**UNIT ONE**

**INTRODUCTION TO ENVIRONMENTAL SCIENCE AND ENVIORNMENTAL ETHICS**

**Introduction**

Environmental ethics seeks to respond to the many environmental consequences of human development in marrying science with philosophy. Thus, is a multidisciplinary activity that draws on expertise in physics, biology, economics, law, sociology, psychology and philosophy. Roughly speaking, we can distinguish between *descriptive* and *normative* environmental ethics. The descriptive aim is to describe and explain what attitudes people have to questions like those mentioned above. This part is usually undertaken by sociologists and anthropologists.The normative aim is to critically assess the attitudes people have on these issues.This task depends on scientific knowledge and philosophical considerations about logic, value theory, normative ethical theory and the clarification of central concepts like those of *welfare*, *value* and *nature*. In line with the title of this Course, the focus in this entry will be on some of the philosophical perspectives on environmental ethics.

**Definition of Environment and Environment Science**

Environmental ethics is ethics about environment. Thus, in order to understand the concept of environmental ethics one should be able to understand the meaning of environment environmentalism. Accordingly, in this section of the chapter we define environment and, environmentalism. The academic field of environmental ethics grew up in response to scientific findings about environment. Environmental Science provides an integrated, quantitative, and [interdisciplinary](https://en.wikipedia.org/wiki/Interdisciplinary) approach to the study of [environmental systems](https://en.wikipedia.org/wiki/Ecosystem). Thus, in this section, you will also be introduced to the scientific concepts of environment such as Ecology and ecosystem; environmental economics and ecological economics; sustainable development; green economy; environmental justice; environment science and technology.

Foundational texts from philosophy, science, and the humanities provide an interdisciplinary context for the concepts explored in sections on the human place in nature, moral consideration, putting environmental ethics into practice, and issues of and for the future.

**Meaning of “Environment”**

The word environment is derived from an ancient French word environner, meaning to encircle. By broadly applying to surroundings, environment can include the aggregate of natural, social and cultural conditions that influence the life of an individual or community. Our surrounding includes biotic factors like human beings, Plants, animals, microbes, etc and abiotic factors such as light, air, water, soil, etc. Environment is a complex of many variables, which surrounds man as well as the living organisms. Environment consists of an inseparable whole system constituted by physical, chemical, biological, social and cultural elements, which are interlinked individually and collectively in myriad ways.

Of course, defining an Environment is not an easy task. Most treaties, declarations, codes of conduct, guidelines, etc. don‘t attempt to define it directly. No doubt this is because it is difficult both to identify and to restrict the scope of such an ambiguous term, which could be used to encompass anything.

Many conventions (like The 1992 Rio Declaration on Environment and Development) avoid the problem, however, no doubt because, as Caldwell remarks “it is a term that everyone understands and no one is able to define”.

**Components of Environment**

The natural environment, matter (chemicals) as well as living beings on earth are distributed among the four major Environmental Components viz. Lithosphere, Hydrosphere, Atmosphere and Biosphere. These four systems are in constant change and such changes are affected by human activities and vice versa (Kumarasamy, 2004). The four major components of our environment are:

1. Hydrosphere: includes all water bodies such as lakes, ponds, rivers, streams and ocean etc. Hydrosphere functions in a cyclic nature, which is termed as hydrological cycle or water cycle.

2. Lithosphere: mainly, contains soil, earth rocks, mountain etc. Lithosphere is divided into three layers-crusts, mantle and core (outer and inner). The earth is a cold spherical solid planet of the solar system, which spins in its axis and revolves around the sun at a certain constant distance.

3. Atmosphere: is a thin layer which contains gases like oxygen, carbon dioxide etc. and which protects the solid earth and human beings from the harmful radiations of the sun.

4. Biosphere: is known as the life layer, it refers to all organisms on the earth’s surface and their interaction with water and air. It consists of plants, animals and micro-organisms, ranging from the tiniest microscopic organism to the largest whales in the sea. The richness of biosphere depends upon a number of factors like rainfall, temperature, geographical reference etc.

**Environmentalism**

Environmentalism is the movement, especially in politics and consumer affairs, that works toward protecting the natural world form harmful human activities. In this regard environmentalism can be taken as concern for the environment. As a theory, environmentalism is stating that our environment is more influential than heredity in determining our development.

Beginning in the 1960s environmentalism became an important political and intellectual movement in the West. In the United States biologist Rachel Carson‘s Silent Spring (1962), a passionate and persuasive examination of chlorinated hydrocarbon pesticides and the environmental damage caused by their use, led to a reconsideration of a much broader range of actual and potential environmental hazards. In subsequent decades the U.S. government passed an extraordinary number of environmental laws—including acts addressing solid-waste disposal, air and water pollution, and the protection of endangered species—and created an Environmental Protection Agency to monitor compliance with the laws. These new environmental laws dramatically increased the national government‘s role in an area previously left primarily to state and local regulation.

**Environmental Science**

Environmental science is interdisciplinary academic field physical, biological and information sciences such as ecology, biology, physics, chemistry, plant science, zoology, mineralogy, oceanography, [limnology](https://en.wikipedia.org/wiki/Limnology), [soil science](https://en.wikipedia.org/wiki/Soil_science), [geology](https://en.wikipedia.org/wiki/Geology) and [physical geography](https://en.wikipedia.org/wiki/Physical_geography) ([geodesy](https://en.wikipedia.org/wiki/Geodesy)), and [atmospheric science](https://en.wikipedia.org/wiki/Atmospheric_science)) to the study of the environment, and the solution of environmental problems. Related areas of study include [environmental studies](https://en.wikipedia.org/wiki/Environmental_studies) and [environmental engineering](https://en.wikipedia.org/wiki/Environmental_engineering). Environmental engineering focuses on design and technology for improving environmental quality in every aspect. Today Environmental Science provides an integrated, quantitative, and [interdisciplinary](https://en.wikipedia.org/wiki/Interdisciplinary) approach to the study of [environmental systems](https://en.wikipedia.org/wiki/Ecosystem).

Environmental scientists work on subjects like the understanding of earth processes, evaluating [alternative energy](https://en.wikipedia.org/wiki/Alternative_energy) systems, [pollution control](https://en.wikipedia.org/wiki/Pollution_control) and mitigation, [natural resource management](https://en.wikipedia.org/wiki/Natural_resource_management), and the [effects of global climate change](https://en.wikipedia.org/wiki/Effects_of_global_warming). [Environmental issues](https://en.wikipedia.org/wiki/Environmental_issues) almost always include an interaction of physical, chemical, and biological processes. Environmental scientists bring a systems approach to the analysis of environmental problems. Key elements of an effective environmental scientist include the ability to relate space, and time relationships as well as quantitative analysis.

Environmental science came alive as a substantive, active field of scientific investigation in the 1960s and 1970s driven by (a) the need for a [multi-disciplinary](https://en.wikipedia.org/wiki/Multi-disciplinary) approach to analyze complex environmental problems, (b) the arrival of substantive environmental laws requiring specific environmental protocols of investigation and (c) the growing public awareness of a need for action in addressing environmental problems. Events that spurred this development included the publication of [Rachel Carson](https://en.wikipedia.org/wiki/Rachel_Carson)'s landmark environmental book [*Silent Spring*](https://en.wikipedia.org/wiki/Silent_Spring) along with major environmental issues becoming very public, such as the [1969 Santa Barbara oil spill](https://en.wikipedia.org/wiki/1969_Santa_Barbara_oil_spill), and the [Cuyahoga River](https://en.wikipedia.org/wiki/Cuyahoga_River) of Cleveland, Ohio, "catching fire" (also in 1969), and helped increase the visibility of environmental issues and create this new field of study.

**Ecology and Ecosystem**

The study and understanding of Ecology is an integral part of Environment Science learning. Every living being however small or big depends on the environment for its existence and also competes with others for essentials in life. For survival, living beings form groups and different groups compete with each other for survival.

Ecology is study of interrelationships between organisms and group of organisms and their interactions with the physical environment.

The word Ecology has its roots from two Greek words “ikos” meaning a house or dwelling or place of living or habitat and “logos” meaning study. Ecology is hence the study of interrelationship among plants and animals and their interactions with the physical environment. There are two important divisions of Ecology. They are :

1. Autoecology or Species Ecology: This is the study of an individual species. i.e. behavior, adaptation and interaction of a particular species in its environment.

2. Synecology or Ecology of Communities: This is the study of Communities and their interaction with the environment.

An Ecosystem is defined as a group of plants, animals or living organisms living together and interacting with the physical environment in which they live. An Eco system has a more or less a closed boundary and the flow of mass in and out of the system is very less as compared to the internal movement of mass. Ecosystems can be large or small. Examples of large eco systems are rain forests, deserts, salt marshes, coral reefs, lakes and ponds, open ocean, grass lands etc.

According to Orr, “ignorance is not solvable problem, rather it is inescapable part of human situation. We cannot comprehend the world with its entirety.” Despite the growing knowledge about environment, the complexity of the earth and it’s life system can never be managed. However, what ought to be managed is that human desire, economics, politics and community.

**Environmental Economics vs. Ecological Economics**

Apart from the physical environmental factors, the man made environment includes human groups, the material infrastructures built by man, the production relationships and institutional systems that he has devised. The social environment shows the way in which human societies have organized themselves and how they function in order to satisfy their needs (Kumarasamy , 2004). Thus, environmental studies incorporates more of the social sciences for understanding human relationships, perceptions and policies towards the environment.

Environment economics is a sub-field of economics that is concerned with environmental issues. Economics is a field of discipline that is concerned with allocation finite resource to unlimited human wants. Environmental economics emerged as a widely studied topic due to growing concerns in regards to the environment in the twenty first century.

**The Concept of Sustainable Development**

Sustainable development is the organizing principle for meeting human development goals while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend. The desired result is a state of society where living conditions and resource use continue to meet human needs without undermining the integrity and stability of the natural system.

Sustainable development can be classified as development that meets the needs of the present without compromising the ability of future generations.

While the modern concept of sustainable development is derived mostly from the 1987 Brundtland report, it is also rooted in earlier ideas about sustainable forest management and twentieth century environmental concerns. As the concept developed, it has shifted to focus more on economic development, social development and environmental protection for future generations. It has been suggested that "the term 'sustainability' should be viewed as humanity's target goal of human-ecosystem equilibrium (homeostasis), while 'sustainable development' refers to the holistic approach and temporal processes that lead us to the end point of sustainability". Modern economies are endeavoring to reconcile ambitious economic development and obligations of preserving natural resource and ecosystem, as the two are usually seen as of conflicting nature.

Agenda 21, the program of action adopted by the UNCED Conference, refers in its preamble to the need for a‘ global partnership for sustainable development‘, and most of its provisions, together with the principles and down in the Rio Declaration on Environment and Development, are intended to promote implementation of the concept.

The concept of sustainable development has been and still is subject to criticism, including the question of what is to be sustained in sustainable development. It has been argued that there is no such thing as a sustainable use of a non-renewable resource, since any positive rate of exploitation will eventually lead to the exhaustion of earth's finite stock;[[2]](https://en.wikipedia.org/wiki/Sustainable_development#cite_note-kt01-2):13 this perspective renders the Industrial revolution as a whole unsustainable.[[3]](https://en.wikipedia.org/wiki/Sustainable_development#cite_note-ngr01-3):20f [[4]](https://en.wikipedia.org/wiki/Sustainable_development#cite_note-jr01-4):61–67 [[5]](https://en.wikipedia.org/wiki/Sustainable_development#cite_note-hd01-5):22f It has also been argued that the meaning of the concept has opportunistically been stretched from 'conservation management' to 'economic development', and that the Brundtland Report promoted nothing but a business as usual strategy for world development, with an ambiguous and insubstantial concept attached as a public relations slogan.

**Green economy**

The green economy is defined as an [economy](https://en.wikipedia.org/wiki/Economy) that aims at reducing environmental risks and ecological scarcities, and that aims for [sustainable development](https://en.wikipedia.org/wiki/Sustainable_development) without [degrading the environment](https://en.wikipedia.org/wiki/Environmental_degradation). It is closely related with [ecological economics](https://en.wikipedia.org/wiki/Ecological_economics), but has a more politically applied focus. The 2011 [UNEP](https://en.wikipedia.org/wiki/United_Nations_Environment_Programme) Green Economy Report argues "that to be green, an economy must not only be efficient, but also fair. Fairness implies recognizing global and country level equity dimensions, particularly in assuring a just transition to an economy that is low-carbon, resource efficient, and socially inclusive."

A feature distinguishing it from prior economic regimes is the direct valuation of [natural capital](https://en.wikipedia.org/wiki/Natural_capital) and [ecological services](https://en.wikipedia.org/wiki/Ecological_services) as having economic value and a [full cost accounting](https://en.wikipedia.org/wiki/Full_cost_accounting) regime in which costs externalized onto society via ecosystems are reliably traced back to, and accounted for as liabilities of, the entity that does the harm or neglects an asset.

**Environmental Justice**

The term environmental justice has two distinct uses with the more common usage describing a social movement that focuses on the fair distribution of environmental benefits and burdens. The other use is an interdisciplinary body of social science literature that includes theories of the environment and justice, environmental laws and their implementations, environmental policy and planning and governance for development and sustainability, and political ecology. In general, environmental justice seeks to ensure that authorities fairly allocate and regulate scarce resources to ensure that the benefits of environmental resources, the costs associated with protecting them, and any degradation that occurs (i.e. all the benefits and burdens) are equitably shared by all members of society. Environmental justice goes beyond traditional environmental protection objectives to consider the equitable distribution of pollution, and, more broadly, the often disproportionate burden borne by the poor and minority groups in respect to environmental harm.

The United States Environmental Protection Agency defines environmental justice as follows: “Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” (Shiva, Vandana: 2008).

**Environment science/technology**

The production and use of technology can have a negative impact on the environment and therefore on us. Innovation within technology can also be used to *remove* or *mitigate* some of these man-made threats, and to *minimise the impact* of some non-man-made threats such as huge meteors, volcanoes, earthquakes, tsunamis and diseases.

Our use of technology has changed and continues to change the natural environment. While technology – medicine, transportation technologies and information technology and so on – can help us to prosper, there is also no doubt that the production and use of technology can have a negative impact on the environment and therefore on us. The pollution of rivers, oceans and the air poses an immediate threat to the *health* of humans; and the build-up of greenhouse gases, depletion of the ozone layer, and deforestation may each pose a threat, not only to the health of humans, but also to the *survival* of the human species.

**What is Environmental Ethics**

Environmental ethics is the part of [environmental philosophy](http://en.wikipedia.org/wiki/Environmental_philosophy) which considers extending the traditional boundaries of ethics from solely including humans to including the non-human world. It exerts influence on a large range of disciplines asks questions that cut across main branches of philosophy:

Metaphysics- (from the Greek words metá, "beyond", "upon" or "after" and physiká, “physics”) : the branch of philosophy that concerns the nature of existence. What is real? Environmental ethics thus takes up metaphysics insofar as it concerns the difference in reality between human culture and wild nature. Thus deals with the question are human beings part of nature?

Axiology (from Greek axi~, "value, worth"; and logos, “study of”—“the study of values”): the branch of philosophy dealing with the nature of values (ethics and aesthetics are areas of axiology). Environmental ethics concerns axiology in considering whether humans alone are intrinsically valuable. Does wild nature have value in itself or value only for human beings?

Epistemology (from Greek epistime‘, "knowledge, science", and logos, "study of"): the branch of philosophy that concerns knowledge. What is the source of knowledge? What is truth? Environmental ethics takes up epistemology insofar as it concerns questions about how one would know what the relation between human beings and nature is or what the value nature has in itself.

Aesthetics (from Greek aisthetikos, meaning "esthetic, sensitive, sentient"): the branch of philosophy dealing with the nature of beauty, art and taste, and with the creation and appreciation of beauty. Environmental ethics takes up aesthetics insofar as it concerns questions about the beauty of nature.

**Environmental Metaethics**

Environmental metaethics is axiology of Nature. In terms of epistemology, metaethics it is usually framed by distinguishing between objectivism and subjectivism. Metaethical objectivism is the view that there are objective standards of ethical value independent of human consciousness. Metaethical subjectivism is the view that there are no objective standards, the standards of ethical value are determined by human beings and thus relative.

In terms of axiology, metaethics involves determining what is the proper subject-matter of ethics. Environmental ethics thus attempts to broaden the boundaries of what is considered the proper subject matter of ethics. Some different positions within the field of environmental ethics includes:

1) Nonhuman natural objects are valuable in themselves, independent of human consciousness (metaethical objectivism).

2) Nonhuman natural objects are valuable only insofar as humans desire them (metaethical subjectivism). Subjectivism thus favors anthropocentrism; objectivism favors nonanthropocentrism

**Why study environment ethics?**

Environmental ethics is the philosophical discipline that considers the moral and ethical relationship of human beings to the environment. In other words it considers the ethical basis of environmental protection. Its emergence was the result of increased awareness of how the rapidly growing world population was impacting the environment as well as the environmental consequences that come with the growing use of pesticides, technology and industry.

The environmental crisis is an outward manifestation of the crisis of mind and spirit. It all depends on how we think and act. The strains of the ecological crisis are so apparent that the task to preserve the environment is a must. Adjusting the relationship between humans and nature is one of the most fundamental issues we face and must deal with today. With the increasing deterioration of ecological systems on which human beings rely and the aggravation of the environmental crisis, human beings have realized that we cannot rely on economic and judicial methods alone to solve the problems of environmental pollution and ecological imbalances.

In this context, environmental ethics aims to provide ethical justification and moral motivation for the cause of global environmental protection. Environmental ethics helps define man’s moral and ethical obligations towards the environment. It considers the ethical relationship between people and the natural world and the kind of decisions people have to make about the environment. Its approaches can play a vital role to run our life smoothly and can make a balance between man and other beings in our surrounding environment.

Thus, environmental ethics has no specific international environmental code. It simply tries to answer the questions of how humans should relate to their environment, how we should use the Earth’s resources & how we should treat other species etc. The Norwegian Philosopher “Arne Naess” is regarded as one of the founder fathers of environmental movement and he identified the environmental problems in his short paper “The shallow and the Deep: Long Range Ecology Movement”, published in 1973. He argued for the intrinsic value and inherent worth of the environment. According to Naess, every being, whether human, animal has an equal right to live and blossom. He called this “ecosophy”, which he defines as follows: “By an ecosophy I mean a philosophy of ecological harmony or equilibrium”. (Naess: 1973) Naess rejected any idea that humans were more important because they had a soul, use reason or have consciousness. So nature does not exist to serve human; humans are simply a part of nature and all species have a right to exist for their own sake, regardless of their usefulness to humans.

Environmental ethics provides moral grounds for social policies aimed at protecting the earth’ s environment and remedying environmental degradation. That is why it can be viewed that environmental ethics involves ecological consciousness amongst us. Ecological consciousness is a growing spirit that speaks of tolerance, interdependence etc. It also show path to a sustainable future. Ecological consciousness makes a bond in nature creating ecological balance. Otherwise the concept of ecological imbalance will emerge. Therefore, it can be opined that we are in a chain in environment if one knot is displaced from another the whole chain will be useless.

**CHAPTER TWO**

**THEORIES/PERSPECTIVES ON ENVIRONMENT ETHICS AND JUSTICE**

1. **What Are Ethics?**

People tend to use the term ethics in two different ways. Ethics help us decide how we ought to live. In their most general form, we might say that ethics are the standards we employ (among other factors) to determine our actions. They are prescriptive in that they tell us what we should or ought to do and which values we should or ought to hold. They also help us evaluate whether something is good or bad, right or wrong. Ethics explain why things are important to us.

Ethics are also concerned with how and why we value certain things and what actions properly reflect those values. In this sense, ethics appear more descriptive. Just as it is possible for taste to be a neutral and descriptive term—appreciation for a work of art can be a matter of taste— ethics can operate the same way. Hence, even though they clearly value nature differently, and therefore possess different environmental ethics, James Watt can be said to have an environmental ethic just as Aldo Leopold had one. Either way, our ethics are not solely individual or deterministic: they are social constructs. This means that, while the raw capacity to extend moral consideration might be a product of our biology, our actual ethical beliefs are largely shaped by a cultural context and history.

1. **Ethical theories: Grounding Ethical Claims**

When someone offers an argument for or against protecting a threatened forest or river or plant, chances are that much of his or her argument will sound familiar. Places, species names, economic projections, etc., may all vary, but the logic of the argument will be similar, whether the debate is about condominium development in Ambo or natural gas exploration in Afar. At a basic level, most of our arguments appeal to ethics: what is the right or wrong thing to do, what type of value do things hold, and why? In turn, our ethical arguments—including those used in biodiversity debates—are often based on one of a number of established ethical theories. For instance, when someone argues that jobs are more important than environmental protection, he or she may be appealing to an ethical structure that goes back to the eighteenth-century English philosopher Jeremy Bentham and his theory of Utilitarianism. Understanding the roots of these theories helps us to understand where people are coming from when they say that an action is good or bad, right or wrong. It also helps us understand how to counter their perspective, if necessary. What follows are thumbnail sketches of some of the leading Western ethical theories that continue to shape and define people’s views on the environment today.

1. **Utilitarianism**

In its most basic form, utilitarianism suggests that we ought to judge an action, or decide upon a course of action, on the basis of the utility, happiness, or pleasure that action produces. The phrase “the greatest good for the greatest number” is often associated with this theory. For example, a developer who justifies a new sprawling residential development on the basis that it will provide housing for many families or increase the local tax base is appealing to a utilitarian theory.

Responses: Utilitarian justifications must often confront certain problems. First are problems of measurement: How do we assign values to the possible outcomes of our actions? Do all pleasures count equally? Is all happiness identical? Second, are problems of consequence: How do we know what the consequences of our actions might be? Should we justify horrific practices—such as slavery, child labor, or the destruction of the Amazon rainforest— because such practices might be useful or produce the most overall utility?

1. **Rights Theory**

Often seen as a reaction to utilitarianism, these ethical theories claim that we should adhere to certain rules or guiding principles that define an action as good or right when determining whether that action is right or wrong, irrespective of its consequences. For example, if someone argues that people should not be enslaved regardless of the benefits of slavery, they are basing their argument on the principle that people have a basic right to freedom that applies in all circumstances and overrides all consequences. Some have argued that the Endangered Species Act grants such basic rights (the right to continue to exist) to all species quite apart from their economic value.

Responses: Rights theorists must respond to two important questions. First, how do we sort out conflicts among or between principles or rights?2 Second, how do we ultimately justify or establish those duties or rights that we decide are fundamental?

1. **Divine Command/Natural Law**

Divine command theory suggests that ethical precepts are the product of divine or revealed dictate (i.e., ethical rules are dictated from above by God or Krishna or Allah). For example, we may believe that our stewardship of the land (or even our malicious impact upon it) is the morally correct course of action because it is what God intended; or we may believe it is morally right because humans are by nature stewards, caretakers, and nurturers and that the land is a proper object of this natural caretaking role.

**IV Virtue Theory**

Some people hold to the belief that in general good people will perform good actions (as an extension of their goodness and perhaps as a way of attaining their own true happiness) and that they will help promote the well-being of all. Therefore, we need to maximize those qualities within people that make them virtuous. Although this appeal to ethics is not as popular as the others in environmental ethical discourse, it does occur. We conservationists often speak of nurturing the qualities or virtues of humility and respect within humans, and especially as humans interact with nature, with the assumption that by and large the humble and respectful person will act morally.

**V Moral Theory**

This theory holds that we are ethical creatures because we are both rational and emotional creatures. If we reason that something commands our moral recognition, our moral sentiments (sentiments like compassion, sympathy, empathy) are prompted and spur our willingness to value that something and act on its behalf. Environmental philosopher J. Baird Callicott, for instance, has argued that it is such a theory of morality that underlies the Land Ethic of Aldo Leopold.4 We see this theory when Leopold characterizes ethics as a product of both conscience and feeling:

**Theories of Environmental Ethics**

1. **Environmental Ethics**

The field of environmental ethics concerns human beings’ ethical relationship with the natural environment. While numerous philosophers have written on this topic throughout history, environmental ethics only developed into a specific philosophical discipline in the 1970s. This emergence was no doubt due to the increasing awareness in the 1960s of the effects that technology, industry, economic expansion and population growth were having on the environment.

The development of such awareness was aided by the publication of two important books at this time. Rachel Carson’s *Silent Spring*, first published in 1962, alerted readers to how the widespread use of chemical pesticides was posing a serious threat to public health and leading to the destruction of wildlife. Of similar significance was Paul Ehrlich’s 1968 book, *The Population Bomb*, which warned of the devastating effects the spiraling human population has on the planet’s resources. Of course, pollution and the depletion of natural resources have not been the only environmental concerns since that time: dwindling plant and animal biodiversity, the loss of wilderness, the degradation of ecosystems, and climate change are all part of a raft of “green” issues that have implanted themselves into both public consciousness and public policy over subsequent years.

1. **Extending Moral Standing**

As noted above, perhaps the most fundamental question that must be asked when regarding a particular environmental ethic is simply, *what* obligations do we have concerning the natural environment? If the answer is simply that we, as human beings, will perish if we do not constrain our actions towards nature, then that ethic is considered to be “anthropocentric.” Anthropocentrism literally means “human-centeredness,” and in one sense all ethics must be considered anthropocentric. After all, as far as we know, only human beings can reason about and reflect upon ethical matters, thus giving all moral debate a definite “human-centeredness.” However, within environmental ethics anthropocentrism usually means something more than this. It usually refers to an ethical framework that grants “moral standing” solely to human beings. Thus, an anthropocentric ethic claims that only human beings are morally considerable in their own right, meaning that all the direct moral obligations we possess, including those we have with regard to the environment, are owed to our fellow human beings.

1. **Anthropocentrism**

Although many environmental philosophers want to distance themselves from the label of anthropocentrism, it nevertheless remains the case that a number of coherent anthropocentric environmental ethics have been elaborated (Blackstone, 1972; Passmore, 1974; O’Neill, 1997; and Gewirth, 2001). This should be of little surprise, since many of the concerns we have regarding the environment appear to be concerns precisely because of the way they affect human beings. For example, pollution diminishes our health, resource depletion threatens our standards of living, climate change puts our homes at risk, the reduction of biodiversity results in the loss of potential medicines, and the eradication of wilderness means we lose a source of awe and beauty. Quite simply then, an anthropocentric ethic claims that we possess obligations to respect the environment for the sake of human well-being and prosperity.

1. **Zoocentrism**

If only human beings have moral standing, then it follows that if I come across a bear while out camping and shoot it dead on a whim, I do no wrong to that bear. Of course, an anthropocentric ethic might claim that I do some wrong by shooting the bear dead – perhaps shooting bears is not the action of a virtuous individual, or perhaps I am depleting a source of beauty for most other humans – but because anthropocentrism states that only humans have moral standing, then I can do no wrong tothe bear itself. However, many of us have the intuition that this claim is wrong. Many of us feel that it is possible to do wrong to animals, whether that be by shooting innocent bears or by torturing cats. Of course, a feeling or intuition does not get us very far in provingthat animals have moral standing. For one thing, some people (hunters and cat-torturers, for example) no doubt have quite different intuitions, leading to quite different conclusions. However, several philosophers have offered sophisticated arguments to support the view that moral standing should be extended to include animals.

1. **Biocentrism**

As noted above, numerous philosophers have questioned the notion that only conscious beings have moral standing. Some have done this by proposing a thought experiment based on a “last-human scenario” (Attfield, 1983, p. 155). The thought experiment asks us to consider a situation, such as the aftermath of a nuclear holocaust, where the only surviving human being is faced with the only surviving tree of its species. If the individual chops down the tree, no human would be harmed by its destruction. For our purposes we should alter the example and say that all animals have also perished in the holocaust. If this amendment is made, we can go further and say that no conscious being would be harmed by the tree’s destruction. Would this individual be wrong to destroy the tree? According to a human or animal-centered ethic, it is hard to see why such destruction would be wrong. And yet, many of us have the strong intuition that the individual would act wrongly by chopping down the tree. For some environmental philosophers, this intuition suggests that moral standing should be extended beyond conscious life to include individual living organisms, such as trees.

1. **Ethical Holism**

While Albert Schweitzer can be regarded as the most prominent philosophical influence for thinkers who grant moral standing to all individual living things, Aldo Leopold is undoubtedly the main influence on those who propose “holistic” ethics. Aldo Leopold’s “land ethic” demands that we stop treating the land as a mere object or resource. For Leopold, land is not merely soil. Instead, land is a fountain of energy, flowing through a circuit of soils, plants and animals. While food chains conduct the energy upwards from the soil, death and decay returns the energy back to the soil. Thus, the flow of energy relies on a complex structure of relations between living things. While evolution gradually changes these relations, Leopold argues that man’s interventions have been much more violent and destructive. In order to preserve the relations within the land, Leopold claims that we must move towards a “land ethic”, thereby granting moral standing to the land community itself, not just its individual members. This culminates in Leopold’s famous ethical injunction: “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise” (Leopold, 1949/1989, pp. 218-225).

### Radical Ecology

Not all philosophers writing on our obligations concerning the environment see the problem simply in terms of extending moral standing. Instead, many thinkers regard environmental concerns to have warranted an entirely new ideological perspective that has been termed, after its biological counterpart, “ecology”. While the ideas and beliefs within this “radical ecology” movement are diverse, they possess two common elements that separates them from the ethical extensionism outlined above.

First of all, none see extending moral standing as sufficient to resolve the environmental crisis. They argue that a broader philosophical perspective is needed, requiring fundamental changes in both our attitude to and understanding of reality. This involves reexamining who we are as human beings and our place within the natural world. For radical ecologists, ethical extensionism is inadequate because it is stuck in the traditional ways of thinking that led to these environmental problems in the first place. In short, it is argued that ethical extensionism remains too human-centered, because it takes human beings as the paradigm examples of entities with moral standing and then extends outwards to those things considered sufficiently similar.

1. **Deep Ecology**

Deep ecology is perhaps most easily understood when considered in opposition to its “shallow” counterpart. According to deep ecologists, shallow ecology is anthropocentric and concerned with pollution and resource depletion. Shallow ecology might thus be regarded as very much the mainstream wing of environmentalism. Deep ecology, in contrast, rejects anthropocentrism and takes a “total-field” perspective. In other words, deep ecologists are not aiming to formulate moral principles concerning the environment to supplement our existing ethical framework. Instead, they demand an entirely new worldview and philosophical perspective. According to Arne Naess, the Norwegian philosopher who first outlined this shallow-deep split in environmentalism, deep ecologists advocate the development of a new eco-philosophy or “ecosophy“ to replace the destructive philosophy of modern industrial society (Naess, 1973).

Some environmental philosophers have also pointed to a second problem with Bookchin’s theory. For many, his social ecology is anthropocentric, thus failing to grant the environment the standing it deserves. Critics cite evidence of anthropocentrism in the way Bookchin accounts for the liberation of both humans and nature. This unfolding process will not just occur of its own accord, according to Bookchin, rather, human beings must facilitate it. Of course, many philosophers are extremely skeptical of the very idea that history is inevitably “unfolding” towards some particular direction. However, some environmental philosophers are more wary of the prominent place that Bookchin gives to human beings in facilitating this unfolding. Of course, to what extent this is a problem depends on one’s point of view. After all, if humans cannot ameliorate the environmental problems we face, is there much point doing environmental ethics in the first place? Indeed, Bookchin himself has been rather nonplussed by this charge, and explicitly denies that humans are just another community in nature. But he also denies that nature exists solely for the purposes of humans. However, the critics remain unconvinced, and believe it to be extremely arrogant to think that humans know what the unfolding of nature will look like, let alone to think that they can bring it about (Eckersley, 1992, pp. 154-156).

1. **Ecofeminism**

Like social ecology, ecofeminism also points to a link between social domination and the domination of the natural world. And like both deep ecology and social ecology, ecofeminism calls for a radical overhaul of the prevailing philosophical perspective and ideology of western society. However, ecofeminism is a broad church, and there are actually a number of different positions that feminist writers on the environment have taken. In this section I will review three of the most prominent.

Val Plumwood offers a critique of the rationalism inherent in traditional ethics and blames this rationalism for the oppression of both women and nature. The fundamental problem with rationalism, so Plumwood claims, is its fostering of dualisms. For example, reason itself is usually presented in stark opposition to emotion. Traditional ethics, Plumwood argues, promote reason as capable of providing a stable foundation for moral argument, because of its impartiality and universalizability. Emotion, on the other hand, lacks these characteristics, and because it is based on sentiment and affection makes for shaky ethical frameworks. Plumwood claims that this dualism between reason and emotion grounds other dualisms in rationalist thought: in particular, mind/body, human/nature and man/woman. In each case, the former is held to be superior to the latter (Plumwood, 1991). So, for Plumwood, the inferiority of both women and nature have a common source: namely, rationalism. Once this is recognized, so the argument goes, it becomes clear that simple ethical extensionism as outlined above is insufficient to resolve the domination of women and nature. After all, such extensionism is stuck in the same mainstream rationalist thought that is the very source of the problem. What is needed instead, according to Plumwood, is a challenge to rationalism itself, and thus a challenge to the dualisms it perpetuates.

1. **Environmental Justice**

Other thinkers have focused on how various forms of environmental degradation, and even various proposals to remedy this degradation, play out in terms of justice between and within societies. Critiquing such concepts as Gross National Product (GNP) as a measure of progress, capitalism and free market economics, technological fixes to environmental problems, the imposition of wilderness areas and parks on local populaces, and economic development, those interested in issues of environmental justice (or eco-justice) have dramatically illustrated the negative global result of our current environmental problems, and especially how the costs of environmentally negligent behavior are unfairly borne by some.

As philosopher Peter Wenz puts it, “questions about justice arise concerning those things that are, or are perceived to be, in short supply relative to the demand for them.”(Peter Wenz, 1988) Given that the Earth’s resources are finite, and given that we are all concerned with getting our fair share of those resources, environmental issues and ethics are inherently a matter of justice.

**The Future of Environmental Ethics**

Given the increasing concern for the environment and the impact that our actions have upon it, it is clear that the field of environmental ethics is here to stay. However, it is less clear in what way the discipline will move forward. There is evidence for at least three possible future developments.

First of all, environmental ethics needs to be and will be informed by changes in the political efforts to ameliorate environmental problems. Environmental ethics concerns formulating our moral obligations regarding the environment. While this enterprise can be, and often is, quite abstract, it is also meant to engage with the real world. After all, ethicists are making claims about how they think the world ought to be. Given this, the effectiveness of states and governments in “getting there” will affect the types of ethics that emerge. For example, the Kyoto Protocol might be regarded as the first real global attempt to deal with the problem of climate change. However, without the participation of so many large polluters, with the agreed reductions in greenhouse gas emissions so small, and with many countries looking like they may well miss their targets, many commentators already regard it as a failure. Ethicists need to respond not just by castigating those they blame for the failure. Rather they must propose alternative and better means of resolving the problems we face. For example, is it more important to outline a scheme of obligations for individuals rather than states, and go for a bottom-up solution to these problems? Alternatively, perhaps businesses should take the lead in tackling these problems. Indeed, it may even be in the interests of big business to be active in this way, given the power of consumers. It is quite possible then, that we will see business ethics address many of the same issues that environmental ethics has been tackling.

However, the effects of environmental ethics will not be limited to influencing and informing business ethics alone, but will undoubtedly feed into and merge with more mainstream ethical thinking.

**CHAPTER THREE**

**THE ENVIRONMENT AS AN ETHICAL QUESTION**

In the previous chapter we have seen that ethics play an important role in our conversations and decisions about Environment. But what does it mean to assert that there is an ethical dimension to a debate, or that ethics should inform our decision-making and our actions? This chapter provides a basic framework for understanding major ethical viewpoints on the environment.

When someone offers an argument for or against protecting a threatened forest or river or plant, chances are that much of his or her argument will sound familiar. Places, species names, economic projections, etc., may all vary, but the logic of the argument will be similar. At a basic level, most of our arguments appeal to ethics: what is the right or wrong thing to do, what type of value do things hold, and why?

**Environment Science/Technology and Environment Ethics**

The production and use of technology can have a negative impact on the environment and therefore on us. Innovation within technology can also be used to *remove* or *mitigate* some of these man-made threats, and to *minimize the impact* of some non-man-made threats such as huge meteors, volcanoes, earthquakes, tsunamis and diseases.

Our use of technology has changed and continues to change the natural environment. While technology – medicine, transportation technologies and information technology and so on – can help us to prosper, there is also no doubt that the production and use of technology can have a negative impact on the environment and therefore on us. The pollution of rivers, oceans and the air poses an immediate threat to the *health* of humans; and the build-up of greenhouse gases, depletion of the ozone layer, and deforestation may each pose a threat, not only to the health of humans, but also to the *survival* of the human species.

1. **Emerging scientific concern**

The emergence of global warming/climate change as an area of scientific interest is familiar enough to anyone with more than a passing interest in the subject. However, since science has been at the forefront of both prompting and sustaining climate change as an area of social and political concern it is worth very briefly recalling some early way points before turning to an ethical analysis of the contribution of contemporary climate science to climate policy.

The mathematician and scientist Jean-Baptiste Joseph Fourier is usually cited as making the first significant contribution to our understanding of how global mean temperature is influenced by the atmosphere. Though Fourier published an article in 1824 in which he discussed different aspects of the heating of the Earth, James Fleming’s history of climate change and human contribution shows that Fourier and others had been exploring this field for some years previously.

**Environment Economics, Environmental policy and Environment Ethics**

Conflicts between economic and environmental concerns are numerous, and occur at the highest level of academic methods and in many specific policy applications. Sometimes these conflicts are the inevitable result of trade-offs and differing priorities. Often, though, the conflict runs deeper, to the differences between the worldview of economists and public policy practitioners on the one hand, and environmental scholars and environmental philosophers and activists on the other. In this section, we try to discover policy-related conflicts and attempted to bridge the conceptual gap between these schools of thought, by identifying the roots of the conflicts and rethinking the institutions that shape our economic life following Steven McMullen and Daniel Molling.

1. **The Environmental Ethics and Economic Thought**

The field of environmental ethics is young, but is now well established enough that scholars in other fields can draw upon major themes in its literature. Two such themes animate critical assessment of the concept of property in economics: (i) that environmental “goods,” variously defined, have some intrinsic value apart from the preferences of humans; and (ii) that environmental goods ought to be conceived of as uniquely situated in a particular ecological context, and are thus often not substitutable or separable. Both of these ethical claims conflict with dominant property conceptions in law, economics, and policy, and thus present a challenge to practitioners in these fields.

To understand the first part of this critique, it is helpful to categorize the different types of value that can be attributed to a part of the environment. First, there is an anthropocentric instrumental value, which is the use-value that humans are willing to ascribe. This value is measured well by the market price. Second, there is an anthropocentric non-use value, which is the value that humans attribute to the mere existence of the element of the environment. There is a real debate about the best way to measure and include non-use values in environmental policy making, or even whether existence value should be considered at all when making policy. (Boudreaux & Meiners, 1998). Third, there is non-anthropocentric instrumental value, which includes the value of an element of the environment to all other parts of the environment, human and nonhuman. Finally there is non-anthropocentric non-use value, which we refer to as “intrinsic value.”

1. **The economic approach**

The practice of economics and public policy has yet to take into account these insights from environmental ethicists, and so the two major themes outlined above constitute a dual critique of economic and public policy analysis. It is not always recognized how fundamental these criticisms of the standard economic tool set really are. Taking the two elements of this critique in turn, these elements constitute an ethical critique of standard economic models, of economic valuations, and of current models of exchange, all of which are at the core of the discipline.

First, the discipline of economics, and much of the resulting public policy analysis, is decidedly anthropocentric. Standard models assign values to environmental goods based on the revealed preferences of human actors. That is, values are assigned based on the trade-offs that humans are willing to make, on the margin, in favor of particular environmental goods. The preferences and welfare of non-human creatures are given weight only indirectly, when humans gain utility from their welfare. Similarly the value attached to ecosystems and species is conceived only in terms of their long-term value to humans.

If one accepts that non-human creatures, species, and ecosystems have some inherent value, this anthropocentric approach leads to some ethically unacceptable outcomes. For example, there are cases in which non-human animals have relatively well-defined, known preferences, but because human preferences are at odds with non-human animal preferences, these non-human preferences are ignored in economic analysis.

1. **The Dominant Conception of Property and the Environment**

In legal scholarship, the dominant conception of a property right stems from the work of Wesley Hohfeld (1913, 1917). In two essays, Hohfeld lays out the idea that any right also has a corresponding duty or duties in other people and differentiates rights from privileges or mere powers. For example, a person’s right to life includes the duty of all other people not to commit any action that would take that life. A property right to a piece of land could include a duty for all other people not to trespass on that land. In law, these rights are always stated as being between people, with any subsequent duties relating to people or groups of people only.

Moreover, in economics, as in law, ownership consists of a bundle of rights (Coase, 1960; Demsetz, 2009), where the owner usually has the right to use, sell, modify, and exclude others from the property in question. Each of these individual “rights” in the bundle can, in theory, be restricted or limited separately, though there are those who argue that the rights in a “bundle” are actually more unified than the bundle of rights theory suggests and should be preserved as a unit (Merrill & Smith, 2011). Environmental restrictions which restrict the use of property in some way, then, generally will limit one or more of these property rights. Some argue that these restrictions constitute a “taking” of value by the government, requiring compensation and justification (Epstein, 1993; Meyer, 2009).

1. **Alternative Property Concepts**

In recognition of the many property disputes that arise in debates about the environmental protection, a number of scholars have proposed alternative property concepts that might be more environmentally friendly. Because our current property regime inhabits both ethical and legal space, rethinking property and ownership is no simple task. A suitably non-anthropocentric property concept must accomplish three tasks. First, it must recognize the intrinsic value of non-human elements of the environment. Second, it should preserve, in a non-arbitrary way, the moral content of human ownership. This means that theft ought to still be a moral as well as a legal wrong that even the government must respect. Finally, the new property regime must fit practically into a set of social institutions in which humans are in a position of authority. In this section we will consider a pair of such proposals, arguing that none meet these criteria for an environmentally-friendly property ethic.

1. **An Environmentally-Conscious Property Ethics**

In order to shape an economic theory and practice which is not subject to the dual environmental ethics critique, it is important to frame a property concept that incorporates both intrinsic value and ecological inter-connection. Once such a moral and legal property regime is established, economic practice can proceed in a way that is consistent with real respect for the environment. The shape of the resulting economics, however, depends heavily on the redefinition of property. A weak property concept that leaves individuals with little political or moral claim to the natural world might free up the state to more heavily regulate environmental exploitation, but it could also undermine the moral and legal obligations individuals have to protect the environment under their control. Consequently, one key element of property law ought to be to locate the responsibilities associated with ownership clearly in the hands of the owners, and not with the state.

Additionally, since the failings of modern environmental economics are primarily ethical in nature, we argue that the best way to alleviate this harm is to more firmly establish moral obligations into the economic relations and economic analysis that we critique. This, however requires a stronger, not weaker, property concept, in which the human-environmental relationships characterized by “ownership” include real rights on the part of the human and also duties that the human has toward their property. These rights and duties, then, would provide the moral framework from which government action could proceed in a principled fashion.

**The role of government and environmental regulation**

At first glance, this way of thinking about ownership might seem to leave a large role for government regulation and a relatively small role for traditional environmental economic analysis. These impressions would both be mistaken. Despite the fact that these duties which attend ownership do constrain the owners of property in some significant ways, we still would like to articulate a “strong” individual property concept, for a few reasons. First, property owners, in our view, still have a unique claim on the use of, and fruits of, the environmental goods that they own. As a moral claim, we are articulating property rights that the government and other people have a duty to respect. In fact, the moral basis for a person’s claim to the fruits of their property is more easily defensible if those owners also have duties to maintain the wellbeing of the environment that they own. Second, outside of broad abuses which must be regulated by government, specific decisions about environmental stewardship ought to be subject primarily to the prudential judgment of the owner. It is possible to envision a property regime based on strong respect for the environment that still leaves considerable room for the aims and vision of the owner of property.

How then, would government policy be impacted by this vision of property? The idea of having duties to one’s property might imply that the state should formalize these duties into law. In many cases, such regulations could be improvements over the status quo. Moreover, despite the strong moral claim that it establishes for owners, this formulation also establishes a particular type of regulation as legitimate and necessary. For example, it is often argued that regulation designed to protect the environment infringes on property rights (Meyer 2009, Epstein, 2011).

**Environment Politics and Environment Ethics**

Environmental concerns were rooted in the vast social changes that took place in the United States after World War II. Although environmentalism can be identified in earlier years, only after the war did it become widely shared social priority. This began with outdoor recreation in the 1950s, extended into the wider field of the protection of natural environments, and then became infused with attempts to cope with air and [water pollution](https://en.wikipedia.org/wiki/Water_pollution) and still later with toxic chemical pollutants. After World War II, environmental politics became a major public concern. The development of environmentalism in the United Kingdom emerged in this period following the great London smog of 1952 and the Torrey Canyon oil spill of 1967. This is reflected by the emergence of [Green politics](https://en.wikipedia.org/wiki/Green_politics) in the Western world beginning in the 1970s.

In this section of the chapter we examine political theories compatibility to climatic change mitigation strategy.

1. **Democratic Challenges**

Climate change is slow relative to political cycles of leadership in [electoral democracies](https://en.wikipedia.org/wiki/Electoral_system), which impedes responses by politicians who are elected and re-elected on much shorter timescales.

Effectively responding to [global warming](https://en.wikipedia.org/wiki/Global_warming) necessitates some form of international [environmental governance](https://en.wikipedia.org/wiki/Environmental_governance) to achieve shared targets related to energy consumption and environmental usage. Climate change complicates political ideology and practice, affecting conceptions of responsibility for future societies as well as economic systems. Material inequality between nations makes technological solutions insufficient for climate change mitigation. Rather, political solutions can navigate the particularities of various facets of environmental crisis. Climate change mitigation strategies can be at odds with democratic priorities of prosperity, progress, and state sovereignty, and instead underscore a collective relationship with the environment.

The international political community is presently based on liberal principles that prioritize individual freedoms and capitalist systems that make quick and ambitious climate responses difficult. [Interest-group liberalism](https://en.wikipedia.org/wiki/Interest_group_liberalism) is guided by individual human priorities. Groups unable to voice their self-interest, such as minorities without suffrage, or non-humans, are not included in the political compromise. Addressing environmental crises can be impeded when citizens of liberal democracies do not see environmental problems as impacting their lives, or when they lack the education to evaluate the importance of the problem. The human benefits from environmental exploitation and protection compete. Considering the implications of ecological degradation for future human generations can give environmental concerns a basis in anthropocentric liberal democratic politics.

[William Ophuls](https://en.wikipedia.org/wiki/William_Ophuls) posits that liberal democracies are unfit to address environmental problems, and that the prioritization of these challenges would involve a transition to more authoritarian forms of government. Others counter this by pointing to the past successes of environmental reform movements to improve water and air quality in liberal societies. In practice, environmentalism can improve democracy rather than necessitate its end, by expanding democratic participation and promoting political innovations.

The tensions between liberal democracy and environmental goals raise questions about the possible limitations of democracy (or at least democracy as we know it): in its responsiveness to subtle but large-scale problems, its ability to work from a holistic societal perspective, its aptness in coping with environmental crisis relative to other forms of government. Democracies do not have the provisions to make environmental reforms that are not mandated by voters, and many voters lack incentives or desire to demand policies that could compromise immediate prosperity. The question arises as to whether the foundation of politics is morality or practicality. A scheme that conceives of and values the environment beyond its human utility, an [environmental ethics](https://en.wikipedia.org/wiki/Environmental_ethics), could be crucial for democracies to respond to climate change.

1. **Alternative forms of democracy for Environmental Policy**

In political theory, [deliberative democracy](https://en.wikipedia.org/wiki/Deliberative_democracy) has been discussed as a political model more compatible with environmental goals. Deliberative democracy is a system in which informed political equals weigh values, information, and expertise, and debate priorities to make decisions, as opposed to a democracy based on interest aggregation. This definition of democracy emphasizes informed discussion among citizens in the decision making process, and encourages decisions to benefit the common good rather than individual interests. Amy Gutmann and Dennis Thompson claimed that reason prevails over self-interest in deliberative democracy, making it a more just system. The broad perspective that this discursive model encourages could lead to a stronger engagement with environmental concerns.

In political theory, the lottery system is a democratic design that allows governments to address problems with future, rather than immediate, impacts. Deliberative bodies composed of randomly selected representatives can draft environmental policies that have short-term costs without considering the political consequences for re-election.

1. **New Materialism and Environmental Justice**

New materialism is a strain of thought in philosophy and the social sciences that conceives of all material as having life or agency. It criticizes frameworks of justice that center on human attributes like consciousness as insufficient for modern ethical problems that concern the natural environment. It is a post-humanist consideration of all matter that rejects arguments of utility that privilege humans. This politically relevant social theory combats inequality beyond the interpersonal plane. People are ethically responsible for one another, and for the physical spaces they navigate, including animal and plant life, and the inanimate matter that sustains it, like soil. New materialism encourages political action according to this world vision, even if it is incompatible with economic growth.

[Jane Bennett](https://en.wikipedia.org/wiki/Jane_Bennett_(political_theorist)) uses the term "vital materialism" in her book *Vibrant Matter: A Political Ecology of Things*. She develops the concept of materialism with the aim of providing a stronger basis in political theory for environmental politics.

New materialists have invoked [Derrida](https://en.wikipedia.org/wiki/Jacques_Derrida) and other historical thinkers to trace the emergence of their philosophy and to justify their environmental claims:

"No justice ... seems possible or thinkable without the principle of some responsibility, beyond all living present, within that which disjoins the living present, before the ghosts of those who are not yet born or who are already dead [...]. Without this non-contemporaneity with itself of the living present ... without this responsibility and this respect for justice concerning those who are not there, of those who are no longer or who are not yet present and living, what sense would there be to ask the question 'where?' 'where tomorrow?' 'whither? (*Dolphijn and van der Tuin, Rick and Iris,2012;. pp. 67–68).*

All material, living and dead, is interrelated in "the mesh" as described by [Timothy Morton](https://en.wikipedia.org/wiki/Timothy_Morton). As all matter is interdependent, humans have obligations to all parts of the material world, including those that are unfamiliar.

New materialism is related to a shift from the view of the environment as a form of capital to a form of labor (see [Ecosystem services](https://en.wikipedia.org/wiki/Ecosystem_services)).

**Religion and Environment Ethics**

Outside Europe, religion seems to be a growing market. Recent statistics show increasing numbers of adherents, especially of Pentacostalism in Africa, Asia and Latin America while numbers of believers in North America stabilize at high levels of 80 to 85%. Northwest Europe is exceptional in its steadily declining pattern of church membership. At present over 80% of the world population (approx. 5 billion) adheres to some sort of religion: Christianity (2.1 billion) and Islam (1.2 billion) being the major faiths.

The second trend is the increased awareness of the ideological and spiritual elements in the environmental debate, most notably in the Western world. Nobel prize laureate Al Gore, for instance, considers the human-enhanced climate change ultimately to be a ‘moral issue’, and scientists like Thomas Dunlap in his Faith in Nature (2004) and Freeman Dyson in the New York Review of Books (2008) have made a compelling case for recognizing religious motives in modern environmentalism. What is, in this respect, our role as scientists? What is the relationship between scientiﬁc enquiry and religious belief with respect to environment and how does religion inﬂuence our understanding of environmental questions? To answer these questions, this section describes three diﬀerent ways to approach the religion-environment connection scientiﬁcally, and argues in favor of a more integrative type of research, which tries to explain the way worldviews exert their inﬂuence on behavior.

1. **Looking for a Cause**

The ﬁrst approach tries to unravel the cause of events by following the causal chain that has resulted in the present problems to a (religious) root cause. Lynn White Jr. was among the ﬁrst to walk this alley in his seminal article ‘The Historical Roots of Our Ecologic Crisis’ published in Science in 1967. With this article he played an important role in starting the debate about the relationship between religion and what he called the ‘ecologic crisis’. White pointed at the Judeo-Christian tradition as a cause of this ecological crisis, because of its inﬂuence on Western science and technology. This statement became known as the ‘White-thesis’. White argued that the Western faith in perpetual progress could not be seen apart from Judeo-Christian teleology.

White’s paper and notably his apparent placing of the blame on Christianity ignited a debate that has been ongoing ever since. His plea for an ‘essentially religious remedy’ however was by and large neglected though his proposal to appoint Saint Francis as patron saint of the ecologists was accepted by the Pope in 1979.

1. **Looking for a solution**

The second approach is best characterized by the introductory sentence. ‘Many cultures and religions have a deep reverence and respect for nature and all life’, a sentence often followed by a wide array of quotations and ideas taken from a great variety of world religions to prove the case. Some environmental textbooks include such anthologies to inform students about the teachings of major beliefs and about the wealth of some lesser known religions like Shamanism, Shintoism and Taoism which date back thousands of years. Providing such an overview is supposed to help readers understand historical context and roots of various environmental worldviews and might spur their own reverence and respect for nature. Those who want to highlight, advocate and defend the environmentally friendly nature of a particular religion take a less ‘neutral’ stand but may do so in a sincere scholarly way. At times, this yields surprising results like in Richard Foltz’ book on Muslim tradition and attitudes toward animals (2006). While not a Muslim, the implicit aim of his publication is to feed the contemporary animal rights debate and eventually contribute to a more benign treatment of animals in the Islamic world.

1. **Looking for Data**

A third reaction came from the empiricists, social scientists who carry out large surveys to measure quantitative correlations between variables like church membership, behavior and particular creeds people adhere to. In the wake of Lynn White’s paper they were not interested in historical, exegetical or theoretical explanations but in data. They put his thesis to the test. Over the last decades some 25 such surveys were published. Martine Vonk (2008) has compiled a useful overview of these studies. By and large, she found in the data neither a positive nor a negative correlation between religion and environmentally friendly behavior. In fact religion and environmental behavior appear in most surveys to be uncorrelated. The results of the empirical studies question the existence of direct relationships between religion and environmental concern, attitudes and behavior. These relationships seem to be far less direct and more complicated than is often assum

**CHAPTER FOUR**

**OVERVIEW OF INTRENATIONAL PRACTICES OF ENVIRONMENT ETHICS AND POLICIES**

This section is intended to provide overview of the Earth Summit in Rio de Janeiro hosted the United Nations Conference on Environment and Development (UNCED).

From 3-14 June 1992, Rio de Janeiro hosted the United Nations Conference on Environment and Development (UNCED). The focus of this conference was the state of the global environment and the relationship between economics, science and the environment in a political context. The conference concluded with the Earth Summit, at which leaders of 105 nations gathered to demonstrate their commitment to sustainable development. This section will summarize the goals of the Conference and what was accomplished.

**[History of the Summit](http://publications.gc.ca/Collection-R/LoPBdP/BP/bp317-e.htm" \l "A. History of the Summit)**

In 1972, Stockholm, Sweden, hosted the first United Nations Conference on the Human Environment, which was attended by 113 delegates and two heads of state (Olaf Palme of Sweden and Indira Gandhi of India). This conference raised a generation's awareness of an issue hitherto little talked about, the global environment. The Stockholm conference secured a permanent place for the environment on the world's agenda and led to the establishment of the United Nations Environment Program (UNEP). The conference and its aftermath made known the international nature of the environment and introduced the idea of the relationship between development and the environment. It has been said that the only way to unite the countries of the world is for them to face a common enemy; perhaps environmental degradation will be that enemy.

Since the 1972 conference, there have been many international environmental agreements, a number of which have been ratified by Canada. These include the 1978 Great Lakes Water Quality Agreement; the 1979 Geneva Convention on Long-range Trans-boundary Air Pollution; the 1985 Helsinki Agreement (a 21-nation commitment to reduce sulphur dioxide emissions); the 1988 Montreal Protocol on Substances that Deplete the Ozone Layer; and the 1989 Basel Convention on Trans-boundary Movements of Hazardous Wastes. It was this kind of international cooperation that the 1992 Rio conference sought, but on a larger scale

UNCED addressed environmental issues, such as the protection of air, land and water; conservation of biological diversity, forests, and natural resources; and sound management of wastes and technology. It was a unique opportunity for world leaders to curtail the human activities that are threatening our planet and bringing about pollution of land, ocean and atmosphere, drought, desertification through land degradation, thinning of the ozone layer, global warming and the threat of rising sea levels, and the extinction of plant and animal species.

**[The Convention on Climate Change: What Happens Now?](http://publications.gc.ca/Collection-R/LoPBdP/BP/bp317-e.htm" \l "Convention)**

The Convention on Climate Change has been signed and will become legally binding when ratified by 30 states. The Munich Summit committed all members of the G-7 to ratify by the end of 1993. The Convention will then take on a life of its own, with regular meetings of governments party to it. At annual meetings of the signatory governments, it will in principle be possible for the signatories to adopt protocols that put the stuffing into the framework. The Convention on Climate Change will eventually have a permanent secretariat, as well as two technical bodies responsible for collecting data on climate change and for monitoring and assessing various countries' plans for abating emissions. Some fear that the climate convention will become a mere form for assigning allowable emission quotas to its members while

**[WHAT HAPPENED AT RIO?](http://publications.gc.ca/Collection-R/LoPBdP/BP/bp317-e.htm" \l "WHAT HAPPENED AT RIO?)**

At UNCED, more than 130 nations signed a Convention on Climate Change and a Convention on Biodiversity. The delegates also reached agreement on Agenda 21, an action plan for developing the planet sustainably through the twenty-first century, and on a broad statement of principles for protecting forests. All nations present accepted without change the Rio Declaration, a non-binding statement of broad principles for environmental policy (see p. 19). New international networks, both formal and informal, were set up to carry out and oversee implementation of the agreements.

In the end, the UNCED negotiations came down to a matter of money. The industrialized nations have it and the developing nations want it. If the industrialized nations want environmental protection, they must be prepared to pay for it. The tensions between rich and poor and the financial conflicts that underlie them were at the heart of every major negotiation.

**[The Rio Declaration](http://publications.gc.ca/Collection-R/LoPBdP/BP/bp317-e.htm" \l "E. The Rio Declaration)**

It had been hoped that the Earth Charter drafted five years ago as a moral framework for environmental development would be adopted as a legally binding document at the Conference. It affirmed the rights of all citizens to a clean environment and the rights of developing countries to pursue sustainable development. Instead, the Earth Charter was replaced by a 27-clause statement of principles called the Rio Declaration.

**The Keyoto Protocol on Climatic Change**

**Objectives of Kyoto Protocol**

The main goal of the Kyoto Protocol is to control emissions of the main anthropogenic (human-emitted) greenhouse gases (GHGs) in ways that reflect underlying national differences in GHG emissions, wealth, and capacity to make the reductions. The treaty follows the main principles agreed in the original 1992 UN Framework Convention. According to the treaty, in 2012, Parties who have ratified the treaty must have fulfilled their obligations of greenhouse gas emissions limitations established for the Kyoto Protocol's first commitment period (2008–2012).

For each of the different anthropogenic GHGs, different levels of emissions reductions would be required to meet the objective of stabilizing atmospheric concentrations CO2) is the most important anthropogenic GHG. Stabilizing the concentration of CO2 in the atmosphere would ultimately require the effective elimination of anthropogenic CO2 emissions.

**Details of the agreement**

The agreement is a protocol to the [United Nations Framework Convention on Climate Change](https://en.wikipedia.org/wiki/United_Nations_Framework_Convention_on_Climate_Change) (UNFCCC) adopted at the [Earth Summit](https://en.wikipedia.org/wiki/Earth_Summit) in [Rio de Janeiro](https://en.wikipedia.org/wiki/Rio_de_Janeiro) in 1992, which did not set any legally binding limitations on emissions or enforcement mechanisms. Only Parties to the UNFCCC can become Parties to the Kyoto Protocol. The Kyoto Protocol was adopted at the third session of the Conference of Parties to the UNFCCC (COP 3) in 1997 in Kyoto, Japan. The negotiating agenda is framed by four key themes:

(1) Mitigation – how can we reduce greenhouse gas emissions, especially carbon dioxide, to a level that prevents dangerous climate change;

(2) Adaptation – how we help people and communities cope with the negative impacts of unavoidable climate change;

(3) Technology – how we develop and deploy new and alternative green technologies; and

(4) Finance – who will pay how much to help with the necessary mitigation and adaptation actions?

use change. Particular criteria apply to the definition of forestry under the Kyoto Protocol.

### Financial commitments

The Protocol also reaffirms the principle that developed countries have to pay billions of dollars, and supply technology to other countries for climate-related studies and projects. The principle was originally agreed in [UNFCCC](https://en.wikipedia.org/wiki/UNFCCC). One such project is [The Adaptation Fund](https://en.wikipedia.org/wiki/The_Adaptation_Fund), that has been established by the Parties to the Kyoto Protocol of the UN Framework Convention on Climate Change to finance concrete adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol.

**Climate Protection –The Key Issues**

Rational decision-making in climate policy requires balancing the cost of greenhouse gas emission abatement and the benefits of avoided undesirable consequences of global warming. Classical cost–benefit analysis (see e.g. Mishan 1975 or Pearce 1998) provides the appropriate framework for measuring all negative and positive policy impacts and resource uses in the form of monetary costs and benefits. An emission mitigation policy that allocates society’s resources efficiently maximizes net benefits: Emissions reduction efforts are taken up to the level where the marginal benefit equals the marginal cost.

Combating global warming constitutes the problem of providing a global public good. Public goods are commodities for which the cost of extending the service to an additional individual is zero and for which it is impossible (or expensive) to exclude individuals from enjoying it. These features of non-rivalry and non-excludability apply to climate protection.

A first-best, i.e. globally efficient, response policy to climate change requires an international environmental policy which takes into account the benefits for all countries that emission abatement in a single country produces. Given complete information, a global cost–benefit analysis could tell us how much greenhouse gas (GHG) emissions should be abated, when and by whom. However, at a decentralized level, individual rational countries only pursue their own interests and neglect the positive externalities of their reduction measures for other countries. Thus, the level of GHG emission reductions will be too low.

At first glance, the optimal solution to the GHG problem seems straightforward. But a closer look reveals severe obstacles. First, large uncertainties on the cost and benefit of GHG abatement render decision-making in climate policy very difficult. Second, there are, at best, only weak economic and political mechanisms to enforce cooperative behavior between sovereign countries.

**Uncertainty**

The first-best solution to climate change requires concrete information, not only about the cost, but also about the benefits of abatement. However, the chain of causality – from GHG emissions to ambient concentrations of greenhouse gases in the atmosphere, from temperature increase to physical effects such as climatic and sea level changes, is very complex and hardly understood. Moreover, economists do not even agree on the methodology to be used for valuing certain potential climate change impacts such as the extinction of a species. The large uncertainties in predicting global climate change, as well as quantifying and monetizing the associated biophysical impacts, explain much of the controversy on the desirable longterm level of greenhouse gas concentrations in the atmosphere and the scope and timing of emission mitigation measures.

The uncertainties, together with (partial) irreversibility of both GHG accumulation in the atmosphere and accumulation of capital investments, imply a trade-off between the risk of premature abatement action and the risk of delayed action. In the context of uncertainty, option theory typically replaces classical cost-benefit analysis in evaluating decisions (see e.g. Arrow and Fisher 1974, Hanemann 1989, Dixit and Pindyck 1994). The relative irreversibility between climate change and mitigation measures (including adaptation) will determine which option, whether to wait until more information is available, or to invest now is more valuable. In practice, this leads to a sequential decision-making approach that is sufficiently flexible to incorporate new information.

Given the large uncertainties, the international community’s primary climate policy objective - as adopted in the United Nations Framework Convention on Climate Change (UNFCCC 1992) – has not been the balancing of benefits and costs based on an elaborate option value approach. In a situation subject to tremendous uncertainty, alternative options become rather incommensurate. Presuming that uncertain future outcomes of climate change could be extreme and irreversible, risk aversion suggests the adoption of the precautionary principle.

In this vein, the UNFCCC aims at establishing an ample margin of safety based on recommendations from natural science on “tolerable” emission levels. The UNFCCC’s stated goal is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (UNFCCC 1992, Article 2). As pointed out by the Intergovernmental Panel on Climate Change (IPCC), which serves as the scientific advisory board to the UNFCCC, stabilizing concentrations at “safe” levels may require reductions of much more than 50% below current levels in 2100 (IPCC 2001). After choosing some desirable global emission trajectory, cost-effectiveness analysis as a second- or third-best policy approach then minimizes aggregate costs of abatement for the given - typically sub-optimal - global emission target.

# Bali Road Map

In this section you will be introduced with climatic change negotiation in Bali, Indonesia known as Bali Road map.

As climate change has gained widespread attention as a critical issue facing the nations of the world, the negotiations to be held in Bali, Indonesia, December 3-14, 2007, are widely regarded as a critical next step in continuing to chart an international course to mitigate global warming and deal with its impacts.

It is widely expected that the outcome in Bali is likely to be decisions that focus only on the framework, procedures, and time frame for negotiations to follow on a post-2012 agreement. Substantive issues will be taken up in those future negotiations. All parties appear to agree that an agreement needs be completed by the end of 2009 in order to be ratified by the necessary number of parties by 2012, when the Kyoto Protocol commitment period ends.

Climate change negotiations to be held in Bali, Indonesia, December 3-14, 2007, are widely regarded as a critical next step in continuing to chart an international course to mitigate global warming and deal with its impacts. This section provides background on the negotiations, including brief discussions of the Kyoto Protocol, the science underlying climate concerns, progress of nations in meeting Kyoto Protocol requirements, and an overview of key issues of the negotiations in Bali.

1. **The UNFCCC and Kyoto Protocol: Background**

The Kyoto Protocol is the only agreement establishing legally binding reductions of greenhouse gas (GHG) emissions, which are major contributors to global warming. It was negotiated under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), and the United States played a major role in shaping the provisions of the Protocol. The UNFCCC, opened for signature at the 1992 Earth Summit in Rio de Janeiro, outlined a goal of voluntary reductions in greenhouse gas emissions to 1990 levels by the year 2000.

At the annual conferences of the parties, participants soon concluded that the year 2000 goal of the UNFCCC would not be met, and that voluntary reductions would not suffice; negotiations began on a protocol that would provide for mandatory, legally binding emissions reductions for the developed countries listed in Annex I of the UNFCCC.

Negotiations on the Protocol were completed in 1997, and the United States signed it in 1998. However, it has never been sent to the U.S. Senate for advice and consent, and thus the United States has not ratified it. President Bush characterized the Protocol as “fatally flawed,” and rejected it in early 2001, citing economic burdens, competitiveness concerns, and the lack of mandatory emissions requirements for major developing countries such as China and India. The United States’ withdrawal from participation in the Protocol and its rejection of mandatory limitation of greenhouse gas emissions has remained a sensitive issue in U.S. relations with many nations, particularly the European parties to the Protocol. They continue to express the hope that the United States will rejoin the negotiations that continue on the Protocol and particularly on measures to reduce GHGs after the Protocol commitment period ends in 2012.

A key element of both the UNFCCC and the Kyoto Protocol is “common but differentiated responsibilities,” which has meant that while all nations, developed or developing, have responsibilities for monitoring and reporting their emissions, only the developed [Annex I] nations have had an obligation to reduce GHG emissions. This has meant, in practice, that in negotiations relating to the Kyoto Protocol, no new commitments for developing countries have been under consideration. This concept arises from two basic principles accepted by all parties to the UNFCCC and the Kyoto Protocol: that the industrialized/developed nations are responsible for most of the greenhouse gases in the atmosphere (several of these gases remain in the atmosphere for decades or a century or more); and that nations have widely different capacities and resources to undertake the costs of mitigation, with developed nations generally having the resources and technological infrastructure to undertake emissions reductions. As ways to involve all nations in post-Kyoto action are sought, it is likely that this principle will be the subject of much debate.

The over-all reduction for the 38 industrialized nations specified in Annex B of the Kyoto Protocol is stated as 5.2% below 1990 levels, averaged over the five-year “commitment period” between 2008 - 2012. A target for each Annex B country was negotiated; the United States’ target in the Protocol would have been to reduce the six major greenhouse gases by 7% below 1990 levels. Because of the fact that “sinks,” which remove and store carbon from the atmosphere, are counted, and because emissions credit trading would be allowed, the actual reduction of emissions within the United States that would have been required to meet the target was estimated to be lower than 7% — closer to 4%. But based on projections of potential growth of emissions, the actual required reduction in greenhouse gas emissions for the United States would have been an estimated 15 to 30 % below where their levels would otherwise be by the 2008-2012 period.

The Kyoto Protocol obtained the necessary number of ratifications from Annex B countries in late 2004 and entered into force in February, 2005. Some 169 nations have ratified or accepted the Kyoto Protocol, according to the UNFCCC Secretariat, representing 66% of the emissions of developed countries with obligations outlined in the Protocol. As noted above, the Protocol’s provisions apply only to those countries that have ratified it, which two of the Annex I countries — the United States and Australia — have not done.

Annual meetings of the parties to the UNFCCC and the Kyoto Protocol continue, and attention of the negotiations has turned in large part to “next steps” following the end of the commitment period in 2012 — in particular the extent to which developing countries (non-Annex I) would assume binding commitments, which most of the major greenhouse gas emitters among them remain reluctant to do. The United States has attended these annual meetings, participating in an observer status.

1. **Climate Science, Economics and Future Goals to Reduce Greenhouse Gas Emissions**

Since the UNFCCC Conference of the Parties met in 2006, major international technical assessments of climate change has been released by the Intergovernmental Panel on Climate Change (IPCC). It was a panel of over 2000 scientists from around the world charged with providing the scientific basis for understanding changes in the Earth’s climate and their impacts. The “Fourth Assessment Report” issued in November 2007 (AR4) critically reviewed and synthesized the research on science, impacts and mitigation strategies and underscored large areas of agreement on climate issues (as well as some important uncertainties and disagreements). The IPCC concluded unequivocally in its first report in 2007 that the Earth’s climate has changed over the past century, and that while natural factors, including changes in solar irradiance and volcanoes, have played roles in the observed changes, “most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.” (IPCC, 2007)

Elevated greenhouse gas (GHG) concentrations in the atmosphere (carbon dioxide is now about one-third higher than in 1880) result from fossil fuel use, land clearing, industrial, and agricultural emissions. Current levels of carbon dioxide are at approximately 381 parts per million (ppm) in the atmosphere, up from some 270 ppm in pre-industrial times. GHGs in the atmosphere remain there for many decades to centuries. The United States contributes almost one-fifth of net global greenhouse gas emissions. China emits about as much as the United States. But, with its robust economic growth dependent on industrialization fueled largely by coal, China will likely become and remain the largest global emitter for the foreseeable future. Future greenhouse gas emissions will grow most rapidly from developing economies, as they strive to eliminate poverty and raise income levels towards those of the wealthier “Annex I” countries. Future GHG trajectories are widely uncertain, depending largely on the rate and composition of economic growth and technology choices; the plausible future range may be significantly influenced by policy decisions to limit emissions.

Scientists have found it very likely that rising greenhouse gas concentrations, if they continue unabated, will increase global average temperature above natural variability by at least 1.5o Celsius (2.7o Fahrenheit) during the 21st century (above 1990 temperatures), with a small likelihood that the temperature rise may exceed 5oC (9oF). The projections thought most likely by many climate modelers are for greenhouse gas-induced temperature rise of approximately 2.5 to 3.5oC (4.5 to 6.3oF) by 2100. Future climate change may advance smoothly or sporadically, with some regions experiencing more fluctuations in temperature, precipitation, and frequency or intensity of extreme events than others.

1. **Bali Road Map**

After the [2007 United Nations Climate Change Conference](https://en.wikipedia.org/wiki/2007_United_Nations_Climate_Change_Conference) on the island [Bali](https://en.wikipedia.org/wiki/Bali) in [Indonesia](https://en.wikipedia.org/wiki/Indonesia) in December 2007 the participating nations adopted the Bali Road Map as a two-year process to finalizing a binding agreement in [2009 in Copenhagen](https://en.wikipedia.org/wiki/2009_United_Nations_Climate_Change_Conference). The conference encompassed meetings of several bodies, including the 13th Conference of the Parties to the United Nations Framework Convention on Climate Change and the 3rd Meeting of the Parties to the Kyoto Protocol.

The Bali Road Map includes the Bali Action Plan (BAP) that was adopted by Decision 1/CP.13 of the [COP-13](https://en.wikipedia.org/wiki/COP-13). It also includes the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) negotiations and their 2009 deadline, the launch of the Adaptation Fund, the scope and content of the Article 9 review of the [Kyoto Protocol](https://en.wikipedia.org/wiki/Kyoto_Protocol), as well as decisions on technology transfer and on reducing emissions from deforestation.

1. **Bali Action Plan**

**I, Pillars**

The Conference of Parties decided to launch a comprehensive process to enable the implementation of the Convention through long-term cooperative action, now, up to and beyond 2012, by addressing: (the called pillars or building blocks)

* A shared vision for long-term cooperative action, including a long-term global goal for [emission reductions](https://en.wikipedia.org/wiki/Greenhouse_gas#Greenhouse_gas_emissions).
* Enhanced national/international action on [mitigation of climate change](https://en.wikipedia.org/wiki/Mitigation_of_climate_change).
* Enhanced action on adaptation.
* Enhanced action on [technology development](https://en.wikipedia.org/wiki/Technology_development) and transfer to support action on mitigation and adaptation.
* Enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation.

**II, Cutting emissions**

The nations acknowledge that evidence for [global warming](https://en.wikipedia.org/wiki/Global_warming) is *unequivocal*, and that humans must reduce emissions to reduce the risks of "severe climate change impacts" and emphasized the urgency to address climate change. There was a strong consensus for updated changes for both developed and developing countries. Although there were not specific numbers agreed upon in order to cut emissions, the decision recognized that there was a need for "deep cuts in global emissions" (plural countries proposed 100% reduction in 2050) and that "developed country emissions must fall 10-40% by 2020". (http://www.pewclimate.org)

**III, Mitigation**

Enhanced action on mitigation of climate change includes, inter alia:

* [Nationally appropriate mitigation commitments](https://en.wikipedia.org/wiki/Nationally_Appropriate_Mitigation_Action) or actions by all developed countries.
* [Nationally appropriate mitigation actions (NAMAs)](https://en.wikipedia.org/wiki/Nationally_Appropriate_Mitigation_Action) by developing countries.
* Cooperative sectorial approaches and sector-specific actions (CSAs).
* Ways to strengthen the catalytic role of the convention.

**IV, Forests**

The nations pledge "[policy](https://en.wikipedia.org/wiki/Policy) [approaches](https://en.wiktionary.org/wiki/approach) and positive incentives" on issues relating to [reducing emissions from deforestation and forest degradation](https://en.wikipedia.org/wiki/Reducing_emissions_from_deforestation_and_forest_degradation) ([REDD](https://en.wikipedia.org/wiki/REDD)) in developing countries; and enhancement of [forest carbon stock](https://en.wikipedia.org/wiki/Forest_carbon_stock) in developing countries This paragraph is referred to as “REDD-plus”

**V, Adaptation**

The nations opt for enhanced co-operation to "support urgent implementation" of measures to protect poorer countries against climate change, including NAPAs impacts.

**VI, Technology**

In [technology development](https://en.wikipedia.org/wiki/Technology_development) and [transfer](https://en.wikipedia.org/wiki/Technology_transfer), the nations will consider how to facilitate the transfer of clean and renewable energy technologies from industrialized nations to the developing countries. This includes, inter alia:

* Removal of obstacles to, and provision of financial and other incentives for, [scaling up](https://en.wikipedia.org/wiki/Scalability) the development and transfer of technology to developing country Parties in order to promote access to affordable [environmentally sound technologies](https://en.wikipedia.org/wiki/Environmentally_sound_technology) (renewable energies, electric vehicles).
* Ways to accelerate the [deployment](https://en.wiktionary.org/wiki/deployment), [diffussion](https://en.wiktionary.org/wiki/diffussion) and transfer of such technologies.
* Cooperation on research and development of current, new and innovative technology, including [win-win solutions](https://en.wikipedia.org/wiki/Win-win_solution).
* The effectiveness of mechanism and tools for technology cooperation in specific sectors.

**VII, Finance**

Provision of financial resources and investment includes:

* Improved access to predictable and sustainable financial resources and the provision of new and additional resources, including [official](https://en.wikipedia.org/wiki/Official_funding) and [concessional funding](https://en.wikipedia.org/wiki/Concessional_funding) for developing country Parties (dcP).
* [Positive incentives](https://en.wikipedia.org/wiki/Positive_incentive) for dcP for national mitigation strategies and adaptation action.
* Innovative means of funding for dcP that are particularly vulnerable to the [adverse impacts of climate change](https://en.wikipedia.org/wiki/Adverse_impacts_of_climate_change) in meeting the costs of adaptation.
* Incentivisation of adaptation actions on the basis of [sustainable development](https://en.wikipedia.org/wiki/Sustainable_development) policies.
* Mobilization of funding and investment, including facilitation of [climate-friendly investment](https://en.wikipedia.org/wiki/Climate-friendly_investment) choices.

**VIII, Timescales**

Four major UNFCCC meetings to implement the Bali Road Map were planned for 2008, with the first to be held in either March or April and the second in June, with the third in either August or September followed by a major meeting in [Poznań](https://en.wikipedia.org/wiki/Pozna%C5%84), Poland in December 2008. The negotiations process was scheduled to conclude at the [United Nations Climate Change Conference 2009](https://en.wikipedia.org/wiki/United_Nations_Climate_Change_Conference_2009) in Copenhagen, Denmark.

**The Copenhagen Discussion on Climate Change**

The 2009 United Nations Climate Change Conference, commonly known as the Copenhagen Summit, was held at the [Bella Center](https://en.wikipedia.org/wiki/Bella_Center) in [Copenhagen](https://en.wikipedia.org/wiki/Copenhagen), [Denmark](https://en.wikipedia.org/wiki/Denmark), between 7 and 18 December. The conference included the 15th Conference of the Parties (COP 15) to the [United Nations Framework Convention on Climate Change](https://en.wikipedia.org/wiki/United_Nations_Framework_Convention_on_Climate_Change) (UNFCCC) and the 5th Meeting of the Parties (MOP 5) to the [Kyoto Protocol](https://en.wikipedia.org/wiki/Kyoto_Protocol). According to the [Bali Road Map](https://en.wikipedia.org/wiki/Bali_Road_Map), a framework for [climate change mitigation](https://en.wikipedia.org/wiki/Climate_change_mitigation) beyond 2012 was to be agreed there.

On Friday 18 December, the final day of the conference, international media reported that the climate talks were "in disarray" Media also reported that in lieu of a summit collapse, only a "weak political statement" was anticipated at the conclusion of the conference. The [Copenhagen Accord](https://en.wikipedia.org/wiki/Copenhagen_Accord) was drafted by the United States, China, [India](https://en.wikipedia.org/wiki/India), [Brazil](https://en.wikipedia.org/wiki/Brazil) and South Africa on 18 December, and judged a "meaningful agreement" by the [United States government](https://en.wikipedia.org/wiki/United_States_government). It was "taken note of", but not "adopted", in a debate of all the participating countries the next day, and it was not passed unanimously. The document recognized that climate change is one of the greatest challenges of the present day and that actions should be taken to keep any temperature increases to below 2 °C. The document is not legally binding and does not contain any legally binding commitments for reducing CO2 emissions.

The conference was preceded by the [Climate Change: Global Risks, Challenges and Decisions](https://en.wikipedia.org/wiki/Climate_Change:_Global_Risks,_Challenges_and_Decisions) scientific conference, which took place in March 2009 and was also held at the Bella Center. The negotiations began to take a new format when in May 2009 UN Secretary General [Ban Ki-moon](https://en.wikipedia.org/wiki/Ban_Ki-moon) attended the World Business Summit on Climate Change in Copenhagen, organized by the [Copenhagen Climate Council](https://en.wikipedia.org/wiki/Copenhagen_Climate_Council) (COC), where he requested that COC councillors attend New York's Climate Week at the Summit on Climate Change on 22 September and engage with heads of government on the topic of the climate problem.

On 28 January 2009, the [European Commission](https://en.wikipedia.org/wiki/European_Commission) released a position paper, "Towards a comprehensive climate agreement in Copenhagen." The position paper "addresses three key challenges: targets and actions; financing [of "low-carbon development and adaptation"]; and building an effective [global carbon market](https://en.wikipedia.org/wiki/Global_carbon_market)". (European Union*. Retrieved 8 April 2010)*

1. **The Conference**

Some small protests occurred during the first week of the conference. A much larger march was held in Copenhagen on 12 December calling for a global agreement on climate. Between 40,000 and 100,000 people attended. 968 protesters were detained at the event, including 19 who were arrested for carrying pocket knives and wearing masks during the demonstration. The [Climate Justice Action](https://en.wikipedia.org/wiki/Climate_Justice_Action) network organized several mass [direct actions](https://en.wikipedia.org/wiki/Direct_actions) during the conference, including the 'Reclaim Power' action on 16 December.

[The Yes Men](https://en.wikipedia.org/wiki/The_Yes_Men) made a false statement purporting to be from the Canadian environment minister [Jim Prentice](https://en.wikipedia.org/wiki/Jim_Prentice), which pledged to cut carbon emissions by 40% below 1990 levels by 2020. The statement was followed by another faked statement from the Ugandan delegation, praising the original pledge and The Yes Men also released a spoof press conference on a fake form of the official website. The statement was written about by [*The Wall Street Journal*](https://en.wikipedia.org/wiki/The_Wall_Street_Journal) before being revealed as a hoax.

### Negotiating problems

According to the Guardian report, the summit in Copenhagen was in jeopardy. "We have made no progress" said a source close to the talks. "What people don't realize is that we are now not really ready for the leaders. These talks are now 17 hours late." Negotiators were openly talking of the best possible outcome being a "weak political agreement that would leave no clear way forward to tackle rising greenhouse gas emissions". This would mean that negotiations would continue into 2010 increasing the damage done by emissions.

On 18 December, the head of the [United Nations Environmental Program](https://en.wikipedia.org/wiki/United_Nations_Environmental_Program) told the BBC that the summit as of this morning is a summit in crisis and that only the arrival of heads of state could bring the summit to a successful conclusion. Head of climate change for [WWF](https://en.wikipedia.org/wiki/World_Wide_Fund_for_Nature) in Britain, said that the proposals made so far, especially those from industrialized countries all far short of what the world needs.

1. **Outcomes**

On 18 December after a day of frantic negotiations between heads of state, it was announced that a "meaningful agreement" had been reached between on one hand the United States and on the other, in a united position as the [BASIC countries](https://en.wikipedia.org/wiki/BASIC_countries) (China, South Africa, [India](https://en.wikipedia.org/wiki/India), and [Brazil](https://en.wikipedia.org/wiki/Brazil)). An unnamed US government official was reported as saying that the deal was a "historic step forward" but was not enough to [prevent dangerous climate change](https://en.wikipedia.org/wiki/Avoiding_dangerous_climate_change) in the future. However, the BBC's environment correspondent said: "While the White House was announcing the agreement, many other – perhaps most other – delegations had not even seen it. A comment from a UK official suggested the text was not yet final and the Bolivian delegation has already complained about the way it was reached – 'anti-democratic, anti-transparent and unacceptable'. With no firm target for limiting the global temperature rise, no commitment to a legal treaty and no target year for peaking emissions, countries most vulnerable to climate impacts have not got the deal they wanted." The use of "meaningful" in the announcement was viewed as being [political spin](https://en.wikipedia.org/wiki/Spin_(public_relations)) by an editorial in [*The Guardian*](https://en.wikipedia.org/wiki/The_Guardian).

Early on Saturday 19 December, delegates approved a motion to take note of the [Copenhagen Accord](https://en.wikipedia.org/wiki/Copenhagen_Accord) of December 18, 2009. This was due to the opposition of countries such as [Bolivia](https://en.wikipedia.org/wiki/Bolivia), [Venezuela](https://en.wikipedia.org/wiki/Venezuela), [Sudan](https://en.wikipedia.org/wiki/Sudan) and [Tuvalu](https://en.wikipedia.org/wiki/Tuvalu) who registered their opposition to both the targets and process by which the Copenhagen Accord was reached. The UN Secretary General Ban Ki-moon welcomed the US-backed climate deal as an "essential beginning" however debate has remained as to the exact legal nature of the Accord. The Copenhagen Accord recognizes the scientific case for keeping temperature rises below 2 °C, but does not contain a baseline for this target, nor commitments for reduced emissions that would be necessary to achieve the target. One part of the agreement pledges US$30 billion to the developing world over the next three years, rising to US$100 billion per year by 2020, to help poor countries adapt to climate change. Earlier proposals, that would have aimed to limit temperature rises to 1.5 °C and cut CO2 emissions by 80% by 2050 were dropped. The Accord also favors developed countries' paying developing countries to reduce emissions from [deforestation](https://en.wikipedia.org/wiki/Deforestation) and degradation, known as "REDD".

The agreement made was non-binding but US President Obama said that countries could show the world their achievements. He said that if they had waited for a binding agreement, no progress would have been made.

Many countries and non-governmental organisations were opposed to this agreement, but, throughout 2010, 138 countries had either formally signed on to agreement or signaled they would. Tony Tujan of the IBON Foundation suggests the perceived failure of Copenhagen may prove useful, if it allows people to unravel some of the underlying misconceptions and work towards a new, more holistic view of things. This could help gain the support of developing countries. Malta's Ambassador for Climate Change, Michael Zammit Cutajar, extends this to suggest "the shock has made people more open to dialogue".

### Reactions

### I, Governments

US President [Barack Obama](https://en.wikipedia.org/wiki/Barack_Obama) said that the agreement would need to be built on in the future and that "We've come a long way but we have much further to go." Gregg Easterbrook noted that Obama's speech was exactly what George H W Bush had said after the 1992 Rio Earth Summit. However, there had been no progress in regulating greenhouse gases since 1992.

Prime Minister [Gordon Brown](https://en.wikipedia.org/wiki/Gordon_Brown) of Great Britain said "We have made a start" but that the agreement needed to become legally binding quickly.” He accused a small number of nations of holding the Copenhagen talks to ransom. EU Commission President [Jose Manuel Barroso](https://en.wikipedia.org/wiki/Jose_Manuel_Barroso) said "I will not hide my disappointment regarding the non-binding nature of the agreement here." French President [Nicolas Sarkozy](https://en.wikipedia.org/wiki/Nicolas_Sarkozy) commented "The text we have is not perfect" however "If we had no deal, that would mean that two countries as important as India and China would be freed from any type of contract.[[](https://en.wikipedia.org/wiki/2009_United_Nations_Climate_Change_Conference#cite_note-BBC_keypowers-114)

The head of China's delegation said that "The meeting has had a positive result, everyone should be happy."[[125]](https://en.wikipedia.org/wiki/2009_United_Nations_Climate_Change_Conference#cite_note-bbcquotes-125) [Wen Jiabao](https://en.wikipedia.org/wiki/Wen_Jiabao), China's prime minister said that the weak agreement was because of distrust between nations: "To meet the climate change challenge, the international community must strengthen confidence, build consensus, make vigorous efforts and enhance co-operation. India's environment minister, [Jairam Ramesh](https://en.wikipedia.org/wiki/Jairam_Ramesh), has been reported as saying, "We can be satisfied that we were able to get our way" and that India had "come out quite well in Copenhagen".

Brazil's climate change ambassador called the agreement "disappointing". The head of the [G7](https://en.wikipedia.org/wiki/Group_of_77)7 group of countries, which actually represents 130 nations, said that the draft text asked African countries to sign a "suicide pact" and that it would "maintain the economic dominance of a few countries". The values the solution was based on were "the very same values in our opinion that funnelled six million people in Europe into furnaces". Representatives of the [Venezuela](https://en.wikipedia.org/wiki/Venezuela), and [Tuvalu](https://en.wikipedia.org/wiki/Tuvalu#Climate_change) were unhappy with the outcome. Bolivian president, [Evo Morales](https://en.wikipedia.org/wiki/Evo_Morales) said that, "The meeting has failed. It's unfortunate for the planet. The fault is with the lack of political will by a small group of countries led by the US."

[John Ashe](https://en.wikipedia.org/wiki/John_William_Ashe), the chair of the talks that led to the Kyoto protocol, was also disappointed with the agreement made, stating: "Given where we started and the expectations for this conference, anything less than a legally binding and agreed outcome falls far short of the mark."

### II, Non-governmental organizations

[Rajendra K. Pachauri](https://en.wikipedia.org/wiki/Rajendra_K._Pachauri) stated the Copenhagen Accord is "good but not adequate." John Sauven, executive director of [Greenpeace](https://en.wikipedia.org/wiki/Greenpeace) UK stated that "The city of Copenhagen is a crime scene tonight ... It is now evident that beating [global warming](https://en.wikipedia.org/wiki/Global_warming) will require a radically different model of politics than the one on display here in Copenhagen." According to him "there are too few politicians in this world capable of looking beyond the horizon of their own narrow self-interest". Nnimmo Bassey, of [Friends of the Earth](https://en.wikipedia.org/wiki/Friends_of_the_Earth) international called the conference "an abject failure". Lydia Baker of [Save the Children](https://en.wikipedia.org/wiki/Save_the_Children) said that world leaders had "effectively signed a death warrant for many of the world's poorest children. Up to 250,000 children from poor communities could die before the next major meeting in Mexico at the end of next year." Tim Jones, climate policy officer from the [World Development Movement](https://en.wikipedia.org/wiki/World_Development_Movement) said that leaders had "refused to lead and instead sought to bribe and bully developing nations to sign up to the equivalent of a death warrant." The United Nation’s Environment Programme’s (UNEP) Fifth Emissions Gap report shows there is an urgent need for governments to ramp up their 2020 commitments to cut greenhouse gases if the world is to stay within the global carbon budget needed to keep climate disrupting temperature increases below 20C… “Canada needs to seize these opportunities by committing to ramping up investments in renewable energy to power our homes, buildings and vehicles,” said John Bennett, Sierra Club of Canada. Kim Carstensen of the [World Wide Fund for Nature](https://en.wikipedia.org/wiki/World_Wide_Fund_for_Nature) stated: "Well-meant but half-hearted pledges to protect our planet from dangerous climate change are simply not sufficient to address a crisis that calls for completely new ways of collaboration across rich and poor countries ... We needed a treaty now and at best, we will be working on one in half a year's time. What we have after two years of negotiation is a half-baked text of unclear substance." Robert Bailey, of [Oxfam International](https://en.wikipedia.org/wiki/Oxfam_International), said: "It is too late to save the summit, but it's not too late to save the planet and its people. We have no choice but to forge forward towards a legally binding deal in 2010. This must be a rapid, decisive and ambitious movement, not business as usual."

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1. **Analysis and aftermath**

Despite widely held expectations that the Copenhagen summit would produce a legally binding treaty, the conference was plagued by negotiating deadlock and the resulting "Copenhagen Accord" which is not legally enforceable. BBC environment analyst [Roger Harrabin](https://en.wikipedia.org/wiki/Roger_Harrabin) attributed the failure of the summit to live up to expectations to a number of factors including the recent [global recession](https://en.wikipedia.org/wiki/Financial_crisis_of_2007%E2%80%932010) and conservative domestic pressure in the US and China.

Gregg Easterbrook described the Copenhagen Accord as "vague, nonbinding comments about how other people should use less fossil fuel". According to Easterbrook, international climate change negotiations are "complex, expensive and going nowhere" and are prone to creating the appearance of action while distracting attention from the lack of real change.

In the week following the end of the Copenhagen summit, carbon prices in the EU dropped to a six-month low.

### I, Failure blamed on developed countries

[George Monbiot](https://en.wikipedia.org/wiki/George_Monbiot) blamed the failure of the conference to achieve a binding deal on the United States Senate and [Barack Obama](https://en.wikipedia.org/wiki/Barack_Obama). By negotiating the Copenhagen Accord with only a select group of nations, most of the UN member states were excluded. If poorer nations did not sign the Accord then they would be unable to access funds from richer nations to help them adapt to climate change. He noted how the British and American governments have both blamed China for the failure of the talks but said that Obama placed China in "an impossible position" – "He demanded concessions while offering nothing." [Martin Khor](https://en.wikipedia.org/wiki/Martin_Khor) blamed Denmark for convening a meeting of only 26 nations in the final two days of the conference. He says that it undermined the UN's multilateral and democratic process of climate negotiations. It was in these meetings that China vetoed long-term emission-reduction goals for global emissions to decrease by 50%, and developed countries emissions to fall by 80% by 2050 compared to 1990. Khor states that this is when other countries began to blame the failures on China. If China had accepted this, by 2050 their emissions per capita would have had to be around one half to one fifth per capita of those of the United States

According to [Kishore Mahbubani](https://en.wikipedia.org/wiki/Kishore_Mahbubani), President Obama interrupted a negotiating session to which he had not been invited and began yelling at members of the Chinese delegation, including [Premier](https://en.wikipedia.org/wiki/Premier_of_the_People%27s_Republic_of_China) [Wen Jiabao](https://en.wikipedia.org/wiki/Wen_Jiabao), eliciting an angry response from [Xie Zhenhua](https://en.wikipedia.org/wiki/Xie_Zhenhua_(politician)). White House staffer Alyssa Mastromonaco describes the US delegation including Obama and Clinton, breaking into a "secret" BASIC negotiating session, and the prior confusion over whether the Indian delegation had abandoned the conference.

### II, Failure blamed on developing countries

The [Australian Broadcasting Corporation](https://en.wikipedia.org/wiki/Australian_Broadcasting_Corporation) has reported that India, China and other emerging nations cooperated at Copenhagen to thwart attempts at establishing legally binding targets for carbon emissions, in order to protect their economic growth.

UK Climate Change secretary Ed Miliband accused China specifically of sinking an agreement, provoking a counter response from China that British politicians were engaging in a political scheme. [Mark Lynas](https://en.wikipedia.org/wiki/Mark_Lynas), who was attached to the [Maldives](https://en.wikipedia.org/wiki/Maldives) delegation, accused China of "sabotaging" the talks and ensuring that Barack Obama would publicly shoulder the blame. [*The New York Times*](https://en.wikipedia.org/wiki/The_New_York_Times) has quoted Lynas as further commenting:

"...the NGO movement is ten years out of date. They’re still arguing for ‘climate justice’, whatever that means, which is interpreted by the big developing countries like India and China as a right to pollute up to Western levels. To me carbon equity is the logic of mutually assured destruction. I think NGOs are far too soft on the Chinese, given that it’s the world’s biggest polluter, and is the single most important factor in deciding when global emissions will peak, which in turn is the single most important factor in the eventual temperature outcome...

"I think the bottom line for China (and India) is growth, and given that this growth is mainly based on coal, there is going to have to be much more pressure on China if global emissions are to peak within any reasonable time frame. In Beijing the interests of the Party come first, second and third, and global warming is somewhere further down the list. Growth delivers stability and prosperity, and keeps the party in power."

China's [Xinhua](https://en.wikipedia.org/wiki/Xinhua) news agency responded to these allegations by asserting that Premier Wen Jiabao played a sincere, determined and constructive role at the last minute talks in Copenhagen and credited him with playing a key role in the "success" of the conference. However, Wen did not take part in critical closed-door discussions at the end of the conference. According to Wen himself, the Chinese delegation was not informed about the critical discussion.

The editorial of [*The Australian*](https://en.wikipedia.org/wiki/The_Australian) newspaper, blamed African countries for turning Copenhagen into "a platform for demands that the world improve the continent's standard of living" and claimed that "Copenhagen was about old-fashioned anti-Americanism, not the environment".

Indian journalist [Praful Bidwai](https://en.wikipedia.org/wiki/Praful_Bidwai) puts the blame on both developed and a few developing countries such as India, arguing that the "Copenhagen Accord is an illegitimate, ill-conceived, collusive deal between a handful of countries that are some of the world's greatest present and future emitters." He argues that India's policy is driven by elites determined to maintain high-consumer lifestyles which will have devastating effects for the vast majority of India's poor.

### III, Media

An article by Gerald Traufetter for [Spiegel Online](https://en.wikipedia.org/wiki/Spiegel_Online) described the Copenhagen summit as a "political disaster," and asserted that the US and China "joined forces to stymie every attempt by European nations to reach agreement." Traufetter's assertion was based on his analysis of "leaked diplomatic cables." An article by Damian Carrington for[guardian.co.uk](https://en.wikipedia.org/wiki/Guardian.co.uk) also included an analysis of [WikiLeaks](https://en.wikipedia.org/wiki/WikiLeaks) US diplomatic cables. According to Carrington, "America used spying, threats and promises of aid to get support for [the] Copenhagen accord."

### IV, Academics

Benito Müller commented on criticisms of the UNFCCC process. Müller is a programme director at the Oxford Institute for Energy Studies. In his view, the failure to get a better result at Copenhagen was due to a lack of political will in the months preceding the conference.

[Walter Russell Mead](https://en.wikipedia.org/wiki/Walter_Russell_Mead)argues that the conference failed because environmentalists have changed from "Bambi to Godzilla." According to Mead, environmentalist used to represent the skeptical few who made valid arguments against big government programs which tried to impose simple but massive solutions on complex situations. Environmentalists' more recent advocacy for big economic and social intervention against global warming, according to Mead, has made them, "the voice of the establishment, of the tenured, of the technocrats" and thus has lost them the support of a public which is increasingly skeptical of global warming.

### V, Emissions reductions

A preliminary assessment published in November 2010 by the [United Nations Environment Programme](https://en.wikipedia.org/wiki/United_Nations_Environment_Programme)  (UNEP) suggests a possible "emissions gap" between the voluntary pledges made in the Copenhagen Accord and the emissions cuts necessary to have a "likely" (greater than 66% probability) chance of meeting the 2 °C objective. The UNEP assessment takes the 2 °C objective as being measured against the pre-industrial global mean temperature level. To having a likely chance of meeting the 2 °C objective, assessed studies generally indicated the need for global emissions to peak before 2020, with substantial declines in emissions thereafter.

**Climate Change, Ethics and the Earth Charter**

The climate change problem is one of the great environmental challenges of our era; not the only one but certainly one we ignore at our peril. The climate change problem and its solutions are usually discussed in terms of technology, economics and politics. The technological dimension is concerned with how to redesign and re-engineer how we generate and use energy so that we can reduce emissions of carbon dioxide and other greenhouse gases and still have the energy we need for industrial production, manufacturing, heating and cooling houses, transportation and agriculture. The economic problem is concerned with how we can do this in the most cost effective ways; that is, with the least cost and disruption to the economy, and gaining maximum mitigation benefits from investments.

The political dimension of the climate change problem has received overwhelming coverage recently following the failure of the Copenhagen conference negotiations to deliver the much anticipated comprehensive legally binding agreement. In part, this failure stems from the simple fact that the costs of mitigation are incurred now while the benefits (i.e., the benefits from the avoided climate change) arise largely in the future. The promulgation of policies that prevent harm from arising in the futures requires both an enlightened citizenship and a courageous political leadership with vision. We cannot ignore the reality that some players with financial vested interests in the current modes of energy production and use advocate against such progressive policies. While these technological, economic and political issues are critical, they do not tell the full story about the climate change problem and its solution. The less discussed part of the climate change story concerns the ethical dimension. Ethical issues are imbedded within every aspect and at every level of the climate change agenda. Failure to explicitly recognize and deal with these ethical issues is proving to be a major impediment to solving the problem.

1. **International relations and ethics**

The UN Framework Convention on Climate Change (UNFCCC), does in fact contain ethical imperatives agreed to by the ‘parties’ (i.e. the national governments who ratified this treaty), and which are designed to guide ongoing negotiations.

(1) The principle of common but differentiated responsibilities and capacities – this recognizes that nations vary in the extent to which they have contributed to the climate change problem, the extent to which they will be impacted by climate change, their ability to contribute to solving the problem, and their capacity to cope with the negative consequences of unavoidable climate change; this principle is articulated in Earth Charter principle ‘Accept that with the right to own, manage, and use natural resources comes the duty to prevent environmental harm and to protect the rights of people’; and 2(b) ‘Affirm that with increased freedom, knowledge, and power comes increased responsibility to promote the common good’.

(2) The prevention and precautionary principles – these are expressed in principle 6 of the Earth Charter; ‘Prevent harm as the best method of environmental protection and, when knowledge is limited, apply a precautionary approach’; and 6(a) ‘Take action to avoid the possibility of serious or irreversible environmental harm even when scientific knowledge is incomplete or inconclusive’.

(3) The right to development – which should be interpreted in the light of other commitments made under the Rio and Johannesburg Declarations as the right to sustainable development, which is articulated in Earth Charter principle 10 ‘Ensure that economic activities and institutions at all levels promote human development in an equitable and sustainable manner’. These ethical imperatives are drawn upon by parties during climate change treaty negotiations and were evident at the 2010 Copenhagen conference. The notion of ‘climate justice’ is now being used by civil society, the need to act now to prevent harm was strongly argued by the Association of Small Island States, and the G7, especially the poorest and most vulnerable states who argued for substantial adaptation funding to be transferred to them from the industrialized countries on the basis of the principle of common but differentiated responsibilities and capacities.

Indeed, it has been claimed that the Copenhagen conference was distinguished by the strong claims made by parties, NGOs, and during side events, that climate change is an ethical problem and that responses must be guided by ethical, justice, and human rights considerations. However, we argue that in general terms, over the last 20 years of international negotiations under the UNFCCC ethics has played a relatively minor role in international climate change negotiations.

One impediment to ethical issues being more explicitly analyzed is due to confusion as to what is meant by ‘ethics’ in a climate change context. To act ethically means that in deciding what is the right or wrong thing to do in a given situation, we go beyond self-interest and give consideration to the consequences of our actions (or non-actions) for the well-being of others. Many people associate ‘ethics’ only with the rights and wrongs of personal behavior such as are addressed by an organizations ‘code of conduct’ for their staff. From this perspective, ethics is a personal matter and not central to international affairs.

However, the reality is that ethics is central to international negotiations when obligations are created for governments that require them to go beyond consideration of self-interest alone in making decisions, and to consider their duties and responsibilities towards others; including people in other countries, future generations of people, and even other species. Conventional notions of the morality of the nation state are challenged by the proposition that nations should act beyond their self-interest in their decision making.

Historically, the dominant paradigm has been that the international responsibilities of national governments are prosaically defined in terms such as securing their borders from invasion and honoring contractual obligations so as to enable trade and economic activity. Ethical considerations do enter international negotiations, but history dictates that their influence is always constrained by the principle of ‘war readiness’; the ever-present possibility of war and invasion. This conventional view of the morality of states accepts ethics as part of international relations but only up to the point where it does not serve the national self-interest. The influence of this conventional paradigm is still strong, such that the climate change negotiating positions of many (if not most) industrialized nations, and many (if not most) of the powerful developing nations, are dominated by national self-interest largely defined by standard measures of short-term economic costs and benefits.

For example, one of the main arguments made in Australia against climate change policies is that ‘Australia is not a major polluter, any reductions in greenhouse gas emissions will not significantly influence climate change, but mitigation policies will add unnecessary costs to the Australian economy’. These arguments hold political sway in Australia because we obtain around 90% of our energy from coal-fired power stations and we are the world’s largest exporter of coal. This conflict between the influences in decision-making of ‘national self-interest’ versus considering ‘responsibilities for others’ is perhaps the critical ethical issue when we come to consider the current state of international climate change negotiations.

1. **Specific climate change ethical issues**

Here we will now consider some of the specific ethical issues that are embedded within the current international climate change treaty negotiations and that were evident at the 2010 Copenhagen conference negotiations. The negotiating agenda is framed by four key themes:

(1) Mitigation – how can we reduce greenhouse gas emissions, especially carbon dioxide, to a level that prevents dangerous climate change;

(2) Adaptation – how we help people and communities cope with the negative impacts of unavoidable climate change;

(3) Technology – how we develop and deploy new and alternative green technologies; and

(4) Finance – who will pay how much to help with the necessary mitigation and adaptation actions?

**Mitigation**

A key issue at Copenhagen concerned the global mitigation target, that is, what should be the maximum level of climate change allowed; expressed in terms of the future average planetary temperature. This is an ethical issue because higher planetary temperatures equate with greater levels of impact and harm to humans and other species. The Association of Small Island States argued for no more that 1.50C, while the Copenhagen Accord (the non-binding agreement that was ‘noted’ at the Copenhagen Conference of the Parties) expresses support for no more than 20 C; even though this figure may result in the flooding of small island states, amongst other undesirable impacts.

To prevent the average planetary temperature exceeding the target (be it 1.5 or 20 C), total global annual greenhouse gas emissions must be progressively reduced (or ‘contracted’) each year to a scientifically prescribed level.

To limit climate change to 20 C requires significant level reduction in CO2 emanation. Once the world community has decided upon the reduction in CO2 emanation, we must then make another critical decision with equally serious ethical implications.

One way of thinking about the area under the contraction curve is that it represents the global permissible emissions, i.e., the emissions that humans are entitled to safely emit each year. While this entitlement must contract over time, it remains an entitlement nonetheless. The question is how will this emission entitlement be distributed amongst the nations of the world?

This question invokes fundamental ethical considerations because currently the level of emissions equates with the amount of economic activity that can occur employing conventional forms of energy production and land use activity. Therefore the ability of many developing countries to generate economic wealth and provide for the basic needs of their people will be hampered by the size of the emission entitlement they are allocated. To date, the industrialized nations have had the lion’s share of global emissions. Now, China is appropriating an increasing proportion. But what rule can we use to ensure that the emission entitlements going forward are allocated in a way that is equitable and just for all nations?

**Adaptation**

There is an inexorable link between mitigation and adaptation. The need for adaptation will decrease or increase with the success or failure of the world community to agree upon and reach the cuts in greenhouse gas emissions needed to prevent dangerous climate change. Failure to mitigate will place ever greater burdens on those who have the least capacity to response and who are the most exposed to the negative impacts of rapid climate change. These more vulnerable communities include the poor in developing countries with little capacity to take the necessary adaptation actions should, for example, their food security be threatened or as sea levels rise.

Various ethical issues arose at Copenhagen in the debates around adaptation. However, the basic ethical issue here is one of distributive justice: the poorest nations have not been responsible for causing the climate change problem but are the ones who will suffer the most harm. The ‘polluter pays’ principle suggests that the wealthy countries whom have caused the problem, and who have in fact benefited from it, should now pay to help poorer countries adapt to the negative impacts of unavoidable climate change. From this perspective, adaptation funding is not just of ‘overseas aid’, it is a matter of climate justice.

A major outcome from Copenhagen that invokes significant ethical issues concerns the general consensus reached around the proposed policies and measures for REDD; reducing emissions from deforestation and degradation. One set of ethical issues concerns prospects for perverse outcomes from REDD funded activities that aim to reduce emissions for deforestation but in so doing cause harm to biodiversity and local communities, especially indigenous forest dependent people.

For example, the way forests are defined under REDD rules may allow natural forests to be cleared and the land converted to monoculture plantations for bio-fuels or palm oil. This would result in a massive increase in greenhouse gas emissions, the loss of biodiversity, and the degradation of ecosystem services that support sustainable livelihoods. To counter the prospects of such perverse outcomes, it is critical that appropriate safeguards are agreed to and put in place. A second ethical issue derives from the fact that REDD is concerned with deforestation and degradation in developing countries only; not the industrialized nations.

The balance of evidence suggests that REDD is no longer an optional mitigation activity. Emissions from deforestation are a significant component of total annual human emissions. To prevent dangerous climate change we need to dramatically reduce greenhouse gases emissions from all sources. However, historically, industrialized countries benefited economically from clearing their forests for agriculture; and the emissions from this deforestation have been a significant (~30%) source of the greenhouse gases that have caused the climate change problem to date.

**Chapter Five**

**ANALYZING ETHIOPIAN ENVIRONMENT POLICY AND PRACTICES IN THE EYES OF ENIVORNMENT ETHICS**

**Overview**

One could say environmental issues came to the forefront to be concern of government in Ethiopia at the wake of 1974 and 1984 draught because it was believed that the draught was the result of agricultural degradation or environmental mismanagement. But, here, it is good to keep in mind that this doesn‘t mean that there was no environmental management before the above mentioned draught. Rather, there were fragmented environmental management activities in Ethiopia like the establishment of Semen National Park, Awash National Park and other wildlife protections though these were individual cases and not holistic approach to the problem.

**Brief Overview of Environmental Problems in Ethiopia**

This section presents a brief overview of the main current environmental issues in Ethiopia. Climate change is a major global environmental issue with profound implications for the Ethiopian environment and economy. The major environmental issues affecting Ethiopia include soil erosion and land degradation (encompassing impacts on forests, agricultural and pastoral land), deforestation and forest degradation, water scarcity, biodiversity loss and various types of pollution issue.

More recently, however, other environmental issues and other parts of the country have come to greater prominence in the research literature, including urban areas. Environmental degradation may be exacerbated by population growth in areas where resources are already scarce, which can lead to further division of resources, overuse of divided land and/or inappropriate use of environments that are unable to meet the demands placed on them.

What are major Environmental problems in Ethiopia?

* 1. **Soil erosion and land degradation**

Soil erosion occurs naturally due to processes of erosion by water and wind in the landscape, but it is increased by several orders of magnitude above background rates by human actions. Land-use change – especially the removal of forest cover and riparian vegetation – exposes the underlying soil, which may then be rapidly removed by heavy rainfall, overland flow during flooding, or by the action of the wind. This runoff of topsoil has knock-on effects downstream as it leads to the siltation of watercourses and to ecological change in watercourses and wetland ecosystems.

Soil erosion is very serious in the northern highlands of Ethiopia owing to the dissected nature of the terrain, with nearly 70 per cent of the highlands having slopes in excess of 30 per cent, and highly erosive rain storms. “Highly erosive rain storms hit a landscape that has been stripped bare, with little mitigating cover to protect the soil from the bombardment of the rain drops” (Michael Ståhl, 1992:283). As a result, the yield of soil declines, leading to less vegetation. Besides, the use of intensive farming practices on cleared land, with inadequate soil conservation measures, also results in accelerated soil erosion. Farming practices such as preparing fine tilth seed beds for small seed crops such as barely, wheat, teff, sorghum, and single cropping have enhanced soil erosion (Adrian P Wood, 1990:191; Tegegn Gebre Egziabher, 1995:283). Here, it is important to note that, as Alan Hoben (1995) has observed, estimates of soil erosion and nutrient loss in Ethiopia seem to be too high and unreliable. Various authors give contrasting figures (see for instance Ståhl, 1990:40; Adrian P Wood, 1990:188). Compared to the northern highlands, landform is less rugged, and there is more vegetative cover, in the central and southern highlands of Ethiopia. As a result, soil erosion is less severe in central and southern Ethiopia than in the north (Hoben, 1997:57).

Moreover, once the topsoil has been lost to erosion, the remaining soil has a diminished capacity to store water, with the effect that subsequent rainfall runs off the land more rapidly, causing further erosion and potentially leading to more frequent and more severe flooding events. The removal of topsoil by accelerated erosion also alters the characteristics and structure of the remaining soil, leading to leaching of chemical species downwards through the soil profile and in some cases leaving impoverished, infertile soils that may also be more prone to waterlogging. A further issue is that cleared land is more prone to soil-water evaporation and upward transport of salts through the soil profile, leading to salinisation and the formation of infertile, blighted land. Soil biodiversity is reduced as a result of all of these processes, and the capacity for the remaining soil both to support vegetation cover and to regenerate declines.

Land degradation may be defined as the loss of productive and ecosystem services provided by land resources. It is defined by the United Nations Convention to Combat Desertification (UNCCD) as the reduction or loss of the biological or economic productivity and complexity of pastoral, agricultural and wooded land due to soil erosion, soil impoverishment (such as nutrient depletion) and/or the loss of natural vegetation. Much of the world’s land surface area is degraded, particularly in sub-Saharan Africa where it is critical to the livelihoods of poor farmers. (Nkonya et al. 2008, p. vi) Soil erosion and land degradation in Ethiopia and their connections with agriculture are a prominent environmental concern, as this is one of the most important causes of low and declining agricultural productivity, ongoing food insecurity and rural poverty in the country. (Gashaw et al. 2014, p. 98)

Around 85 per cent of Ethiopia’s population rely heavily on subsistence agriculture for their livelihoods, and their activities contribute to the increasing degradation and vulnerability of soil **Deforestation and forest degradation**

Deforestation has also been a serious environmental issue in Ethiopia, and its effects persist today. Some historical reconstructions estimate that forest cover in Ethiopia has been reduced from around 40 per cent to around 3 per cent over the course of the last century. The pattern of deforestation has been uneven, with some regions – particularly the Ethiopian highlands – being almost completely deforested. In the south central Rift Valley of Ethiopia, natural forest cover has declined dramatically from 16 percent in 1972 to 2.8 per cent in 2000, corresponding to an annual forest loss of around 1,440 hectares in that area.

The major parts of the southern highlands were full of forest and woodlands at the turn of the century; but by 1950 about 40 % of these lands was covered by forests (Sutuma Waaqo, 1994:12). Various authors give different figures concerning the present forest area in the country. Heske (cited in Melaku Bekele, 1992:96) estimated that 8.1% of the total area of Ethiopia is covered by forest. F. Breitenbach (cited in Melaku Bekele, 1992:96) on the other hand estimated that forest area covers 2.5% of the total area. Three West Ethiopian former provinces: Illuababorra, Kefa, and Welega contain half of the remaining forestland, and a quarter of the country’s forestland is found in Illuababorra. It has been estimated that from 80,000 to 200,000 hectares of forest are lost every year (FDRE, 1997:1) owing to the clearance of forests for agricultural areas, the collection of fuelwood, the use of timber for construction, fences and furniture, and the uncontrolled grazing of livestock.

Moreover, the incessant civil war and the deployment of large military units in Ethiopia have contributed to the depletion of forests. For instance, Bahru Zewde has stated that military units in Wollo cut trees indiscriminately both for their own firewood needs and for the benefit of their mistresses (1998:106).

It is also worth noting that forest fire has caused a considerable loss of natural forests in Ethiopia (for details see Peter Lex 1986; Mengistu Woube, 1998; Zerihun Woldu and Sileshi Nemomissa; Ministry of Agriculture [MOA], 2000; Elleni Mocra, 2000). According to Warkine Kelbesa forest fire has had devastating impacts on animals and plants in their regions. The recent bush fires in different parts of the country have ruined the livelihoods of many honey farmers (MOA, 2000; Ayenew Haileselasie, 2000). Forest fire occurs frequently in different parts of the country even though there are no fully documented fire data in the country. Moreover, no serious policy has been formulated to control forest fires in Ethiopia. There have been no trained forest fire fighters.

Deforestation is closely linked to the issue of soil erosion and land degradation, but is an important environmental issue in its own right because it leads to the loss of important forest resources on which livelihoods may depend; it affects local microclimates (and even regional climates, in some cases); and it causes other environmental issues in turn, particularly biodiversity loss and soil erosion.

Deforestation and forest degradation are exacerbated by population growth and migration patterns (for instance, migration to the southwest of the country), which has increased demand

**C. Water scarcity**

Scarcity of water resources occurs as a result of the reduced availability of water, the over abstraction of water and/or the contamination of existing supplies. Again, the environmental issues are closely interrelated, with water availability or scarcity being related to hydrological patterns which have been altered and in some cases highly disrupted by changes in vegetation cover and soils.

Those patterns, of course, are mediated by a range of social and institutional factors. Locally, water availability and water resource security may require the use of appropriate water and soil conservation practices (such as constructing stone terraces on agricultural land), but although such techniques have been widely introduced over several decades their sustained use has been less than had been hoped.

Water scarcity in rural areas of Ethiopia takes two main forms: low coverage levels and poor water quality, and these have implications for human and animal health, for economic and social life, and for ecosystem functioning. As Bogale and Urgessa have acknowledged, in rural parts of Ethiopia many women and children still spend many hours a day collecting water, time that could be better spent in education or productive employment. (Bogale and Urgessa, 2012). Some evidence suggests that water availability may be better in towns. However, inadequate water supplies are also prominent issues in urban areas, although this may be more frequently due to contamination of supplies than to absolute shortage.

The principal biological pathogens that are present in urban areas in Ethiopia are waterborne (such as the organisms responsible for causing cholera and dysentery) or are carried by insect/animal vectors that use sources of water as part of their lifecycles (causing malaria and dengue fever, for instance). The urban poor are vulnerable to these infectious diseases as informal settlements in and around urban areas commonly lack adequate provision of potable water, sanitation, drainage and solid waste collection services and facilities. (Smith, 2013) Adequate provision of infrastructure and services (whether public, private, NGO or community-based activity) is required to improve water security and to reduce the spread of infectious diseases in poor urban areas of Ethiopia. .

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What is biodiversity loss status in Ethiopia?

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**D. Biodiversity loss**

Biodiversity loss is another major environmental challenge in Ethiopia. Biodiversity is a critical, if sometimes overlooked aspect of ecosystem services and biosphere integrity which underpins all aspects of economic, social, political and cultural life.

Biodiversity encompasses both wild and domesticated/crop species; the overall trends in biodiversity are of precipitous declines, particularly in tropical environments. Biodiversity loss is defined as a reduction in genetic, species and ecosystem diversity, and it is now occurring at an unprecedented rate. Biodiversity loss leads to depleted ecosystem services (such as provision of freshwater, food and fuel) and in turn affects human health, livelihoods, income and wellbeing.

Since the poorest people are frequently those most directly dependent on adequate local ecosystem services such as freshwater supplies, fuel wood provision and flood protection, there is a direct link between biodiversity loss and poverty, and poor people are disproportionately affected by biodiversity loss. Biodiversity loss occurs primarily through habitat degradation and destruction and through the spread of disease, but it also occurs through direct mortality to animal and plant populations (for instance, through hunting, poaching and collecting).

All of these issues are current concerns in Ethiopia, with important implications for livelihoods, sustainable development and green growth. The relationship between biodiversity loss and poverty is not straightforward, and many of the linkages between poverty and biodiversity are not yet fully understood. Nevertheless, there is frequently considerable spatial overlap between areas of high biodiversity and high poverty, creating a rationale for pursuing both poverty alleviation and biodiversity conservation simultaneously in countries such as Ethiopia.

To date, there has been little progress in reversing the overall decline of biodiversity, despite the existence of many environmental management policies and initiatives. (Kidane-Mariam 2013) In contrast to this overall picture of decline, some evidence suggests that urban biodiversity may be improving in some parts of equatorial Africa, particularly as a result of small-scale urban agriculture (including both urban livestock production and small mixed crop-livestock farming). (Smith, 2010)

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What are pollution issues in Ethiopia?

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1. **Pollution issues**

Pollution issues encompass a broad range of types of air, water, soil and land pollution, with the result that these resources are contaminated by anthropogenic substances and their ability to provide sustainable ecosystem services may be compromised. Air pollution includes the emission of black carbon (soot), aerosols, nitrogen oxides, sulphur oxides, volatile organic compounds, lead and other forms of particulate matter, as well as the problem of acid deposition. Those emissions are disproportionately from urban, industrial and transportation sources, although some important forms of rural air pollution also occur (particularly particulate matter released from biomass burning). These and other pollutants are responsible for significant human mortality and morbidity as well as for multiple ecological effects, such as impaired plant growth and reduced agricultural productivity.

Recent research has highlighted the continuing heavy dependence on, and inefficient use of, biomass resources in Ethiopia, which have contributed to the loss of forest resources and to indoor air pollution and poor health through the use of traditional cooking technology. This is despite the efforts made by government and other institutions to promote the adoption of new cooking technologies, which had met with only limited success. (Beyene and Koch, 2013)

Section 2:

**Brief Historical Review of Environmental policies in Ethiopia during the imperial and Dergue regime**

Overview

The Evolution of Environmental Institutions in Ethiopia Historical evidences indicate that the reasons for century-old lack of sustainable natural resource management and environmental protection tradition are mainly related to the instability of successive governments, their rapidly changing political economy and non-participatory top-down development programs (Bekele, 2008, p. 337).

Population growth is often taken as one of the causes of environmental degradation in Ethiopia. But there is no universal agreement among scholars about the impact of population pressure on the environment. Some Ethiopian and non-Ethiopian scholars underscore that population growth has given a new dimension to the pressure on land owing to the partial control of epidemics and the relatively peaceful period of Haile Selassie's reign after the Second World War (see Ståhl, 1992:282).

This section is partly a background section, relevant to later sections on environmental ethics and partly concerns important social and political trends leading to environmental degradation in Ethiopia. It addresses questions relating to the causes and consequences of environmental degradation, the influence of government policies on indigenous knowledge and how peasant farmers and pastoralists perceive the present state of the environment.

* 1. **Brief Historical Review of Environmental Policies In Ethiopia During Imperial Regime**

Prior to the period of Italian occupation (1936-41), while there were rules that addressed aspects of the environment in Ethiopia, formal environmental decrees were rare (Bekele, 2008). Population growth is often taken as one of the causes of environmental degradation in Ethiopia. But there is no universal agreement among scholars about the impact of population pressure on the environment. Some Ethiopian and non-Ethiopian scholars underscore that population growth has given a new dimension to the pressure on land owing to the partial control of epidemics and the relatively peaceful period of Haile Selassie's reign after the Second World War (see Ståhl, 1992:282). Hoben, however, argues that those who consider population pressure as one of the major causes of environmental degradation are promoting the neo-Malthusian environmental degradation narrative. He contends that this narrative is not new. It had a paramount role in east African soil conservation and forestry policy in Africa in the 1930s (Hoben, 1995:1013). The resource laws during the Italian occupation focused on the economic potential of Ethiopia’s natural resources rather than their ecological value. During this period, the Italians issued over twenty forest decrees and implemented destructive forestry programs to fuel infrastructural development (Bekele, 2008).

After the return of the Ethiopian imperial government (1941-1975), government policy focused on the development of the agricultural sector for domestic consumption and export; as a result, national forest land was redistributed for conversion to agricultural land (Bekele, 2008). While the 1955 Constitution introduced the principle of conservation, it took years for forestry policies to develop and even longer for any implementation to take place.

The period of 1955-1968 is described by Bekele as “probably one of the most distressing phases in forestry management” in Ethiopia, where the highland forest estimated in 1937 at nearly six million hectares was reduced by almost half to three million hectares in the early 1960s (2008, p. 339).

But it should be underlined that the traditional land tenure system had been one of the major causes of environmental degradation, economic inequality, and exploitation of peasant farmers by the landlords in Ethiopia. As Dessalegn has noted, the government is also responsible for environmental degradation (1998a:51). Before the February 1974 revolution, there were two forms of land tenure system: "owner cultivator" in the north and "tenancy" or the gabbar system in the south. While the people of Abyssinia in the north had inalienable rights to acquire their own ‘rist’ which was inheritable, the majority of peasant farmers in the southern half of the country were ‘gabbars’ or tenants of landlords, who acquired land through grants from the state following a vast expropriation of land (up to two-thirds) in many places in the second half of the nineteenth century. Tenant farmers in the south did not have any legal or political protection from arbitrary and sudden eviction. They were forced to give free service to the northern settlers and pay tributes in kind both to the northern settlers and the state. They were not encouraged to control soil erosion or conserve trees and water resources. On the contrary,

[w]hen they increased the value of the land by planting trees, digging ditches, etc. or raised the yield of their harvest, the landlord usually responded by increasing their rent (which amounted to 75 per cent of the harvest in some areas (P Koehn, 1982:255).

With regard to trees, the law did not clearly recognize security of tenure.

Even in the case of the peasant farmers of the northern part of the country, it should also be noted that the periodic reallocation of land, the scattered and changing composition of the parcels that constituted a household's holding, and the division and redistribution associated with inheritance in northern Ethiopia discouraged peasant farmers from investing in long-term improvements in land. As has been stated, environmental deterioration is higher in northern highlands than in the south.

Although successive Ethiopian governments have had negative impacts on indigenous knowledge, emperors and kings have tried to protect large forests in Ethiopia for environmental and economic reasons (for details see Melaku Bekele, 1992; John McCann, 1995; Dessalegn, 1998a; Workineh Kelbessa, 2001).

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Explain the content of Environmental policies in Ethiopia during ‘Derg’ Regime?

**B.** **Brief Historical Review of Ethiopian Environmental Policies During Derg Regime**

In 1975, the militaristic Derg regime succeeded the imperial government, drastically changing Ethiopian environmental management. Environmental policies produced during the Derg era (1975-1991) were grounded in the socialist ideologies of the regime (Bekele, 2008). Environmental legislation from this time period “emanated from the socialist principles in which the role of the State as owner of land and manager of related resources was magnified and individual initiative greatly discouraged” (Bekele, 2008, p. 340).

At the beginning of the 1970s the government issued legislation and established government bodies responsible for environmental protection. Despite the fact that the environmental record of the military government (1977-90) was disappointing, it established institutional structures to address environmental issues. It designed grand schemes such as state farms, forest plantations and irrigation projects without consulting the rural people. Policy makers hardly recognized the diversity of farming systems and agro-ecologies in the country. (see Workineh, 2001; see also Shibru Tedla and Kifle Lemma, 1999).

It is also worth noting that the villagization and resettlement programmes of the military government led to destabilisation of peasant farmer life which had a destructive impact on agriculture, food production and the environment (see Beyene Dolicho, 1992; Tesfaye Tafesse, 1994). In all parts of the country, the resettlement and villagisation programs of the Ethiopian military regime of the 1970s and 1980s inflicted incalculable damage on natural forests. For instance, recent resettlement schemes and mechanized farming aggravated forest fire in Gambela. As Mengistu noted, the military government transferred many thousands of people from the northern Ethiopian highlands to Gambela which increased the population in Gambela from about 50,000 in 1983, to 122, 800 in 1984 and to more than 174,000 in 1996 (Mengistu, 1998:276).

About 300,000 refugees from the southern Sudan in 1988 and more than 65,000 in 1996 have also aggravated the situation. According to Mengistu, [b]etween 1984 and 1994, the local people and the government cleared and burnt 140,000 ha of natural forestland for the establishment of resettlement schemes and mechanized farms (1998:276). In Gambela, woody, grassy and bushy lands are replacing the previous forestlands, as a result (Mengistu, 1998).

The environmental policies of the Derg regime were characterized by top-down management policies which, although they often incorporated extensive conservation and tree-planting initiatives, were accompanied by the disintegration of “customary institutions of natural resource management” (Ogbaharya & Tecle, 2010, pp. 495-496). This resulted in situations where “thousands of hectares of land belonging to communities and individual households came under plantation by force” (Bekele, 2008, p. 339) without regard for local participation or community empowerment. As a result, when the Derg government lost power in 1991, most of the conservation and development activities in the Environmental Policy Review 2011 12 environmental sector were destroyed in protest against decades of top-down rule (Bekele, 2008; Keeley & Scoones, 2003).

**Post-1991 environmental policy in Ethiopia**

**Overview**

After a brief period of transitional government, the current federal republic system, led by the Ethiopian People's Revolutionary Democratic Front (EPRDF), was instituted in 1995 (Ogbaharya & Tecle, 2010). The violent change in government from the Derg regime to the current EPRDF was accompanied by a drastic ideological shift in environmental management that was manifested in the administrative structure of the government and the development of formal environmental institutions.

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Explain the difference between Environmental policy in Ethiopia during ‘Derg’ Regime and EPRDF?

* 1. **The EPRDF’s approach to Environmental Policy**

The EPRDF’s approach to land management, which views land as a common property resource owned by the state and by the people, exemplifies the recent shift towards a more inclusive approach to environmental policy in Ethiopia (Bekele, 2008). The period after the Derg regime can be characterized by a move towards political decentralization, i.e., “a transfer of decision-making power and administrative responsibility from the central government to the periphery” (Wamai, 2008, p. 1).

Ethiopia has pursued decentralization as a means of improving service delivery, resource allocation, regional development, and the meaningful participation of the people in decision-making processes (Wamai, 2008; MoFED, 2002). In theory, this administrative and fiscal decentralization was meant to result in more participatory, responsive, government structures and by extension, improved environmental management.

The first wave of decentralization policies in 1995 resulted in the establishment of a federal republic government, and in 2002 a further set of decentralization initiatives relegated more fiscal and administrative power to local government administrations (McKee, 2007). Today, most large-scale environmental administration is dispersed between the federal government, and administrative subdivisions, including nine ethnically based regions and two chartered cities, Addis Ababa and Dire Dawa (US DOS, 2011).

In 1995, the Ethiopian Environmental Protection Authority (EPA) was established as a response to the Rio Agenda 21, which emphasized “the necessity of integrating environment and development at policy, planning, and management levels for improved decision making” (Ruffeis et al., 2010, p. 31). The EPA is the primary agency at the federal level responsible for managing environmental issues, and its responsibilities reflect the Rio Agenda 21 goals.

The responsibilities of the EPA include the development of environmental legislation and policy, setting of standards, monitoring of environmental policies, implementing Environmental Impact Assessments (EIAs) for proposed development activities, negotiating access & benefit sharing agreements, and undertaking capacity development in relevant agencies to ensure integration of environmental management into policymaking (McKee, 2007).

Writing an article on Project Syndicate, Prime Minister Meles Zenawi wrote:

"Climate change will hit Africa – a continent that has contributed virtually nothing to bring it about – first and hardest. Aside from Antarctica, Africa is the only continent that has not industrialized. Indeed, since the 1980s the industrialization that had taken place in Africa has by and large been reversed. Africa has thus contributed nothing to the historical accumulation of greenhouse gases through carbon-based industrialization. Moreover, its current contribution is also negligible, practically all of it coming from deforestation and degradation of forests and farmland.

Yet climate change will hit Africa hardest, because it will cripple the continent's vulnerable agricultural sector, on which 70% of the population depends. All estimates of the possible impact of global warming suggest that a large part of the continent will become drier, and that the continent as a whole will experience greater climatic variability.

We know what the impact of periodic droughts have been on the lives of tens of millions of Africans. We can therefore imagine what the impact of a drier climate on agriculture is likely to be. Conditions in this vital economic sector will become even more precarious than they currently are.

Africa will not only be hit hardest, but it will be hit first. Indeed, the long dreaded impact of climate change is already upon us. The current drought covering much of east Africa – far more severe than past droughts – has been directly associated with climate change."

Indeed, these concerns have long been demonstrated in the national policies and plans of Ethiopia in the past two decades. The strength of the Constitutional commitment to environment as observed in the FDRE is among the most progressive in the world.

The Constitution of the Federal Democratic Republic of Ethiopia recognized in Article 92 "Environmental Objectives":

1. Government shall endeavor to ensure that all Ethiopians live in a clean and healthy environment.

2. The design and implementation of programs and projects of development shall not damage or destroy the environment.

3. People have the right to full consultation and to the expression of views in the planning and implementations of environmental policies and projects that affect them directly.

4. Government and citizens shall have the duty to protect the environment.

Similarly, the government's overall policy goal set two decades ago envisaged:

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| "to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs." |
|  |

Recently, the government of Ethiopia took its commitment forward with the preparation of the most progressive and forward-looking development plan. Ethiopia was one of the first countries to formally merge policy agendas around climate resilience and the green economy at a national planning level by adopting a Climate Resilient Green Economy (CRGE) Vision and Strategy in 2011.

The green economy strategy, Climate Resilient Green Economy, was launched in 2011, addressing climate change adaptation and mitigation, while pursuing the goals of economic growth, zero net emissions and building resilience.

**Section 6:**

**Environmental Policy of Ethiopia and mainstreaming Environmental Ethics**

As we have seen in the previous sections of the chapter, Environmental Policy of Ethiopia aimed at a rapid and sustained rise in real output per capita on the one hand and developing green economy on the other hand. Here the concept of development is perceived as the conventional concept of development to be defined as a process of change aimed at attaining economic growth (a rapid and sustained rise in real output per capita). In this section, we raise ethical issues of Environmental policy of Ethiopia.

1. **Concept of Sustainable Development**

Environmental Policy of Ethiopia aimed at a rapid and sustained rise in real output per capita. In this definition, human and social transformation are not given sufficient attention. But high economic growth rate does not necessarily suggest higher levels of human development. There has been a gap between income and human development (for instance, levels of life expectancy and literacy) in many countries.

Recently, some development theorists and the United Nations Development Program (UNDP) in its Human Development Reports since the beginning of the 1990s have questioned this approach and paid attention to the role of human development (see UNDP, 1990-2000; Nigel Dower, 2000). Human development is intended to promote human well-being. The main parameters of human well-being include health, literacy, life expectancy, community, rule of law, liberty, and the exercise of choice or “control” over one’s life (Dower, 2000:40-41). The UNDP Human Development Report defines the concept “sustainable development” in the following way:

Sustainable human development is development that not only generates economic growth but distributes its benefits equitably; that generates [sic] the environment rather than destroying it; that empowers people rather than marginalizing them. It is development that gives priority to the poor, enlarging their choices and opportunities and providing for their participation in decisions that affect their lives. It is development that is pro-people, pro-nature, pro-jobs and pro-women (1994:iii).

Here, development which empowers people and involves economic well-being, environmental care and social concerns is regarded as sound. As Dower has noted, “[a] form of development might be sustainable while being undemocratic, socially unjust or cruel to animals” (2000:44). Accordingly, the term “environmentally sound development” is used to refer to environmentally, socially and economically justified development. This form of development also involves environmentally friendly indigenous knowledge and practices and promotes people-centered development.

There are two clearly demarcated views on traditional environmental knowledge, each of which advances its own arguments for and against. On the one hand, some scholars have approached indigenous knowledge cautiously and questioned its validity. The fundamental ecological insights of peasant farmers and other indigenous people have been identified with backwardness and a primitive mentality. On the other hand, the advocates of indigenous knowledge provides evidence at our disposal confirms that indigenous knowledge is not just a passing on of folk wisdom in a static way from one generation to the next. Rather, peasant farmers and pastoralists do not passively follow the course of nature. Many peasant farmers and pastoralists critically and rationally evaluate the commonly accepted opinions and practices of their people and thereby develop their own independent views about society and the natural environment. When they are affected by what is going on in the society, they come up with quotable proverbs which originate from their reflective remarks and their thinking about nature. Their view of the value of the natural environment is based on reasoned thought. Accordingly, there are principles of thought (implicit or explicit) in various peasant farmers’ and pastoralists’ knowledge.

1. **Indigenous Knowledge in Ethiopia**

Ethiopian and non-Ethiopian scholars have studied different aspects of peasant farmers’ knowledge in different parts of Ethiopia and have shown that there has been an indigenous tradition of environmental concern and conservationism in Ethiopia (see Dessalegn Rahmato, 1990, 1991, 1992, 1994, 1998a and b; Tahal and Shawel Consultants, 1988; James McCann, 1987; Alemneh Dejene, 1990; Belay Tegene, 1992, 1998a and b). They reveal that Ethiopian peasant farmers, through continuous experiments on their environment, have managed to learn how to control weeds and insects, select crop varieties, classify vegetation types, and cope with climatic and environmental changes. Peasant farmers are capable of monitoring environmental degradation through traditional conservation practices. Ethiopian peasant farmers have also a well-established system of soil classification (see James McCann, 1987; Mesfin Woldemariam, 1991; Belay, 1992, 1998a and b). Ethiopian peasant farmers have adapted traditional crops and landraces over centuries of selection and use them to meet dynamic and changing needs (Melaku Worede et al., 2000). Peasant farmers have developed various strategies to cope with climatic changes. They conserve water resources and avoid unnecessary danger and crisis during dry seasons.

Some peasant farmers in southern Ethiopia, for instance in Walayita (see Laeke Mariam Demissie, 2000), feed the leaves of enset, which has the power to retain water during the dry season, to their animals to quench thirst and serve as food. Enset is an important source of food for the people. Some studies also show that the Oromo people ascribe important value to the natural environment (see Karl Eric Knutsson, 1967; Lambert Bartels, 1983; Jan Hultin, 1987, 1994). Aneesa Kassam and Gemetchu Megerssa (1994) argue that the Oromo have some of the finest principles and codes of behavior towards nature. They stress that the Oromo maintain a perfect balance between nature and culture. They have further outlined how the Borena pastoralists protect the natural vegetation and manage pasturelands through a combination of different mechanisms (see also Gufu Oba, 1998). Religious attitudes, values and practices force peasant farmers to revere nature and natural places.

It is in the name of religion that peasant farmers preserve certain kinds of trees, animals, and sources of water. Therefore, traditional leadership and local religious institutions have contributed much to save the natural environment. The religious conception of the humanity-nature relationship reflects how the Oromo people harmonize themselves with nature. Moreover, in many ethnic groups in southern Ethiopia (Kambata, Alaba, Sidama and others), a newly married person is required to plant and take care of at least one tree (Workineh, 1997a:280). In Walayita, a person is required to have a grass lawn and at least ten trees as sheds in order to secure a wife (Laeke Mariam, 2000). Among others, the Amhara peasant farmers have also developed their own taboos and restrictions towards nature and natural resources. Environmental divination is practiced in Amhara regions. "Each season is given one of the names of the Evangelists, and the order of change, which follows the order of the Gospels, is considered to be eternally cyclical” (Dessalegn, 1990:39). Of the four seasons–Matthew, Mark, Luke and John– the people believe that the first is characterized by peace and stability, but the last three are followed by exhaustion of men through rebellion, hunger and war. Peasant farmers try to cope with the behaviors of consecutive seasons. In general, peasant farmers are not only the receivers of new technology, they are also the initiators of development. According to Dessalegn,

[a] peasant community does not just give up and wait for death when confronted with a natural disaster or food crisis. The threat of imminent danger in fact triggers a heightened awareness and a spate of defensive activity in rural communities. Everything is done to anticipate, prepare for, withstand and finally withdraw from the ambit of crisis. These four 'movements` make up the totality of peasant survival strategies (1994:201-202).

**B. Environmental Ethics: Traditions and Progress**

Oral traditions have the role as the sources of an indigenous environmental ethic and other issues. For instance, according to Warkine Kelbesa, Oromo view of the environment, knowledge, and power is illustrated by examining proverbs, folktales, riddles and songs that convey values. The wide variety of proverbs in Oromia shows different levels of peasant farmer and pastoralist environmental knowledge.

Contrary to the conventional view, there are some independent thinkers who subject their own culture to critical scrutiny in Oromia. Reasonably strong empirical evidence suggests that elders and some other knowledgeable persons are the masters of fine environmental knowledge and the living libraries of their society. Both oral and written sources are useful bases of knowledge transmission, even though both have their own respective strengths and weaknesses.

Power can influence ethical laws, and the preservation and transmission of local knowledge. In some cases, powerful groups manipulate ethical principles and knowledge, and exclude those who are not rich from power and participation. What appears to emerge in Warkine Kelbesa’s book entitled “Indigenous and Modern Environmental Ethics: A Study of the Indigenous Oromo Environmental Ethic and Modern Issues of Environment and Development, concluded is that pastoralists’ and peasant farmers’ environmental consciousness, protection, management and utilization of resources are integrated into their traditional life (religion, politics and culture). Their environmental consciousness primarily stems from their efforts to grapple with their practical, immediate, and pressing problems which arise in everyday living. Also, their cultural practices and beliefs contribute to the development of their consciousness. They have been improving their environmental consciousness in response to new ideas and environmental hazards over time. This view is reinforced by the fact that indigenous knowledge is dynamic and in a process of change.

Peasant farmers and pastoralists are not passive receivers of new ideas or inactive transmitters of local knowledge. Instead, they are active receivers and transmitters of knowledge, and initiators of development as well. They preserve and nurture the already existing knowledge and create new knowledge and culture. In the process, they have discarded some aspects of their knowledge and refined other aspects of it. Put differently, they have developed their own indigenous environmental science. They protect their natural environment for various reasons. The level of individuals’ environmental consciousness has considerably influenced environmental protection. Those who have learned environmental knowledge from knowledgeable persons are more responsible for the natural environment and its resources than other groups.

The people also employ effective management systems in order to minimize resource depletion. Peasant farmers’ and pastoralists’ environmental management involves the use of improved pest- and drought-resistant crop varieties over other crops, planting of fast growing trees, diversification of farming strategies, seasonal use of water and grazing-lands and agroforestry. Accordingly, they know what grows where, under what conditions and what is needed to improve it. Another interesting point is that they have their own conscious plans regarding where, when and how to utilize natural resources. Environmental consciousness largely influences decisions about the use of resources. Thus, peasant farmers’ and pastoralists’ environmental consciousness, protection, management and utilization are interconnected.

According to Warkine Kelbesa, indigenous knowledge has been challenged by modernization, the market economy, transnational corporations, foreign religions, the government’s acculturation and assimilation policies, the imminent losses of cultural knowledge with the passing of the elders and environmental losses caused by resource extraction and other human activities and the attempt to integrate it into scientific frameworks. The important conclusion he implied there is that the people should be supported to maintain, revitalize, and continue to develop their languages and thereby reclaim and update their knowledge and environmental ethics. The exploitation of peasant farmers and pastoralists by transnational corporations, governments and others should be resisted, and the integration of indigenous knowledge into science should not risk its very existence.