵ An Essay on the Rise of the Precautionary Culture: The Precautionary Principle or Striving for Ignorance”, The stichting Heidelberg Appeal Nederland Foundation,p.1-33(available at www.stichting-han.nl)

¹⁵⁶ Ibid.

¹⁵⁷ Peter defur and Michelle Kaszuba, “Implementing the precautionary principle”, The Science of the Total Environment (2002) p. 156; Marjolein Asselt & Ellen Vos, “The Precautionary Principle and the Uncertainty Paradox”, Journal of Risk Research, (2006), vol. 9, no.4, p.314; Pereira Di Salvo & Leigh Raymond, “Defining the precautionary principle: an empirical analysis of elite discourse”, Environmental Politics(2010), vol.19,no.1,p.90

¹⁵⁸ Jonathan Harris, “Trade and the Environment”, Global Development and Environment Institute Tufts University (2004), p.3

¹⁵⁹ Saradhi Puttagunta, “The Precautionary Principle in the Regulation of Genetically Modified Organisms,” Health Law Review(2015), vol.9, no.2, p.14

protection is found to be ethical than giving the benefit of doubt to economic activities, whose harm to the environment is anticipated.”¹⁶⁰

Irrespective of the criticisms and oppositions pointed against the Precautionary Principle, the regime of IEG accepted the Principle as one of the principles of international environmental law. The very rationale of the Principle emerged out of the concern that “uncertainty about the magnitude or possible causes of environmental harms has frequently been used as a reason to postpone measures to protect the environment.”¹⁶¹ Inactions justified on such uncertainties has subjected the environment to irreparable harm.¹⁶² Precautionary Principle thus counters the traditional decision making narration as it, the Precautionary Principle, enables decision making in the face of uncertainties.¹⁶³

3.4. Constituent Elements

Constituent elements to the Precautionary Principle have been identified from various instruments which include the Principle. There are common elements which are reflected in these instruments. Thus by elements it implies conditions which triggers the application of the Precautionary Principle. Accordingly threat of harm; uncertainty of causality and magnitude of effects; shifting the burden of proof to the proponents of activities; and Precautionary Responses are the common elements.

3.4.1. Threat of Harm

Precautionary Principle requires the existence of threat to environmental harm to interfere in the proceedings of economic activities which are supposed as causes of the anticipated harm. The harm although it is an anticipated one should satisfy a certain level of threshold to trigger the Precautionary action. Without demonstrating the threat or potential harm it would be unreasonable to take precaution for activities that have beneficial outcomes.¹⁶⁴ Thus,

¹⁶⁰ Arie Trouwborst, “Prevention, Precaution, Logic and Law: The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions”, Erasmus Law Review(2009), vol.2, no.2, p.108

¹⁶¹ Aaron Holdway, “Reducing Uncertainty the Need to clarify the Key elements of the Precautionary Principle” Consilience, (Columbia University, 2008), no.1. p.39

¹⁶² Id, p.40

¹⁶³ Andri Wibisana, “The Development of the Precautionary Principle in International and in Indonesian Environmental Law”, Asia Pacific Journal of Environmental Law(2011), vol. 13, no. 2, p.1

¹⁶⁴ Gardiner “A Core Precautionary Principle” Journal of Political Philosophy (2006), p. 33.

demonstrating the threat of harm is an indispensable component of the Precautionary Principle. Once this element is established Precautionary Principle would interfere in the economic activity which posed a threat of harm to the environment. Level of threat to harm, however, are different from one instrument to the other. Instruments employ phrases like “threats of serious or irreversible damage”¹⁶⁵; “possible or potentially damaging effects”¹⁶⁶; “harm or hazards to humans or the environment.”¹⁶⁷ Thus, identification of the level of threat of harm which qualifies the application of the Precautionary Principle is dependent on the specific instrument. Differences on the threshold of harm would bring dissimilarities in the application of the Precautionary Principle. Even within the same instrument there would be differences among states while applying the Principle due to the subjective nature of qualifications to harm thresholds.¹⁶⁸

3.4.2. Uncertainty

Uncertainty about the cause and effect relationship between activities and the magnitude of the anticipated environmental harm is another indispensable component of the Precautionary Principle. As the Precautionary Principle is the anticipatory model of environmental protection it differs from preventative and curative models of environmental protection basically on the basis of uncertainty.¹⁶⁹ For certainly known environmental harms whose causes are scientifically established the Precautionary Principle is not the proper tool to react. Inability of scientific tools to determine the harmlessness of activities in a conclusive way necessities decision making in the face of uncertainties. Waiting for conclusive scientific evidence to prove the causal relationship between activities and anticipated harms and the magnitude of the harm would let the environment to face the serious or irreversible damages. Thus, Precautionary Principle authorizes decision makers to take action in the face of uncertainty the omission of which subject the

¹⁶⁵ Rio-Declaration, cited above at note 1, principle 15

¹⁶⁶ Ministerial Declaration of the Second International Conference on the Protection of the North Sea, 1987, Art 3

¹⁶⁷ OSPAR Convention, 1992, Art 2

¹⁶⁸ Andri Wibisana, cited above at note 163, p.11-12

¹⁶⁹ Elli Louka, cited above at note 3, p.50.

environment for irreversible damage.¹⁷⁰ So uncertainty is the crucial factor to take Precautionary actions.¹⁷¹

3.4.3. Shifting Burden Proof

Though this element is not expressly provided in most instruments it has logically been taken as an indispensable component of the Precautionary Principle.¹⁷² Decision making in the face of uncertainty will relieve the decision makers from their burden of proving the harming effect of economic activities. Traditionally it was a must for the opponents of certain activities to provide evidence for the adverse impacts of such activities. Thus, safety was presumed until harmfulness is proven by virtue of the traditional principle of burden of proof. But in the case of the Precautionary Principle the presumption is reversed and harmfulness of activities is presumed until their harmlessness is proven. The burden to prove such harmlessness is imposed on the proponents of economic activities. Unless they disprove the harmful effect of their activities their activities will be interrupted by precautionary actions. What is required from the side of the decision makers is to establish the threshold of harm as per the given instrument which recognize the precautionary principle.

3.4.4. Precautionary Responses

Once the thresholds of harm and uncertainty elements are satisfied decision makers are expected to take precautionary responses. These responses are measures to be taken in order to avoid the anticipated threats from occurring.¹⁷³ These responses indeed are the ultimate objectives of the Precautionary Principle. Without taking actions the Principle will not be changed into practice. Taking of such actions is, therefore, an intrinsic element of the Precautionary Principle even in the absence of clear stipulation within the instruments recognizing the Principle. For that matter most instruments do not expressly list out the exhaustive actions or responses to be taken in the application of the Precautionary Principle.¹⁷⁴ Commonly instruments provide general terms like

¹⁷⁰ James Cameron & Juli Abouchar, cited above at note 128, p.21-23

¹⁷¹ John Applegate, "The Precautionary Preference: An American Perspective on the Precautionary Principle, Human and Ecological Risk Assessment: An International Journal(2000), vol.6, no.3, p.413

¹⁷² Andri Wibisana, cited above at note 163, p.10-12

¹⁷³ Andri Wibisana, cited above at note 163, p.10-12

¹⁷⁴ James Hickey and Vern Walker, "Refining the Precautionary Principle in International Environmental Law", Virginia Environmental Law Journal (1995), vol.14,no. 3, p.423-54

precautionary measures should be taken. The specific actions to be taken on the basis of the Principle are left to the determination of decision makers, obviously to states.

Actions on the basis of the Precautionary Principle take different forms such as phasing out or stop the product or activity, placing an outright ban on the product or activity, placing strict regulation on the product or activity, taking measures to reduce the impact of the possible harm, warning people of the possible harm of products or activities, and monitoring the product or activity to look for evidence of the possible harm.¹⁷⁵

¹⁷⁵ Aaron Holdway, cited above at note 161. p.44-45; John Applegate, "The Precautionary Preference: An American Perspective on the Precautionary Principle", Human and Ecological Risk Assessment: An International Journal(2000), vol.6, no. 3, p. 413-43; Thomas Ebben, cited above at note 152, p.119-20,fn.48-51

CHAPTER FOUR

4. THE NORMATIVE STATUS OF THE PRECAUTIONARY PRINCIPLE

4.1. Norm creation under International Law

International law provides norms for regulation of multilateral relationships and it encompasses legal norms governing the relationships.¹⁷⁶ Such norms call states to behave in a certain manner while operating on the international system.¹⁷⁷ It is thus the international norm creating process which yields both substantive and procedural normative guidelines in the international system. Differently speaking, norms under international law are created through the international law-making process.¹⁷⁸

International norm creating process is concomitant to sources of international law.¹⁷⁹ Norms set forth in such sources are binding and subjects are required to adhere these norms. Article 38 of statute of the ICJ is the principal authority on sources of international law.¹⁸⁰ Primary and subsidiary sources are mentioned therewith. There is no hierarchical relationship among the primary sources of international law but there might be a logical relationship to use each source.¹⁸¹

Sources of international law, per Article 38 of statute of ICJ, are: “International conventions, whether general or particular, establishing rules expressly recognized by the contesting states; International custom, as evidence of a general practice accepted as law and general principles of law recognized by states as primary sources and judicial decisions and teachings of the most

¹⁷⁶Kenneth Abbott and Duncan Snidal “Hard and Soft Law in International Governance” International Organization(2000), vol.54, no. 3, p. 422; Luis E. Rodriguez-Rivera, “Is the Human Right to Environment Recognized under International Law- It Depends on the Source”, Columbia Journal of International Environmental Law and Policy(2001), vol.12, no.1,p.2; Stuart Harding, A Guide to the Basics of International Law(Gorge Town University Law Center, 2012), fn.1; Lotus Case, PCIJ, 7 Sept. 1927, no.10, p. 19-20

¹⁷⁷ Rüdiger Wolfrum, “Sources of International Law”, Max Planck Encyclopedia of Public International Law (Oxford University Press, 2015),

¹⁷⁸ Ibid

¹⁷⁹ Daniel Bodansky, cited above at note 11, p. 94-95; Howard S. Schrader, “Custom and General Principles as Sources of International Law in American Federal Courts”, Columbia Law Review(1982), vol. 82, no. 4, p. 756

¹⁸⁰ Statute of the International Court of Justice, 1945; Patrick M. Norton, “The Role of Precedent in the Development of International Investment Law”, ICSID Review(2018),p. 3

¹⁸¹ Dinah Shelton, “Normative Hierarchy in International Law”, the American Journal of International Law (Cambridge University Press, 2006), vol. 100, no. 2, p.297-300

highly qualified publicists of the various nations as subsidiary means for the determination of rules of law.”¹⁸²

Thus, conventions, international custom and general principles of laws are primary sources of international law whereas judicial decisions and publications of renowned scholars are secondary sources. Primary sources of international law intended to be an exclusive list of normative sources of international law secondary sources on the other hand, serves as evidence of international law. It has now become the definitive trend of international law that Article 38 of the ICJ statute can serve as an authentic source of all branches of public international law including international environmental law.¹⁸³ Thus, binding norms of international environmental law could derive from these sources of international law.¹⁸⁴

International conventions (treaties) are the primary source of international law which binds member states.¹⁸⁵ All sovereign states are at utmost freedom to be or not to be members of a certain treaty.¹⁸⁶ Once they became members to a certain treaty they are obliged to respect the letter and spirits of a treaty in concern.¹⁸⁷ Many international environmental laws regulate different environmental challenges through the use of treaties. Thus, member countries to numerous environmental treaties are expected to live up to their commitments contained under these treaties.¹⁸⁸

Customary international law, as a primary source of international law, is a binding law without an express consent of states. It is the practice of states with conviction, which establishes customary norms. Once a norm is established as customary international law, it binds all states regardless of their contribution to the formation of the custom.¹⁸⁹ If, however, a state has persistently objected to a customary norm during its creation that state is a persistent objector and it is not obliged by such norm as it consistently objected the custom since its formation.¹⁹⁰

¹⁸² Statute of the ICJ, 1945, Art 38(1(a-d))

¹⁸³ Rüdiger Wolfrum, cited above at note 177

¹⁸⁴ Daniel Bodansky, cited above at note 11, p. 97

¹⁸⁵ Vienna Convention on the Law of Treaties, 1969, Art 6

¹⁸⁶ Id, Art 6

¹⁸⁷ Id, Art 26

¹⁸⁸ Id, Art 31

¹⁸⁹ Claudia Saladin, “Precautionary Principle in International Law”, International Journal of Occupational and Environmental Health(2000), vol.6, no. 4, p. 270

¹⁹⁰ Claudia Saladin, cited above at note 189,p. 271

Besides to the foregoing sources of international law; there are also soft laws contributing to the international norm-creating process. Soft laws are claimed to be additional sources of international law which brought an end to an exclusive reliance on the traditional sources of international law to ascertain the normative status of rules and principles of international law.¹⁹¹ Soft laws are non-binding in the strict sense of international law but with a huge significance in the process of international norm creation.¹⁹² These rules may derive from non-binding international instruments such as resolutions, recommendations, guidelines, code of conducts and standards.¹⁹³ Soft rules may even envisage in treaties.¹⁹⁴

The existence and normative status of principles embodied in international environmental laws could be ascertain through the progressive gathering of recurrent treaty provisions, recommendations made by international organizations, resolutions adopted at the end of international conferences, and other texts that can be said to have influenced state practice.¹⁹⁵ Some of the principles may exist in multilateral environmental treaties and they become treaty norms that bind parties.¹⁹⁶ Other principles may exist in non-binding international instruments whose normative status would in the future be ascertained based on their elevation either to a treaty or customary international laws. Others may have existed in the form of customary international law whose normative status is binding to all states unless some states are persistent objectors.¹⁹⁷ Others may exist in the form of general principles of laws which are still normatively binding to nations.

Thus identification of the normative status of principles of international environmental law is dependent on explorations of environmental treaties, state practices, and general principles of law, judicial decisions, declarations, resolutions and other related instruments in the field.¹⁹⁸

¹⁹¹ Arif Ahmed and Jahid Mustofa, "Role of Soft Law in Environmental Protection: An Overview", Global Journal of Politics and Law Research (2016), vol.4, no.2, p.2-5

¹⁹² Id, p.2

¹⁹³ Pierre-Marie Dupuy, "Soft Law and The International Law of The Environment", Michigan Journal of International Law (1991), vol, 12, p. 428;

¹⁹⁴ Richard Williamson, "Hard Law, Soft Law, and Non-Law in Multilateral Arms Control: Some Compliance Hypotheses", Chicago Journal of International Law (2003), vol, 4, no.1, p.63

¹⁹⁵ Owen McIntyre, "The Role of Customary Rules and Principles in the Environmental Protection of Shared International Freshwater Resources", Natural Resources Journal, (Regents of the University of New Mexico, 2006), vol. 46, no.1, p. 157-210,

¹⁹⁶ VCLT, cited above at note 185, Art 26

¹⁹⁷ Id, Art 43

¹⁹⁸ Owen McIntyre, cited above at note 195, p. 3

Debates have raged over the precise legal status of many international environmental principles since earlier times.¹⁹⁹ The Precautionary Principle is one of the principal tenets of international environmental law whose normative status was doubtful.²⁰⁰ The following sections discuss the normative status of the Precautionary Principle on the basis of the aforementioned sources.

4.2. International Soft Laws

International soft law denotes norms of international law which are not binding *per se*,²⁰¹ but it plays a significant interpretive role in the construction and interpretation of principles and rules of formal international environmental law.²⁰² The growing importance of such laws has been exhibited in the area of international environmental law.²⁰³ Soft laws, the products of UN family organizations,²⁰⁴ are designed for the creation of certain norms in the international system.²⁰⁵ The paradigm shifts in the post WWII and post-cold wars exhibited within the globe triggers the proliferation of soft laws.²⁰⁶

Principles contained under different instruments of soft international environmental laws, apart from their contribution in the influence and direction of state behaviors, supports the crystallization of these principles to the status of either treaty laws or customary international

¹⁹⁹ Id, p.5

²⁰⁰ Saradhi Puttagunta, cited above at note 159

²⁰¹ Richard Williamson, cited above at note 194, p.63

²⁰² Keith Porter, Mary Jane Porter and Laurence Smith, International Environmental Law, (Centre for Development, Environment and Policy, SOAS University, 2014), p. 30 ; Richard Williamson, "Hard Law, Soft Law, and Non-Law in Multilateral Arms Control: Some Compliance Hypotheses", Chicago Journal of International Law (2003), vol. 4, no.1, p.63.

²⁰³ Cárdenas Castañeda, "Call for Rethinking the Sources of International Law: Soft Law and the Other Side of the Coin", Anuario Mexicano de Derecho Internacional (2013), vol. 13, 368-387; Alexander Puhlmann, "From Declaration to Implementation? – RIO + 13: an evaluation of its legal significance in international environmental law", the new zealand postgraduate law e-journal (ny) , no. 3, p.8; David Wirth, "The World Trade Organization Dispute Over Genetically Modified Organisms: The Precautionary Principle Meets International Trade Law", Vermont Law Review(2013), vol.37,no.4, p.1151,fn.23

²⁰⁴ Carol Annette Petsonk, cited above at note 70, p.351-391

²⁰⁵ Pierre-Marie Dupuy, cited above at note 193, p.420-423

²⁰⁶ Basically the post-cold-war era and technological advancements thereafter demands such laws. Many African countries became independent from colonial rule and they constituted larger portion of the UN; such newly independent countries are not willing to be abided by laws made by their colonial rulers; the developed-developing debate on international agendas incremented and such divisions made the adoption of hard laws difficult. So the solutions for such differences were adoption of soft laws. See, Cárdenas Castañeda, "Call for Rethinking the Sources of International Law: Soft Law and the Other Side of the Coin", Anuario Mexicano de Derecho Internacional (2013), vol. 13, p.371, fn.68

laws.²⁰⁷ Soft laws have a very significant role in the creation of laws because they are the first step in the process of conclusion of multilateral treaties.²⁰⁸

The precautionary principle, as discussed in the following sections, has been included in a plethora of soft instruments coined in the form of declarations, resolutions, and recommendations. Its inception has begun in successive declarations of the North Sea conferences²⁰⁹ and its progressive development at the global level started since the 1992 Rio-declaration of the earth summit.²¹⁰

The first ministerial declaration for the protection of the North Sea, the 1984 Bremen Ministerial Declaration, made an indirect reference to the principle.²¹¹ To that end its preamble reads as “Damage to the environment can be irreversible or remediable only at considerable expense and over long periods and that, therefore, coastal states and the EEC must not wait for proof of harmful effects before taking action”²¹² This declaration upheld environmental harm threshold and uncertainty elements of the Precautionary Principle. So states, to protect the North Sea from an irreversible harm, are obliged to take Precautionary actions.

The 1987 London Ministerial Declaration on the Protection of the North Sea recognizes the principle in an explicit way and it reads: “In order to protect the North Sea from possibly damaging effects of the most dangerous substances a precautionary approach is necessary which may require action to control inputs of such substances even before a causal link has been established by absolutely clear scientific evidence.”²¹³ Taking actions to control the anticipated effects of substances and irrelevance of establishing causal relationship between these substance and the anticipated harm are upheld by this declaration. The declaration has also been incorporated into the national legislations of members to the conference and thirty-four signatories to the Bergen Declaration have agreed over the precautionary principle.²¹⁴

²⁰⁷ Cárdenas Castañeda , cited above at note 8, p.364

²⁰⁸ Djibril Moudachirou and Hamid Mukhtar, “Precautionary Principle in International Environmental Law: Rule of Customary International Law”, International Journal of Management Sciences(2016), vol. 6, no. 12, p. 571, fn.37

²⁰⁹ James Cameron & Juli Abouchar, cited above at note 128, p.4

²¹⁰ Ole Pedersen , “From Abundance to Indeterminacy: The Precautionary Principle and Its Two Camps of Custom” , Transnational Environmental Law, (Cambridge University Press, 2014), vol.3, no.2, p. 323–339

²¹¹ First ministerial declaration for the protection of the North Sea, 1984, Preamble

²¹² Ibid

²¹³ Ministerial Declaration of the Second International Conference on the Protection of the North Sea, 1987, Art 3

²¹⁴ James Cameron & Juli Abouchar, cited above at note 126, p.5,17, fn.10

Then, the third declaration, the 1990 Hague Ministerial Declaration on the protection of the North Sea, reaffirmed the principle and it speaks of: “The participants will continue to apply the precautionary principle that is to take action to avoid potentially damaging impacts of substances that are persistent, toxic and liable to bio accumulate even when there is no scientific evidence to prove a causal link between emissions and effects.”²¹⁵ It is indeed the reaffirmation of its predecessor and it specifies substances with harmful effects to the North Sea. The purpose of the Precautionary Principle is to avoid the anticipated environmental harm. Irrelevance of scientific evidence which proves the causal relationship between emissions and effects is still maintained in the declaration.

The fourth declaration, the 1995 Esbjerg Ministerial Declaration on the protection of the North Sea, incorporates the principle and it reads as “The ministers agree that the objective is to ensure a sustainable, sound and healthy North Sea ecosystem. The guiding principle for achieving this objective is the precautionary principle.”²¹⁶ To ensure a sustainable, sound and healthy ecosystem within the North Sea they have reaffirmed the Precautionary Principle as a guiding principle.

The Fifth declaration, the 2002 Bergen Ministerial Declaration for the protection of the North Sea reads as “In order to achieve sustainable development, policies must be based on the precautionary Principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.”²¹⁷ In addition to its maintenance of the environmental harm threshold and scientific uncertainty elements of the Precautionary Principle, this declaration linked the Principle with sustainable development. Thus, participants believe that without the application of the Precautionary Principle they could not achieve sustainable development.

The 1982 World Charter for Nature has implicitly recognized the Precautionary Principle at the global level. Article 1 of the Charter reads as “activities which are likely to cause irreversible damage to nature shall be avoided and their proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully

²¹⁵ Third Ministerial Declaration on the protection of the North Sea, 1990, preamble

²¹⁶ Fourth Ministerial Declaration on the protection of the North Sea, 1995, Art 3

²¹⁷ Fifth Ministerial Declaration on the protection of the North Sea, 2002, Art 2

understood, the activities should not proceed.”²¹⁸ Irreversibility of the anticipated environmental harm; uncertainty of potential effects and duty to proof the highest benefits gained at the expense of the environment are the very elements of the Charter. Thus, the Charter upheld components of the Precautionary Principle though it did not expressly mention the Principle.

An explicit recognition to the Precautionary Principle at the global level took place in the 1992 Rio-Declaration on Environment and Development. It became the first global non-binding instrument which endorsed the Precautionary Principle.²¹⁹ Principle 15 of the Rio-Declaration reads as “In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”²²⁰

Irreversibility or seriousness of anticipated environmental harm; lack of full scientific certainty as to the occurrence or not of the anticipated harm; cost-effectiveness of measures to be taken as precautionary measures; and capabilities of states to take such measures are the essential elements of the Principle as placed in Principle 15 of the Rio-Declaration. As many of the subsequent international environmental law instruments adopted similar version of the Rio-Declaration, it had acclaimed through its contribution in the development of the Precautionary Principle in IEL.²²¹ It has also influenced subsequent state behaviors as the declaration was adopted by 172 participating states.²²²

Another soft international instrument which recognize the Principle and which influence actors to adopt the same version of the Principle is the 1998 Wingspread Statement on the precautionary principle. The statement reads as:

“When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. The process of applying the precautionary principle must be open, informed and

²¹⁸ World Charter for Nature, cited above at note 92, 1982, Art 1

²¹⁹ Peter Sand, “International Law on the Agenda of the United Nations Conference on Environment and Development: Towards Global Environmental Security?”, *Nordic Journal of International Law* (1991), vol.5, no.60, p. 5

²²⁰ Rio-Declaration, cited above at note 1, Principle 15

²²¹ Peter Sand, cited above at note 219

²²² Ibid

democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action. In this context the proponent of an activity, rather than the public, should bear the burden of proof.”²²³

Activities with anticipated harm to the environment and irrelevance of scientific evidence to prove causal relationship between activities and harm are the elements coined within the statement. The statement does not qualify the threshold of harm as serious or irreversible. It also provides the process of its application and the ranges of actions to be taken through the remit of the Precautionary Principle. Thus, international soft laws have recognized the Precautionary Principle through an observation of some or all elements of the Precautionary Principle. In addition to the instruments discussed here above, a significant number of international soft instruments have adopted the Principle.²²⁴

4.3. International Environmental Laws

4.3.1 Treaties

The Precautionary Principle has so far been recognized in various environmental treaties. Different regimes of the environment such as ozone protection, climate change, bio-diversity, waste disposal and marine environment regimes have incorporated the Principle as a guiding principle. From these treaties, provisions of selected treaties are discussed. These selected treaty provisions are examined in light with the constituent elements of the Precautionary Principle.

²²³ Wingspread Statement on the Precautionary Statement, 1998

²²⁴ Around 18 soft instruments have recognized the principle(*World Charter for Nature*(1982); *Rio-Declaration on Environment and Development*(1992);*First Ministerial Declaration for protection of North Sea (Bremen. 1984)*; *Second Ministerial Declaration for Protection of North Sea (London,1987)*; *Third Ministerial Declaration for protection of North Sea(Hague,1990)*; *Fourth Ministerial Declaration for protection of North Sea(1995)*; *Fifth Ministerial Declaration for protection of North Sea(2002)*; *EU Communication on the Precautionary Principle(2000)*; *Agenda 21(UNCED,1992)*; *Plan of Implementation, World Summit on Sustainable Development (2002)*; *The Strategic Approach to International Chemicals Management, agreed at Dubai(2006)*; *Declaration on the Protection of the Marine Environment from Land-based Activities(1995)*; *OECD Environmental Strategy for the First Decade of the 21st Century(2001)*; *Ministerial Declaration of the Seventh Trilateral Government Conference on the Protection of the Wadden Sea(1994)*; *First Global Ministerial Environment Forum(2000)*; *Helsinki Declaration on the Protection of the Marine Environment of the Baltic Sea(1988)*; *Ministerial Declaration on the Protection of the Black Sea(1993)*; *Programme for the Further Implementation of Agenda 21(1997)*; *decision of the United Nations Environment Programme Governing Council on the Precautionary Approach to Marine Pollution(1989)*; *UNCED Text on Protection of Oceans(1991)*; *FAO Code of Conduct for Responsible Fisheries(1995)*)

To begin with, the 1987 Montreal Ozone Protocol states that “The parties are determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge, taking into account technical and economic considerations.”²²⁵ Precautionary Principle here is recognized as a controlling mechanism of emission of substances which depletes the ozone layer. Though the depleting effect of such substances was known which might reduce the application of the Principle, their future harm to the Ozone was uncertain by the time when the Protocol was adopted. So it fulfills the uncertainty of harm component of the Precautionary Principle. Thus, parties to this protocol consented to control their emissions of substances that deplete the Ozone layer. To that end, the protocol has got universal ratification.

The 1992 UNFCCC reads as “...to take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of scientific certainty should not be used as a reason for postponing cost-effective measures”²²⁶ This framework convention requires states to anticipate causes of climate change and to take precautionary measure as a tool to mitigate the adverse impacts of the climate change. Justifying inability to take precautionary measure on the basis of lack of scientific certainty is unacceptable. This framework convention fulfills the environmental harm threshold and uncertainty of harms components of the Principle. However, measures will be taken on the basis of cost-effectiveness. The convention as a pioneer in the climate change regime has influence subsequent legislations. The Kyoto Protocol has expressly reaffirmed Article 3(3) of the UNFCCC.²²⁷ The Paris Agreement, though it fails to adopt the principle in an explicit way, has implicitly recognize the Principle through its cross-reference to the UNFCCC which reads as “In pursuit of the objective of the UNFCCC, and being guided by its principles and recognizing the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge”²²⁸

²²⁵ The Montreal Protocol on Substances that Deplete the Ozone Layer, 1987, preamble

²²⁶ UNFCCC, cited above at note 19, Art 3(3)

²²⁷ Kyoto Protocol, cited above at note 30, Preamble

²²⁸ Paris Agreement, cited above at note 31, Preamble

The 1992 Bio-Diversity convention has adopted the Principle and its preamble states that “Where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat”²²⁹ A threat to significant reduction or loss and unjustifiability of postponement of precautionary measures on the basis of scientific uncertainty are the elements of the precautionary principle included in this convention. This convention, unlike the UNFCCC, excludes cost-effectiveness of measures and irreversibility of harms as qualification for threat to reduction or loss of bio-diversity. States are thus obliged to take precautionary actions to avoid significant reduction or loss of bio-diversity in the event of scientific uncertainty.

The 2002 Cartagena Biosafety Protocol governing living modified organisms reads as:

“Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the party of import, taking also into account human risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of that living modified organism intended for direct use as food or feed, or for processing in order to avoid or minimize such potential adverse effects.”²³⁰

Lack of scientific certainty derived from insufficient and relevant scientific information or knowledge; scientific uncertainty on the adverse impacts of GMO on bio-diversity; adverse impact in the importing country; inability of precluding the importing state to take appropriate measure towards importation of GMOs are elements to the precautionary principle. Hence, states are authorized to prohibit importation of GMO products until the harmlessness of these products is proven by the exporting state or producers.

The 1996 Protocol to the 1972 Convention on the Prevention of Marine Polluting by Dumping of Wastes and Other Matter recognizes the precautionary principle. The protocol reads as “Contracting Parties shall apply a precautionary approach to environmental protection from dumping of wastes or other matter whereby appropriate preventative measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are

²²⁹ Biological Diversity Convention, 1992, Preamble

²³⁰ The Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 2003, Art. 10(6), 11(8)

likely to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects.”²³¹ Per this protocol states are obliged to take action on the basis of precautionary principle when they reasonably believe that wastes are entered into the marine environment which might harm the marine environment. They are obliged to take the action without waiting conclusive scientific evidence as to the causal relationship between wastes and the anticipated harm.

Article 2 of the 1992 United Nations Economic Commission for Europe convention on the protection and use of transboundary watercourses and international lakes reads as “In taking the measures referred to in this article, the parties shall be guided by the precautionary principle, by virtue of which action to avoid the potential transboundary impact of the release of hazardous substances shall not be postponed on the ground that scientific research has not fully proved a causal link between those substances, on the one hand, and the potential transboundary impact, on the other hand.”²³² The convention conveys that states are not allowed to justify their inaction against hazardous substances which might possibly bring harm against other states. Justification of inaction on the basis of lack of scientific study to establish the causal link between the hazardous substances and the anticipated transboundary harm is unacceptable.

The 1989 convention for the prevention of marine pollution from land based sources states that:

“The contracting parties accept the principle of safeguarding the marine ecosystem of the Paris Convention area by reducing at source polluting emissions of substances that are persistent, toxic and liable to bio-accumulate by the use of best available technology and other appropriate measures. This applies especially when there is reason to assume that certain damage or harmful effects on the living resources of the sea are likely to be caused by such substances, even when there is no scientific evidence to prove a causal link between the emissions and effects.”²³³

This convention although it does not expressly mention the Precautionary Principle has upheld elements of the principle. Reduction of emissions of pollutants at source; the likelihood of harms

²³¹ The Protocol to the 1972 Convention on the Prevention of Marine Polluting by Dumping of Wastes and Other Matter, 1996, Art 3.1

²³² The United Nations Economic Commission for Europe convention on the protection and use of transboundary watercourses and international lakes, 1992, Art.2.

²³³ The convention for the prevention of marine pollution from land based sources, 1989, Art 3

(uncertainty); and absence of scientific evidence to prove causal linkage are anchored on the convention and these facts evidence the recognition of the Precautionary Principle in the convention.

The 1995 UN Fish stocks agreement provides that “states shall apply the precautionary approach widely to conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks. States shall be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.”²³⁴ Cautious in the event of doubts on information and inadequacy of scientific information to take measures are at the heart of the Precautionary Principle within the agreement and these elements are in conformity with the general elements of the Principle.

Hence, the abovementioned discussions together with many other environmental treaties²³⁵ which incorporate the Precautionary Principle tells the wider recognition of the Principle as a

²³⁴ The UN Fish stocks agreement, 1995, Art 6

²³⁵ More than 30 environmental treaties have recognized the Principle (UNFCCC(1992, Art 3(3)); Bio-Diversity Convention(1992, Preamble); United Nations Agreement on the Conservation and Management of Straddling Stocks and Highly Migratory Fish Stocks (1995, Arts 5,6); Cartagena Protocol on Biosafety to the Convention on Biological Diversity (2000, Arts10(6),11(8)); Stockholm Convention on Persistent Organic Pollutants (2004, Art 1);Vienna Convention on Ozone (1985, preamble); Montreal Protocol on Ozone(1987, preamble); Long-Range Transboundary Air Pollution (LRTAP)(1994, Art 6(2));Protocol to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter of 1972 (1996, Art 3.1);Kyoto Protocol (1997, preamble); The Framework Agreement for the Conservation of Living Marine Resources on the High Seas of the South Pacific, Galapagos Agreement (2000, Art 5); Stockholm Convention on Persistent Organic Pollutants(POPs) (Arts 4, 8(7), 2001); CITES(1973); Bamako Hazardous Waste Movement Convention(1991, Art 4(3(f));1996 Izmir Protocol on Trans-frontier Movement of Hazardous Wastes the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter(1972, Art 8(3)); UNCLOS(1982, Implicitly recognized in Arts 61-66; preamble and 116-119); Treaty on the Functioning of the EU(2007, Art 191); The Convention on the Protection of the Marine Environment of the Baltic Sea Area (Baltic Sea Convention)(1992, Art 3(2));Waigani Convention on prohibit the importation of hazardous Wastes in to Pacific Island(1995, Art 1);The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) (1995, Art 3); International Convention on Oil Pollution Preparedness, Response, and Cooperation(1990,preamble); Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) (1992, Art 2(2)(a)); Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area (1992, Art 3(2));Barcelona Convention for the Protection of the Mediterranean Sea against Pollution (as amended in 1995,Art 4(3)(a));Framework Convention for the Protection of the Marine Environment of the Caspian Sea (2003,Art 5); Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992, Art 2(5)); Sofia Convention on Cooperation for the Protection and Sustainable Use of the Danube (1994,Art 2(4)); Rotterdam Convention on the Protection of the Rhine (1998, Art 4); Convention on Migratory Species, (Art 2(2)); Agreement on the Conservation of the African-Eurasian Migratory Waterbirds(Art 2(4)); Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Areas(2001;Art 2(3));Stockholm Convention on Persistent Organic Pollutants (POPs) (2001, preamble & Art4); London IMO Convention on the Control of Harmful Anti-fouling Systems on Ships(2001, preamble, Art 6(3) and (5))

norm of international environmental law established through treaties in the sense of Article 38(1(a)) of the ICJ statute.

4.3.2 The Precautionary Principle as Customary International Law

Customary international law is another principal source of international environmental law.²³⁶ The status of certain principle as a rule of customary international law is significant because CIL create obligations for all states, except those that have persistently objected to the practice and its legal consequences. Therefore, in case when the precautionary principle is recognized as a rule of customary law, the application of the principle would acquire a broader scope on the international level.

Per the orthodoxy yardstick for the establishment of CIL, the actual state behavior and the conviction of state's while practicing a certain principle or rule are fundamental requirements. The Statute of the ICJ defines customary international law as "evidence of general practice accepted as law".²³⁷ The *Nicaragua*²³⁸ and the *North Sea Continental Shelf* cases²³⁹ supplement with the statute and clarify two requirements of CIL.²⁴⁰ According to these cases, CIL arises when "nations follow a practice in an extensive and virtually uniform manner and this practice is followed with the conviction that it is obligatory to do so under international law (*opinio iuris*)."²⁴¹ Virtually uniformity does not mean absolutely all states are supposed to have the same practice during a clearly defined period of time.²⁴² The *Opinio Juris* element of the CIL can be deduced from state practices.²⁴³

Evaluating the status of the precautionary principle using the orthodoxy elements of CIL gives the following picture. As far as the practices of states concerned; the principle has emerged from domestic environmental policies and laws; then it has transcended to another states; and since

²³⁶ ICJ Statute, cited above at note 181, Art 38(1(b))

²³⁷ Ibid

²³⁸ Nicaragua. ICJ Reports, 1986, para. 97-109

²³⁹ North Sea Continental Shelf. ICJ Reports.1969. para. 43-44

²⁴⁰ Agne Sirinskiene, "The Status of Precautionary Principle: Moving Towards a Rule of Customary Law", *Jurisprudence*(2009), vol. 118, no.4,p.354

²⁴¹ North Sea Continental Shelf Case, cited above at note 239

²⁴² Agne Sirinskiene, cited above at note 240

²⁴³ Ibid

then the principle became the practice of states in Europe and it has also been recognized in other states of the world.

By virtue of the international jurisprudence, state practice can be proved through state legislation, national and international judicial decisions, recitals in treaties, practice of international organizations and resolutions of UNGA, policy statements, and official manuals on legal questions.²⁴⁴ The International Law Commission complements to these lists as evidence of state practice.²⁴⁵

To mention states who have practiced the precautionary principle²⁴⁶: Germany, France, Belgium, United Kingdom, Sweden, the Netherlands, Denmark, Norway, Canada, Australia, Finland, Island, New Zealand, India, Antigua and Barbuda, Argentina, Costa Rica, South Africa, Norway and Switzerland have practiced the precautionary principle. Australia, New Zealand, Ireland, Malaysia, Hungary, Argentina, and Ecuador are states who have repeatedly invoked the status of the Precautionary Principle as a norm of general international law before international adjudications, mainly in ICJ and ITLOS.²⁴⁷ Besides, the EU as a supra-national regional organization practiced the precautionary principle and it has made the principle as the guiding and organizing principle for its policies and decisions.²⁴⁸ It has also persistently argued the customary international status of the Precautionary Principle before the dispute settlement body

²⁴⁴ Brownlie, *Principles of International Law* (4th ed, 1990), p. 5 as referenced by Ernest Young, 'Sorting out the debate over CIL', *Virginia Journal of International Law* (2002), vol 42, no.365, p. 373, fn.36; Daniel Bodansky, cited above at note 11, p.95-97

²⁴⁵ ILC, "the ways and means for making the evidence of customary international law more readily available", Report of the International Law Commission 1950. See also, *Yearbook of the International Law Commission*, 1950, vol. II. P.367-373

²⁴⁶ The practice of some of the mentioned states is compiled by James Cameron & Juli Abouchar, "The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment", *Boston college international & comparative law review* (1991), vol. 14, no.1, p.6-14 and Alexander Puhlmann, "From Declaration to Implementation? – RIO + 13: an evaluation of its legal significance in international environmental law", the new zealand postgraduate law e-journal (NZPGLEJ) - ISSUE 3, p.32-39 ; Agne Sirinskiene, "The Status of Precautionary Principle: Moving Towards a Rule of Customary Law", *Jurisprudence* (2009), vol. 118, no.4, p. 355-56; Aaron Holdway, "Reducing Uncertainty: The Need to Clarify the Key Elements of the Precautionary Principle", *Consilience* (Columbia University, 2008), no.1, p. 40; Scott LaFranchi, "Surveying the Precautionary Principle's Ongoing Global Development: The Evolution of an Emergent Environmental Management Tool", *Boston College Environmental Affairs Law Review*(), vol.32, no.3, p.687-699

²⁴⁷ Arie Trouwborst, "Prevention, Precaution, Logic and Law: The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions", *Erasmus Law Review* (2009), vol.2, no.2, p.109

²⁴⁸ Treaty on the Functioning of the EU, 2007, Art 191(2)

of WTO.²⁴⁹ Owing to the unconditional application of EU laws in the member states and the priority of its laws over its members' laws, all member states to EU could be taken as practitioners of the precautionary principle.²⁵⁰ The Precautionary Principle, therefore, became a regional custom in Europe.²⁵¹

However, the insistence to the conventional defining criteria of CIL is diminished and lenient ways to establish customary norms are developed over years. It is because of the fact that the conventional yardsticks to establish CIL become unattainable or difficult to ascertain. To that end, soft instruments are claimed to be evidence of customary laws.²⁵² Per an empirical research conducted on the judicial politics of ICJ in identifying CIL, it has proved that ICJ has used treaties, consent of parties to the dispute, precedents, resolutions of international institutions, and general reference to state practices as evidence to identify norms of customary international law in their order.²⁵³ ICJ did not follow the classic elements of identification of CIL as provided under its statute. Examination of detailed state practice of individual states to identify norm of CIL is less practiced in the jurisprudence of ICJ.²⁵⁴

Soft instruments (declarations and resolutions of international organizations) significantly contribute to the development of customary laws when normative principles consistently included in these instruments.²⁵⁵ In this regard, McIntyre quoted Judge Tanaka's dissenting opinion in the South West Africa Case which reads as "In relation to repeated pronouncements in UN resolutions and declarations; this collective, cumulative and organic process of custom generation can be characterized as the middle way between legislation by convention and the

²⁴⁹ See the discussion under 4.4.3

²⁵⁰ Klaus-Dieter Borchardt, the ABC of European Union law (Publications Office of the European Union, 2010), p.32

²⁵¹ Jale Tosun, "How the EU handles uncertain risks: Understanding the role of the Precautionary Principle", Journal of European Public Policy(2013), vol.20,no.10, p.1518

²⁵² ILC, "the ways and means for making the evidence of customary international law more readily available", Report of the International Law Commission 1950. See also, Yearbook of the International Law Commission, 1950, vol. II. P.367-373

²⁵³ Niels Petersen, "The International Court of Justice and the Judicial Politics of Identifying Customary International Law", The European Journal of International Law (Oxford University Press,2017),Vol. 28 no. 2, p.357-385

²⁵⁴ Ibid

²⁵⁵ Owen McIntyre, cited above at note 195,p.39

traditional process of custom making and can be seen to have an important role from the viewpoint of development of international law.”²⁵⁶

As an endeavor to analyse the dissenting opinion, McIntyre acknowledged that “This process might be expected to have made a particularly significant contribution to the development of international environmental law where the use of soft law declaratory instruments have been so widespread.”²⁵⁷ As McIntyre rightly noted IEL is unique to other areas of international law in its usage of soft laws in a bloomed way.²⁵⁸ Most environmental treaties have borrowed principles from previously existing declarations and resolutions of UN family organizations. So much so that, soft instruments are linchpins to environmental laws and it has been argued that such instruments are best indicators of state practice.²⁵⁹

Hence, soft instruments which have been discussed in section 4.2 of this chapter unveil the collective general state practices towards the precautionary principle and states have negotiated and adopted these soft instruments in the sense of collective obligations underpinned in the precautionary principle.

Thus, the general practice of individual states mentioned here above and the wider recognition of the principle in plethora of soft laws and environmental treaties proves customary international law status of the Precautionary Principle. The judicial politics of ICJ in the identification of norms of customary international law supports considerations of treaties and soft instruments as evidence of customary laws.²⁶⁰

4.3.3. The Precautionary Principle as General Principle of Law

General principles of laws recognized by states are among the principal sources of international law as stipulated under Article 38(1)(c) of ICJ statute. They are important sources of international law in their own right.²⁶¹ Though the statute mentioned sources without hierarchy among the principal sources, hierarchy has so far been established in practice and general principles of laws are placed on the third within the hierarchy of primary sources. Hence, general principles of laws

²⁵⁶ Owen McIntyre, cited above at note 195, p.39

²⁵⁷ Ibid

²⁵⁸ Cárdenas Castañeda, cited above at note 8, p.364

²⁵⁹ Agne Sirinskiene, cited above at note 240, p.355

²⁶⁰ Niels Petersen, cited above at note 253, p.357–385

²⁶¹ Rumiana Yotova, ‘Challenges in the Identification of the “General Principles of Law Recognized by Civilized Nations”’: The Approach of the International Court’, *CJCL* (2017), vol.3, no.1, p-269

are applicable in default of treaty or customary laws.²⁶² They play a gap-filling role in default of a treaty or customary law.²⁶³ International tribunals have used general principles of laws to fill the lacuna of rules and principles derived from other sources of international law.²⁶⁴

The determination of such sources, however, is imprecise and their application is infrequent.²⁶⁵ Their identification is controversial as compared to other sources.²⁶⁶ Three approaches have been employed in the determination of general principles of law as a source of international law.²⁶⁷ These approaches are domestic law approach, international law approach, and the hybrid approach. Per the domestic law approach general principles are developed and induced from national legal systems.²⁶⁸ Per the second approach the international legal system, independent from the national legal systems, is viewed as capable to develop general principles of laws which can serve as sources of international law in the language of Article 38(1(c) of the statute.²⁶⁹ The third approach takes both national and international legal systems as capable of contributing general principles of laws.

Evaluated in view of the three approaches: the Precautionary Principle has been induced from the domestic legal systems in one hand and it has deduced from the international legal system on the other hand, as it has pervaded in various international instruments as discussed on 4.2 of this paper, So, the Principle's status as a general principle of law recognized by states is established through the hybrid approach, the domestic law approach and the international law approach. Thus, the status of the Principle as general principle of law recognized by states, by virtue of article 38(1(c) of the ICJ statute, is well established.

²⁶² David Hunter, Durwood Zaeklke, and James Salzman, International Environmental Law and Policy, (Foundation Press, New York, 2002), 2nd ed., p.318

²⁶³ Svitlana Kravchenko, Tareq M.R. Chowdhury and Md Jahid Hossain Bhuiyan, "Principles of international environmental law", Routledge Handbook of International Environmental Law (Routledge, 2012), p.43; Kiyotaka Morita, "The Issue of Lacunae in International Law and Non Lique Revisited", Hitotsubashi Journal of Law and Politics (Hitotsubashi University, 2017), p.33-51.

²⁶⁴ Kiyotaka Morita, "The Issue of Lacunae in International Law and Non Lique Revisited", Hitotsubashi Journal of Law and Politics (Hitotsubashi University, 2017), p.33

²⁶⁵ Retfaerd Argang "The Role of General Principles in International Law and their Relationship to Treaty Law", University of Oslo, Department Of Public and International Law(2008,unpublished),p.5

²⁶⁶ Rumiana Yotova, cited above at note 261, p-270

²⁶⁷ Id, p-269-323

²⁶⁸ Ibid

²⁶⁹ Ibid

4.4. Jurisprudence of International Adjudications

International adjudication bodies clarify the meaning and effect of treaty norms and they identify the existence of customary norms of general applications.²⁷⁰ They play a significant role in the adjudication of environmental disputes and pronouncement of normative status of environmental principles.²⁷¹ Despite their contributions, however, multiplicity of international judicial venues in the field is claimed as a problem for the progressive development of some environmental principles.²⁷² The problem attributes to the contradictory stance held by different judicial bodies towards the normative status of a certain principle. The Precautionary Principle is a good example in this regard.²⁷³ ICJ, ITLOS, and WTO are selected to review their decisions on the normative status of the Principle.

4.4.1. The International Court of Justice

ICJ has general and broader jurisdiction for settlement of international disputes.²⁷⁴ It has the power to decide on contentious cases and providing advisory opinions on international disputes, including environmental disputes.²⁷⁵ The *second Nuclear Test case*, *Gabcikovo-Nagymoros case* and the *Pulp Mills on the River Uruguay cases* were environmental disputes entertained through ICJ which contain the issue of the Precautionary Principle.

In 1995, French announced its plan to conduct underground nuclear tests and New Zealand opposed in asserting that “this was against France's 1974 pledge to stop atmospheric nuclear tests and that these tests, which had begun before their safety had been confirmed by environmental impact assessments conducted in compliance with international standards, might lead to the spread of radioactive substances into the marine environment and thus was a violation

²⁷⁰ James Harrison, “Significant International Environmental Law Cases 2016–17”, Journal of Environmental Law (Oxford University Press, 2017), vol. 29, p. 553.

²⁷¹ Id, p. 555

²⁷² Teshager Worku, “Compulsory Dispute Settlement and the Problems of Multiple Fora under International Environmental Law”, p. 2. available at <http://ssrn.com/abstract=1460942>

²⁷³ Maki Tanaka, “Lessons from the Protracted Mox Plant Dispute: A Proposed Protocol on Marine Environmental Impact Assessment to the United Nations Convention on the Law of the Sea”, Michigan Journal of International Law (2004), vol. 25, no. 2, p. 380-82

²⁷⁴ ICJ Statute, cited above at note 181, Art 36(1)

²⁷⁵ In 1993, the ICJ established a specialized chamber for environmental cases under Article 26(1) of its statute. The chamber has the purpose to serve as a special forum for environmental disputes though no case has to date been brought to it. (See also Teshager Worku, “Compulsory Dispute Settlement and the Problems of Multiple Fora under International Environmental Law”, p. 2. available at <http://ssrn.com/abstract=1460942>)

of international law under the precautionary principle.”²⁷⁶ France claimed that “the status of the precautionary principle in international law was unsettled and so it had no obligation to comply with it.”²⁷⁷ The ICJ dismissed the lawsuit brought by New Zealand, holding that its decision on the 1974 *Nuclear Test I Case* involved only atmospheric nuclear tests and did not apply to a case that involved underground nuclear tests.²⁷⁸ Despite the court’s dismissal dissenting Judges have raised the issue of the Precautionary Principle. Judge Weeramantry argues that “the precautionary principle had gradually gained wide support in international environmental law and with regards to the burden of proof New Zealand had provided prima facie evidence that radioactive materials had spread to the ocean and that France was obligated to provide countervailing evidence”²⁷⁹ Judge Koroma also argue that France should bear the burden of proof.²⁸⁰ Judge Palmer also held that “when an activity might have a significant impact on the environment, the precautionary principle should be applied and the environmental impact of the activity should be assessed to eliminate or reduce the possibility of environmental disaster and he argued that this practice be made part of customary international law on environmental issues.”²⁸¹

In the 1997 *Gabcikovo-Nagymoros Case (Hungary/Slovakia)*²⁸², Hungary and Slovakia brought their case to ICJ due to Hungary’s unilateral withdrawal from the bilateral treaty concluded to construct a dam over Danube River.²⁸³ Hungary suspended the construction work due to its allegation that the project would result in substantial damage of the unique ecosystem of the Danube, would diminish the water supply, and would deteriorate the quality of the water downstream from the dam.²⁸⁴ Slovakia replied that these threats to the environment were nonexistent, and unilaterally proceeded to continue the construction of the dam in its part.²⁸⁵ In opposing Slovakia’s continuation of constructing the Dam, Hungary unilaterally terminated the 1977 Agreement. Hungary justifies its withdrawal on the basis of ecological necessity claiming that the Dam will cause harm to the Danube River.²⁸⁶ However, ICJ ruled that “there was no

²⁷⁶ Nuclear Test II Case (New Zealand v. France, ICJ Reports, 1995, para 290

²⁷⁷ Ibid

²⁷⁸ Id, para 307

²⁷⁹ Id, Dissenting Opinion of Judge Weeramantry

²⁸⁰ Id, Dissenting Opinion of Judge Koroma

²⁸¹ Id, Dissenting Opinion of Judge ad hoc Sir Geoffery Palmer

²⁸² Gabcikovo-Nagymoros Project (Hungary/Slovakia), ICJ Reports, 25 September 1997

²⁸³ Id, para.17-18

²⁸⁴ Id, para 17-20

²⁸⁵ Ibid

²⁸⁶ Id,para.35

ecological necessity because the harm was uncertain.”²⁸⁷ The court did not take a position on whether countries could use the precautionary principle to protect the environment.

In the 2010 *Pulp-Mills Case (Argentina / Uruguay)*²⁸⁸ Argentina accused Uruguay in the latter’s announcement to construct a pulp mill that polluted the Uruguay River, violating the countries’ treaty regarding the protection of the river.²⁸⁹ Argentina argued that under the precautionary principle, Uruguay, the defendant, was responsible for proving that the mill would not cause significant harm to the environment.²⁹⁰ ICJ explicitly rejected Argentina’s use of the precautionary principle to shift the burden of proof.²⁹¹ The court added that “While a precautionary approach may be relevant in the interpretation and application of the provisions of the Statute, it does not follow that it operates as a reversal of the burden of proof.”²⁹² It then found that Argentina failed to meet its burden of proof for the likelihood occurrence of environmental harms.²⁹³ As drawn from the three precedents ICJ did not confirm the normative status of the Precautionary Principle despite the positions of dissenting judges.

4.4.2. The International Tribunal for the Law of the Sea

ITLOS, which has jurisdiction over disputes concerning the interpretation or application of UNCLOS or of any other international agreement related to the purpose of UNCLOS where the parties so agree,²⁹⁴ has entertained some cases involving the issue of the Precautionary Principle.

The 1999 Southern Bluefin Tuna Case (New Zealand & Australia/ Japan): The dispute centered on the 1993 treaty between Australia, Japan, and New Zealand (Convention for the Conservation of Southern Bluefin Tuna).²⁹⁵ The treaty has provided limit for the catch of the Bluefin Tuna.²⁹⁶ But in 1998 Japan has increased the number of Blufins to be caught for the purpose of scientific

²⁸⁷ Id, para.42-44

²⁸⁸ Pulp-Mills Case (Argentina / Uruguay), ICJ Reports, 2010

²⁸⁹ Id, para 160-162

²⁹⁰ Ibid

²⁹¹ Id, para 164

²⁹² Ibid

²⁹³ Id, para 255-56

²⁹⁴ UNCLOS, cited above at note 39, Art 287(1(a), 288(1 & 2)

²⁹⁵ Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan) (Provisional Measures), Order of 27 August 1999, ITLOS, para 45

²⁹⁶ Ibid.

study.²⁹⁷ Then, Australia and New Zealand brought a suit against Japan on the alleged violation of treaty obligation by the defendant. The Principle with which the applicants support their arguments was the Precautionary Principle.²⁹⁸ ITLOS was asked then to order an injunction to Japan to stop its increased catch of the Bluefins until it render final judgment.²⁹⁹ Accordingly ITLOS enjoined Japan from its increased catch.³⁰⁰ The tribunal without expressly mentioning the Precautionary Principle in its order stated that “scientific uncertainty regarding measures to be taken to conserve the stock of southern Bluefin tuna, which, combined with the risk of deterioration of the southern Bluefin tuna stock and the risk of serious harm to the Bluefin tuna, led the tribunal to grant provisional measures.”³⁰¹ The measure squarely fits with the very objective of the Precautionary Principle. This decision is taken as a confirmation for the normative status of the Precautionary Principle as customary international law since the Principle was not part of the treaty which gave rise to the dispute.³⁰²

The 2001 MOX Plant Case (Ireland v. United Kingdom): Due to UK’s placement of Mixed Oxide fuel (MOX) factory which processes nuclear fuel to produce energy Ireland sued Britain on the polluting effect of the plant to the Irish Sea.³⁰³ Though the case was submitted to PCA, Ireland has at the same time requested ITLOS to pass provisional measure against the defendant state to stop the operation of the plant up until final decision is given by PCA.³⁰⁴ Ireland claimed a risk of irreparable harm, as even the temporary operation of the plant would discharge pollutants into the Irish Sea.³⁰⁵ It also argued, on the basis of precautionary principle, that UK should bear the burden of proving the safety of the MOX plant.³⁰⁶ The United Kingdom, on the other hand, claimed that the risk of pollution from the MOX plant was insignificantly small.³⁰⁷

²⁹⁷ Id, para 73

²⁹⁸ Id, para 28

²⁹⁹ Ibid.

³⁰⁰ Id, para 89

³⁰¹ Id, 89

³⁰² Daniel Kazhdan, Precautionary Pulp: Pulp Mills and the Evolving Dispute between International Tribunals over the Reach of the Precautionary Principle, 38 Ecology L. Q. 527 (2011).p.533-34

³⁰³ MOX Plant Case, Request for Provisional Measures (Ireland v. United Kingdom) (ITLOS Cases No. 10). 3 December 2001, para 68

³⁰⁴ Ibid

³⁰⁵ Id, para 70

³⁰⁶ Id, para 71

³⁰⁷ Id, para 72

ITLOS decided the case in favor of UK and ruled that “there was insufficient urgency to grant the preliminary injunction that Ireland requested.”³⁰⁸

In this case unlike its previous decision ITLOS rejected the request for order of injunction which was claimed on the basis of the Precautionary Principle. Some scholars have argued that this decision could not be taken as rejection of the Precautionary Principle since the tribunal hoped the dispensation of the case in favor of the Irish Sea through PCA.³⁰⁹

4.4.3. The World Trade Organization

WTO within its dispute settlement mechanism has touched the Precautionary Principle incidentally. Its first reaction was taking place in the 1996 *Beef Hormones dispute* (US vs EU).³¹⁰ US sued EU for unfair trade practice because the later banned the formers livestock meat which was grown up with growth hormone.³¹¹ The panel decided in favor of US and EU appealed to the appellate body supporting its argument with the Precautionary Principle (since there was scientific uncertainty about the impact of the hormones).³¹² In its argument US has argued that Precautionary Principle was not part of customary international law.³¹³ In its ruling the appellate body asserted that “The status of the Precautionary Principle in international law, outside the field of international environmental law, still awaits authoritative formulation.”³¹⁴ Then, it has decided that, since EU failed to present sufficient evidence of possible harm, the precautionary Principle was inapplicable.³¹⁵

In the 2002 Measures affecting the importation of Apples Dispute (US vs Japan)³¹⁶ US sued Japan for the latter’s import restriction on the Apple product suspecting of bacterial infection.³¹⁷ Due to the Panel’s decision in favor the applicant Japan appealed to the appellate body invoking the Precautionary Principle and US has retreated its previous position towards the Principle

³⁰⁸ Id, para 81

³⁰⁹ Daniel Kazhdan, cited above at note 302, p.536

³¹⁰ Appellate Body Report, EC Measures Concerning Meat and Meat Products (Hormones), WT/DS26/AB/R & WT/DS48/AB/R, adopted Feb. 13, 1998,

³¹¹ Id, p.2

³¹² Id, p.6

³¹³ Id, p.13

³¹⁴ Id, p.13

³¹⁵ Ibid

³¹⁶ Appellate Body Report, Japan - Measures Affecting the Importation of Apples, WT/DS245/AB/R (Nov. 26, 2003) (adopted July 20, 2005).

³¹⁷ Id, p.2

denied the status of the Precautionary Principle as customary international law.³¹⁸ The appellate body reaffirms its previous position towards the normative status of the Precautionary Principle and it held that “Precautionary Principle might be part of customary international environmental law.”³¹⁹

In 2003 US has sued EU due to the latter’s import restriction on plants made using DNA technology.³²⁰ EU defended its import restriction on the basis of the Precautionary Principle. Though the Panel decided in favor of the applicant it has affirmed the status of the Precautionary Principle as a norm of customary international law and it has noted the existence of numerous conventions and declarations and domestic laws incorporating the Principle.³²¹

Thus what is drawn from the jurisprudence of WTO is the acceptance of the Precautionary Principle as a binding norm of international environmental law even as a norm of customary international environmental law. But, such affirmation of status is a paradox due to WTO’s decision which disfavored the parties who restrict importation of goods on the basis of the Precautionary Principle. Indeed the regime of international trade is not as such conducive to the environment.³²²

³¹⁸ Id, p.14

³¹⁹ Id,p.19

³²⁰ Panel Report, EC Measures Affecting the Approval and Marketing of Biotech Products, WT/DS291/R, WT/DS291/R, & WT/DS293/R (Sept. 29, 2006) (adopted Nov. 21, 2006).

³²¹ Id, para 2-8

³²² David Wirth, “The World Trade Organization Dispute Over Genetically Modified Organisms: The Precautionary Principle Meets International Trade Law?”, Vermont Law Review(2013), vol.37,no.4, p.1161

CHAPTER FIVE

5. CONCLUSION

The study, while examining the normative status of the Precautionary Principle, explores various international law instruments and the status of the principle ascertained after the analysis of the available instruments in light with article 38 of the ICJ statute. Other sources, like soft international law instruments, have also been utilized. Conclusions, as drawn from the discussions, are made henceforth.

The Precautionary Principle is enshrined in a number of international environmental treaties and it became a treaty norm. International environmental treaties, mostly MEAs, recognize the precautionary principle as a binding legal norm. These treaties, though are not alike every aspects of the Principle components of the principle, shared common elements such as: threat of harm; uncertainty on the casual linkage between causes and impacts and the magnitude of the anticipated harm and the need to take precautionary responses. Moreover, all treaties have shared the ultimate objective of the Principle, protecting the environment from harm. Thus, the inter-regime difference on some aspects of the Precautionary Principle could not devoid its status as a binding norm of international environmental law.

The Precautionary Principle has attained the status of customary international environmental law. The consistent inclusion of the principle in a significant number of soft international instruments including MEAs reflects a collective state practice and their conviction towards the binding nature of the principle in the protection of the global environment. It has found that insistence to the classic yardsticks of CIL is untenable due to the paradigm shifts taking place in international law and the unique nature of IEL which is known in its dependence over soft sources to develop its normative principles. Thus, state practices together with existing soft instruments endorses the attainment of the precautionary principle to the status of CIL.

The Precautionary Principle could be taken as a general principle of law recognized by states. Such status of the Principle has derived from the domestic and international legal systems. At the beginning it has been induced from the domestic legal systems and later on it deduced from the international legal systems. So, the Principle's status as a general principle of law recognized by

states is established through the hybrid approach, the domestic law approach and the international law approach. Thus, the status of the Principle as general principle of law recognized by states (by virtue of article 38(1)(c) of the ICJ statute) is well established.

The Precautionary Principle has been accorded dissimilar normative status within international adjudications. ICJ, ITLOS and WTO have experienced the judicial discourse on the Precautionary Principle and their reaction towards the normative status of the Principle was quite different. ICJ has never confirmed the normative status of the Principle under international environmental law except the strong position of dissenting judges, notably Judge Weeramantry. ITLOS, on the other hand, has implicitly accepted the normative status of the Precautionary Principle under international environmental law, at least in the *Southern Bluefin Tuna Case*. Although it did not apply the Principle in the settlement of international trade disputes WTO has confirmed the normative status of the Principle in international environmental law. Thus, the precedents of the three adjudications in relation to the normative status of the Precautionary Principle indicates the absence of judicial consensus towards the normative status of the principle and such a dissimilar stand might be linked with the multiplicity of forums.

BIBLIOGRAPHY

I. Treaties

1. Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Areas, 2001
2. Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, adopted August 4, 1995
3. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, adopted March 22, 1989
4. Bamako Hazardous Waste Movement Convention, 1991
5. Barcelona Convention for the Protection of the Mediterranean Sea against Pollution (as amended), 1995
6. Cartagena Protocol on Biosafety to the Convention on Biological Diversity, adopted January 29, 2000
7. Convention on Biological Diversity, adopted June 5, 1992
8. Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, Iran, adopted February 2, 1971, 1996
9. Convention on International Trade in Endangered Species of Wild Fauna and Flora, adopted March 2, 1973
10. Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), 1992
11. Convention for the Protection of the World Cultural and Natural Heritage, adopted November 16, 1972,
12. Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention), 1995
13. Convention on the Protection of the Marine Environment of the Baltic Sea Area (Baltic Sea Convention), 1992
14. Framework Agreement for the Conservation of Living Marine Resources on the High Seas of the South Pacific, Galapagos Agreement, 2000

15. Framework Convention for the Protection of the Marine Environment of the Caspian Sea, 2003
16. Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992
17. Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 1992
18. International Convention on Oil Pollution Preparedness, Response, and Cooperation, 1990
19. International Convention for the Regulation of Whaling, adopted December 2, 1946
20. Izmir Protocol on Trans-frontier Movement of Hazardous Wastes the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972
21. Kyoto Protocol to the United Nations Framework Convention on Climate Change, adopted December 10, 1997
22. London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, adopted December 29, 1972
23. London IMO Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001
24. London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, adopted November 7, 1996
25. Long- Range Transboundary Air Pollution Convention, adopted November 13, 1979
26. Long-Range Transboundary Air Pollution (LRTAP), 1994,
27. Montreal Protocol on Substances that Deplete the Ozone Layer, adopted September 16, 1987,
28. OSPAR Convention for the Protection of the Marine Environment of the North- East Atlantic, September 22, 1992
29. Rotterdam Convention on the Protection of the Rhine, 1998,
30. Stockholm Convention on Persistent Organic Pollutants, adopted May 22, 2001
31. Sofia Convention on Cooperation for the Protection and Sustainable Use of the Danube, 1994
32. Stockholm Convention on Persistent Organic Pollutants (POPs) , 2001
33. Treaty on the Functioning of the EU, 2007
34. United Nations Convention on the Law of the Sea, December 10, 1992

35. United Nations Framework Convention on Climate Change, adopted May 9, 1992
36. United Nations Agreement on the Conservation and Management of Straddling Stocks and Highly Migratory Fish Stocks
37. United Nations Charter, 1945
38. Vienna Convention on the Law of Treaties, adopted May 23, 1969
39. Vienna Convention for the Protection of the Ozone Layer, adopted March 22, 1985
40. Waigani Convention on prohibit the importation of hazardous Wastes in to Pacific Island,1995

II. Soft Instruments

1. Agenda 21 of the Rio-Declaration, 1992
2. Brundtland Commission Report, 1987
3. EU Communication on the Precautionary Principle,2000
4. FAO Code of Conduct for Responsible Fisheries,1995
5. Helsinki Declaration on the Protection of the Marine Environment of the Baltic Sea,1988
6. Decision of the United Nations Environment Programme Governing Council,1989
7. Declaration on the Protection of the Marine Environment from Land-based Activities,1995
8. Malmo Ministerial Declaration, First Global Ministerial Environment Forum,2000
9. Ministerial Declaration on the Protection of the Black Sea,1993
10. Ministerial Declarations of the Conferences on the Protection of the North Sea, 1984,1987,1990, 1995, 2002
11. OECD Environmental Strategy for the First Decade of the 21st Century,2001
12. Plan of Implementation, World Summit on Sustainable Development,2002
13. Programme for the Further Implementation of Agenda 21,1997
14. Rio Declaration on Environment and Development, UNCED, June 14, 1992
15. Strategic Approach to International Chemicals Management, Dubai,2006
16. Stockholm Declaration on Human Environment, UNCED, June 16, 1972
17. UNCED Text on Protection of Oceans,1991
18. Wingspread Statement, 1998
19. World Charter for Nature, UNGA Resolution No. 37/7, 1982

III. Cases

1. Asylum Case (Colombia v. Peru), ICJ Reports of Judgments, Advisory Opinions and 20 November 1950
2. Corfu Channel (UK v. Albania), ICJ Reports , 9 April 1949
3. Gabcikovo-Nagymoros Project (Hungary/Slovakia), ICJ Reports, 25 September 1997
4. Lac Lanoux Arbitration (France v. Spain), UN Reports of International Arbitral awards, 1957
5. Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion), ICJ Reports, 8 July 1996
6. MOX Plant (Ireland v. United Kingdom), ITLOS provisional orders 3 December 2001
7. Nuclear Tests (New Zealand v. France), ICJ Order Reports, 22 September 1995
8. Nicaragua. ICJ Reports. 1986
9. North Sea Continental Shelf, ICJ Reports. 1969
10. Pulp Mills on the River Uruguay (Argentina v. Uruguay), ICJ reports 23 January 2007
11. Southern Bluefin Tuna (New Zealand v. Japan; Australia v. Japan), ITLOS Provisional Orders 27 August 1999
12. Trail Smelter Case (U.S. v. Canada), UN Reports of International Arbitral Awards, 1941

IV. Books

1. Alexandre Kiss & Dinah Shelton , “ Guide International Environmental Law”(Martinus Nijhoff Publishers, 2007)
2. Andrew Jordan & Timothy O’Riordan , “The precautionary principle: a legal and policy history,” in Marco Martuzzi and Joel A. Tickner(ed.) ,The precautionary principle: protecting public health, the environment and the future of our children,(World Health Organization, 2004)
3. Daniel Bodansky, “Diagnosing the Causes of Environmental Problems”, The Art and Craft of International Environmental Law(Harvard University Press, 2010)
4. Daniel Bodansky, Jutta Brunnee and Ellen Hey(eds.),The Oxford Handbook of International Environmental Law(Oxford University Press, 2007)
5. David Hunter, Durwood Zaeklke, and James Salzman, International Environmental Law and Policy,(Foundation Press, New York, 2002), 2nd ed
6. David Ong and Robert Wight, Maurice Sunkin (eds), Source Book On Environmental Law(Cavendish Publishing, London, 2nd ed., 2002),

7. Elli Louka, *International Environmental Law: Fairness, Effectiveness, and World Order*(Cambridge University Press, New York, 2006)
8. Farhana Yamin and Joanna Depledge, *The International Climate Change Regime: A Guide to* Jon M. Van Dyke During, the evolution and international acceptance of the Precautionary Principle, D. Caron and H. Scheiber (eds.), *Bringing New Law to Ocean Waters*(Koninklijke Brill N.V., the Netherlands, 2004 *Rules, Institutions and Procedures*(Cambridge University Press, 2004)
9. Frank Biermann, Bernd Siebenhüner and Anna Schreyögg, *International Organizations in Global Environmental Governance*(Routledge, 2009)
10. Joseph DiMento, *The Global Environment and International Law*(University of Texas Press, Austin, 1st ed., 2003)
11. Keith Porter, Mary Jane Porter and Laurence Smith, *International Environmental Law*, (Centre for Development, Environment and Policy, SOAS University, 2014)
12. Malgosia Fitzmaurice, *Contemporary issues in international environmental law*(Edward Elgar Cheltenham, UK,1999)
13. Philippe Sands, *Principles Of International Environmental Law*(Cambridge University Press, New York, 2nd ed., 2003)
14. Rebecca Bratspies and Russell Miller(eds), *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration*(Cambridge University Press,2006)
15. Tuomas Kuokkanen, *International Law and The Environment: Variations on a Theme* (Kluwer Law International, the Netherlands, 1st ed., 2002)

V. Journal Articles

1. Aaron Holdway, “Reducing Uncertainty the Need to clarify the Key elements of the Precautionary Principle” *Consilience*, (Columbia University, 2008), 1:1
2. Agne Sirinskiene, “The Status of Precautionary Principle: Moving Towards a Rule of Customary Law”, *Jurisprudence*(2009), 4:118
3. Alan Stewart, “Scientific Uncertainty, Ecologically Sustainable Development And The Precautionary Principle”, *Griffith Law Review* (1999),8:2
4. Aldo Leopold, “Sovereignty and regulation of environmental risk under the precautionary principle in WTO Law” *Vermont Law Review*, (2011)

5. Alexander Puhlmann, “From Declaration to Implementation? – RIO + 13: an evaluation of its legal significance in international environmental law”, the new zealand postgraduate law e-journal (ny) , no. 3
6. Allister Slingenberg and Leon Braat, ‘Study on understanding the causes of biodiversity loss and the policy assessment framework’, ECORYS Research and Consulting (2009)
7. Andri Wibisana, “The Development of the Precautionary Principle in International and in Indonesian Environmental Law”, Asia Pacific Journal of Environmental Law(2011), 13:2
8. Angelica Cobzaru “Applicability of the Precautionary Principle: European Union Case Law - France Model”, Contemporary Readings in Law and Social Justice (2012), 4:2
9. Arie Trouwborst, “Prevention, Precaution, Logic and Law: The Relationship between the Precautionary Principle and the Preventative Principle in International Law and Associated Questions”, Erasmus Law Review(2009), 2:2
10. Arif Ahmed and Jahid Mustofa, “Role of Soft Law in Environmental Protection: An Overview”, Global Journal of Politics and Law Research (2016),4:2
11. Axel Luttenbergergerger, “The Role of Precautionary Principle in Environmental Protection of Coastal Area”, Tourism and Hospitality Industry, Congress Proceedings Trends in Tourism and Hospitality Industry, Scientific paper (2014)
12. Barnabas Dickson, “The Precautionary Principle in CITES:A Critical Assessment”, Natural Resources Journal(1999), 39:211
13. Bernard Weintraub “Science, International Environmental Regulation, and The Precautionary Principle: Setting Standards and Defining Terms”, N.Y U. Environmental Law Journal(1992), 1:173
14. Brownlie, Principles of International Law(4th ed, 1990), p. 5 as referenced by Ernest A.young, ‘ Sorting out the debate over CIL’, Virginia Journal of International Law(2002), vol 42,no.365
15. Cárdenas Castañeda, “Call for Rethinking the Sources of International Law: Soft Law and the Other Side of the Coin”, Anuario Mexicano de Derecho Internacional (2013)
16. Carol Annette Petsonk, “The Role of the United Nations Environment Programme (UNEP) in the Development of International Environmental Law”, American University International Law Review(1990), vol. 5, no. 2

17. Claudia Saladin, "Precautionary Principle in International Law", *International Journal of Occupational and Environmental Health*(2000), 6:4
18. Chu Xiaolin, "The Evolution of the Precautionary Principle", *China Oceans Law Review*(2007), 207:1
19. Daniel Dobos, "The Necessity of Precaution: The Future of Ecological Necessity and the Precautionary Principle" *Fordham Environmental Law Journal*(2002),13:375
20. Daniel Kazhdan, *Precautionary Pulp: Pulp Mills and the Evolving Dispute between International Tribunals over the Reach of the Precautionary Principle*, 38 *Ecology L. Q.* 527 (2011).
21. David Dana, "The Contextual Rationality of the Precautionary Principle", *Queen's Law Journal*(2009), 35: 67
22. David Wirth, "The World Trade Organization Dispute Over Genetically Modified Organisms: The Precautionary Principle Meets International Trade Law?", *Vermont Law Review*(2013), 37:4
23. Dinah Shelton, "Normative Hierarchy in International Law", *the American Journal of International Law* (Cambridge University Press, 2006), 100:2
24. Didier Bourguignon, "The precautionary principle: Definitions, applications and governance", *European Parliamentary Research Service*(2016)
25. Djibril Moudachirou and Hamid Mukhtar, "Precautionary Principle in International Environmental Law: Rule of Customary International Law", *International Journal of Management Sciences*(2016),6:12
26. Edith Brown Weiss, "the evolution of international environmental law", *Japanese Yearbook of International Law* (2011), 54:
27. Evan Seamone "The Precautionary Principle as the Law of Planetary Defense: Achieving the Mandate to Defend the Earth Against Asteroid and Comet Impacts While There is Still Time," *The Georgetown international environmental law review*(2004), 17:1
28. Foster C, "Necessity and Precaution in International Law: Responding to Oblique Forms of Urgency" *New Zealand Universities Law Review*(2008), 32:2
29. Howard S. Schrader, "Custom and General Principles as Sources of International Law in American Federal Courts", *Columbia Law Review*(1982), 82:4

30. James Cameron & Juli Abouchar, *The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment*, Boston College International and Comparative Law Review(1991),14:1
31. James Hickey and Vern Walker, “Refining the Precautionary Principle in International Environmental Law”, *Virginia Environmental Law Journal* (1995), 14:3
32. James Harrison, “Significant International Environmental Law Cases 2016–17”, *Journal of Environmental Law* (Oxford University Press, 2017), 29:
33. Jonathan Harris, “Trade and the Environment”, *Global Development and Environment Institute Tufts University* (2004)
34. John Applegate, “The Precautionary Preference: An American Perspective on the Precautionary Principle, Human and Ecological Risk Assessment: An International Journal(2000), 6:3
35. Luis Barrionuevo , “The Work of the International Law Commission in the Field of International Environmental Law”, *Boston College Environmental Affairs Law Review* (2005), 32:2
36. Kenneth W. Abbott and Duncan Snidal “Hard and Soft Law in International Governance” *International Organization*(2000), 54:3
37. Kiyotaka Morita, “The Issue of Lacunae in International Law and Non Lique Revisited”, *Hitotsubashi Journal of Law and Politics* (Hitotsubashi University, 2017)
38. Luis Rodriguez-Rivera, “Is the Human Right to Environment Recognized under International Law- It Depends on the Source”, *Colombia Journal of International Environmental Law and Policy*(2001), 12:1
39. Mags Adams , “The precautionary principle and the rhetoric behind it”, *Journal of Risk Research*(2002),5:4
40. Marjolein Asselt & Ellen Vos, “The Precautionary Principle and the Uncertainty Paradox”, *Journal of Risk Research*, (2006), 9:4
41. Nicolas de Sadeleer, *The principles of prevention and precaution in international law: two heads of the same coin?,*” in Fitzmaurice, Ong, and Merkouris(ed.), *Research Handbook on International Environmental law*(Edward Elgar,2010), vol. 13
42. Niels Petersen, “The International Court of Justice and the Judicial Politics of Identifying Customary International Law”, *The European Journal of International Law* (Oxford University Press,2017),28:2

43. Owen McIntyre, "The Role of Customary Rules and Principles in the Environmental Protection of Shared International Freshwater Resources", *Natural Resources Journal*, (Regents of the University of New Mexico, 2006), 46:1
44. Owen McIntyre and Thomas Mosedale, "The Precautionary Principle as a Norm of Customary International Law", *Journal of environmental law* (1997), 9:221
45. Ole W. Pedersen, "From Abundance to Indeterminacy: The Precautionary Principle and Its Two Camps of Custom", *Transnational Environmental Law*, (Cambridge University Press, 2014), 3:2
46. Patrick M. Norton, "The Role of Precedent in the Development of International Investment Law", *ICSID Review* (2018)
47. Peter defur and Michelle Kaszuba, "Implementing the precautionary principle", *The Science of the Total Environment* (2002)
48. Peter Sand, "International Law on the Agenda of the United Nations Conference on Environment and Development: Towards Global Environmental Security?", *Nordic Journal of International Law* (1991), 5:60
49. Peter H. Sand, "the Precautionary Principle: A European Perspective", *Human and Ecological Risk Assessment: An International Journal* (2000), 6:3
50. Pierre-Marie Dupuy, "Soft Law and The International Law of The Environment", *Michigan Journal of International Law* (1991), 12:
51. Richard Williamson, "Hard Law, Soft Law, and Non-Law in Multilateral Arms Control: Some Compliance Hypotheses", *Chicago Journal of International Law* (2003), 4:1
52. Rumiana Yotova, "Challenges in the Identification of the 'General Principles of Law Recognized by Civilized Nations': The Approach of the International Court", *CJCCL* (2017), 3:1
53. Saradhi Puttagunta, "The Precautionary Principle in the Regulation of Genetically Modified Organisms", *Health Law Review* (2015), 9:2
54. Scott La Franchi, "Surveying the Precautionary Principle's Ongoing Global Development: The Evolution of an Emergent Environmental Management Tool", *Boston College Environmental Affairs Law Review* (2005), 32:3
55. Stuart Harding, *A Guide to the Basics of International Law* (Gorge Town University Law Center, 2012)
56. Sunstein, C.R. "Beyond the Precautionary Principle", *University of Pennsylvania Law Review* (2003), 51:3

57. Svitlana Kravchenko, Tareq M.R. Chowdhury and Md Jahid Hossain Bhuiyan, "Principles of international environmental law", Routledge Handbook of International Environmental Law (Routledge, 2012)
58. Tee Guidotti, "Applying the Precautionary Principle", Archives of Environmental & Occupational Health(2012), 67:2
59. Teshager Worku Dagne, "Compulsory Dispute Settlement and the Problems of Multiple Fora under International Environmental Law"
60. Thomas Gehring, "Treaty-Making and Treaty Evolution," in Daniel Bodansky, Jutta Brunnee and Ellen Hey(eds.),The Oxford Handbook of International Environmental Law(Oxford University Press, 2007)
61. Warwick Gullett, "Environmental protection and the precautionary principle: a response to scientific uncertainty in environmental management", Environmental and Planning Law Journal (University of Wollongong, 1997), 14:1
62. Winfried Lang, "UN Principles and International Environmental Law", Max Plank Encyclopedia of Public International Law(Oxford University Press, 1999) ,vol.3

VI. Web Sources

1. <http://www.iisd.org/publications>
2. <http://www.unep.org/assembly/backgroundreport>
3. <https://www.unenvironment.org/explore-topics/air>
4. <https://www.carbonbrief.org/acidificationcouldleaveoceansuninhabitablecoldwatercorals>
5. <http://www.iisd.org/publications>
6. <http://lawdigitalcommons.bc.edu/ealr>
7. <http://ssrn.com/abstract=1460942>
8. <http://ase.tufts.edu/gdae>
9. <https://www.unenvironment.org/explore-topics/air>
10. <http://www.unep.org/assembly/backgroundreport>
11. research-pubs@uow.edu.au
12. www.ijsee.com